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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Public Works DEPARTMENT

G.O. No. 2048(W) Press.
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Dated 30-8-1880 197 .

257

Not to be folded or roughly handled

2048
1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

30th August 1880, No. 2,048 W.

Buildings and Roads.
Civil Works.

Read the following paper:—

No. 90. Despatch from the Most Honorable the Secretary of State for India.

Public Works,
No. 13.

INDIA OFFICE, LONDON,
29th July 1880.

MY LORD DUKE,—With reference to your Grace's letters, Nos. 19 A. and 29, dated 20th April and 12th June last, and to the telegrams noted in the margin, I have to acquaint you that the supply of mooring apparatus for the Madras Harbour Works indented for by you is being proceeded with in this country, and that the stores will probably be despatched to Madras by the end of October next.

From Secretary of State, to Governor of Madras, dated 1st July 1880.
From Governor of Madras, to Secretary of State, dated 2nd July 1880.

2. I enclose copy of a despatch which I have recently addressed to the Government of India, by which your Grace will learn that I have not deemed it advisable to delay the purchase of the stores, and that I have accordingly requested the Government of India, in consultation with your Government, to make the necessary arrangements for meeting the cost of the supply during the current financial year.

No. 22, dated 29th July 1880.

I have, &c.,

(Signed) HARTINGTON.

His Grace the Most Noble
The Governor in Council, Fort St. George.

Public Works Despatch to Government of India, dated 29th July 1880, No. 22.

THE Government of Madras have recently requested the purchase in this country of mooring apparatus for the Madras Harbour Works, intimating at the same time their inability to meet the cost of the supply, about £18,000, till the 1st April 1881.

2. Mr. Parkes, the Engineer of the Harbour Works, has represented to me that the supply of the apparatus is urgent, as the harbour will in all probability be sufficiently advanced by the end of this year to afford shelter to shipping supposing moorings are placed in it by that time.

The importance of using the harbour at as early a date as possible is obvious, and I have decided therefore on proceeding at once with the supply of the mooring apparatus, and request that your Government, in consultation with the Government of Madras, will make such arrangements as may be necessary for meeting the cost of the supply before the close of the current financial year.

3. The stores, it is expected, will be ready for shipment to Madras by the end of next October.

No. 91. ORDER THEREON, 30th August 1880, No. 2,048 W.

COMMUNICATED to the Superintendent, Madras Harbour Works, and to the Marine Department.

2. The Government of India will no doubt address this Government in regard to the provision of funds for the moorings.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Marine Department.
" Examiner of Public Works Accounts.
" Secretary, Harbour Works Committee.

Exd. E. C. Shunker.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of [1880] Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT, MADRAS
HARBOUR WORKS,

&c., &c., &c.

Dated August, 30th.

Issued.

Recd. Encl.

C. O., 30th August 1880, No. 2,048 W.

AUGUST.

Nos. 90-91.

Mooring Apparatus for the Madras Harbour Works.—Despatch from the Secretary of State intimating that the — is being proceeded with and will be despatched to Madras by the end of October next, and forwarding copy of despatch to Government of India to arrange for the cost of the same being met in current financial year, communicated to the Superintendent, Madras Harbour Works, and to the Marine Department.

2048/3

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

22nd March 1879, No. 862 W.

Buildings and Roads.
Civil Works.

Read the following paper :—

No. 262. Endorsement of the Officiating Chief Secretary to Government in the Marine Department, dated Fort St. George, 13th March 1879, No. 631.

From J. H. TAYLOR, Esq., Lieutenant, R.N.R., Master Attendant, Administrative Department, Madras, to the Acting Chief Secretary to Government, Marine Department, dated Madras, 11th March 1879, No. 2,017.

I HAVE the honor to forward, for the information of His Grace the Governor in Council, a tracing of the plan of moorings proposed by Mr. Parkes for the Madras Harbour. It will be observed that to berth the number of ships proposed by Mr. Parkes the moorings are placed as close, and the vessels placed with relation to one another, as if in a London Dock or tidal river. The plan of mooring is undoubtedly good, and the cost seems very reasonable, including as it does the driving of the screw moorings, and it is impossible to say but that an emergency might bring a large number of ships to Madras (as we have lately had occasion to observe) when in fine weather the whole of the moorings might possibly be brought into use. It is in view of such a possibility I have recommended the plan to the favorable consideration of Government; It being represented to me by Mr. Parkes that the buoys not wanted for use in bad weather, or found inconveniently placed in ordinary Madras weather, can be easily disconnected from the cables and removed to a place of security, the cables remaining on the ground until wanted. Otherwise I should have considered half the number more suitable to the area, and the difficulty of warping in the Harbour, with no tide to steady vessels, and no wind shelter; but if moorings on a wider system were adopted no subsequent change would be convenient if possible in order to meet sudden requirements. The unusually fine seasons of the last three years have, I am disposed to think, given the Harbour Works Engineers and officers too favorable an opinion of Madras weather which can be very disagreeable at times. The moorings, Mr. Parkes informs me, are to be screwed twenty feet into the sand, and will require workmen and appliances specially trained and adapted to the duty, such as would not be available in Madras. Under these circumstances I beg respectfully to recommend the system and estimate furnished by Mr. Parkes.

TRANSFERRED to the Public Works Department with reference to paragraph 5 of that Department Order, dated 5th March 1879, No. 657 W.

(Signed) C. G. MASTER,
Offg. Chief Secretary.

No. 262-A. Proceedings of the Harbour Works Committee at a meeting held on the 3rd March 1879.

No. 262-B. Endorsement of the Officiating Chief Secretary to Government in the Marine Department, dated Fort St. George, 14th March 1879, No. 648.

From J. H. TAYLOR, Esq., Lieutenant, R.N.R., Master Attendant, Administrative Department, Madras, to the Acting Chief Secretary to Government, Marine Department, dated Madras, 13th March 1879, No. 2,127.

IN continuation of my letter, No. 2,017, dated the 11th instant, I have the honor to forward the accompanying two covers and paper just handed to me by Mr. F. N. Thorowgood, Superintendent of the Madras Harbour Works.

MADRAS HARBOUR MOORINGS.

Seven lines of Buoys A, B, C, D, E, Buoys in each line 200 feet apart 1, 2, 3, 4, &c.

Large ships length 300 feet and over.
Small do. under 300 feet.

In north-east monsoon—

Maximum of large ships.

A 1, 2, 3, 4, 5, 6, 7, 8, 9	= 9 berths	10	light draught.
B quarter moorings for A			
C 1, 2, 3, 4, 5, 6	= 6 ,,	7	do.
D 1, 2, 3, 4, 5, 6	= 6 ,,		
E quarter moorings for D			
F 1, 2, 3, 4, 5, 6, 7, 8, 9	= 9 ,,	10	do.
G quarter moorings for F			
	30 large	3	light draught.

Maximum of small ships.

A 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	= 10 berths	1, 2, 3 may be large.
B 4, 5, 6, 7, 8, 9, 10	= 7 ,,	
C 1, 2, 3, 4, 5, 6, 7	= 7 ,,	1—6 may be large.
D 1, 2, 3, 4, 5, 6, 7	= 7 ,,	
E 1, 2, 3, 4, 5, 6, 7	= 7 ,,	
F 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	= 10 ,,	1—9 may be large.
G quarter moorings for F	48 ,,	of which 18 may be large.

In south-west monsoon—

The same arrangement except that ship's heads reversed so that A and F become quarter moorings for B and G, and for large ships C becomes quarter mooring for D.

In cyclone seasons the following berths to be kept for vessels that cannot be sent to sea at 12 hours' notice :—

(1).—B 1, 4, 7. D 1, 4. F 1, 4, 7 = 8 berths for large ships, or

(2).—B 1, 3, 5, 7, 9. C 1, 3, 5. D 1, 3, 5. E 1, 3, 5. F 1, 3, 5, 7, 9 = 19 for small ships, or for mixed large and small.

(3).—B 1, 4. D 1. F 1, 4 = 5 berths for large and B 7, 9. C 4, 6. D 5. E 4, 6. F 7, 9 = 9 berths for small.

FORWARDED to the Public Works Department in continuation of endorsement, No. 631, dated 13th March 1879.

(Signed) C. G. MASTER,
Offg. Chief Secretary.

No. 262-C. From the Master Attendant, Administrative Department, Madras, to the Under Secretary to Government, Public Works Department, dated Madras, 14th March 1879, No. 2,149.

With reference to your demi-official letter of yesterday's date, I have the honor to inform you that the Proceedings of the Harbour Works Committee, dated 3rd instant, relating to the moorings, was forwarded by the Master Attendant, as

Secretary to the Committee, to the Chief Secretary to Government, Marine Department, and a copy of the same is herewith forwarded.

Proceedings of a Meeting of the Harbour Works Committee held on Monday, the 3rd March 1879, at 5 P.M.

PRESENT.

Colonel W. FAREWELL.
Captain J. H. TAYLOR.
R. C. WALKER, Esq.
A. MACKENZIE, Esq.

Mr. Thorowgood reports that the Government has desired him to apply to the Forest Department for sleepers, that he has done so, but not received an answer. In the mean time he is buying sleepers for immediate wants from Palghat at Rupees 3-1-0 delivered in Madras.

RESOLVED.—The Committee approves of these temporary purchases, pending reply from Forest Department.

Mr. Thorowgood reports that he will shortly be in want of cement, and that 3,000 tons has been ordered from England by telegram. That he has 400 tons of General Morgan's cement, but which is not sufficiently weathered to use ; that he made up 20 blocks of this cement the other day, and all fell to pieces. The cost of cement and labor on those 20 blocks is about Rupees 3,000. Mr. Thorowgood suggests that this cost shall be deducted from General Morgan's bills.

RESOLVED.—Mr. Thorowgood to inform General Morgan that the Committee propose to deduct the cost of cement and labor in respect of above 20 spoiled blocks from the bills now unadjusted, unless he can give satisfactory explanation, or show good grounds for exemption from the charge.

Captain Taylor mentions that Mr. Parkes has requested him to bring forward the question of moorings and lays plan on the table. The system shown in the plan has been approved in the Marine Department. The estimated cost is 3½ to 4 lakhs.

Mr. Parkes having personally attended and explained the plan.

RESOLVED.—That this plan be forwarded to Government through the Marine Department for favorable consideration.

No. 263. ORDER THEREON, 22nd March 1879, No. 862 W.

THE Government are of opinion that it will be desirable to lay down, in the first instance, only half of the proposed number of moorings, in such positions that the others could be hereafter added, if required.

2. Mr. Parkes will be requested to report upon this point, and to submit the estimate for the moorings as soon as possible.

3. Inquiry will be made in the Marine Department whether any, and what, moorings are in store at Calcutta.

(True Extract.)

(Signed) J. H. M. SHAW-STEWART, Colonel, R.E.,
Ag. Secy. to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
,, the Marine Department.
,, Mr. W. Parkes, M.I.C.E.

Exd. C. Howarth.
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2. In addition to the individuals shown under the head of Establishment, the following, who appear to be employed on general duties, should also be charged to that head, and not to the various sub-heads of work :—

Mr. G. W. Lowe, Foreman of Works.
" G. Gunther, Mechanical Engineer.
P. C. Dorasawmy Pillay, Time-keeper.
P. Narrainasawmy Naidu, Clerk.
A. Jaganaicoolo Naidu, Draughtsman.
Mr. H. C. Scott, Carriage Examiner.
" J. D'Silva, Inspector Intercepting Sewer.
Moonesawmy Rao, Draughtsman.
Cadirvaloo Moodelly, Draughtsman.
Mr. J. Manuel, Clerk.
C. Thanigachellum Moodelly, Clerk.
Annasawmy, Godown-keeper.

3. The remaining individuals appear to be solely employed on special items of work, and their pay forms a legitimate charge against the rates for those items.

4. The following will therefore be considered the sanctioned scale of Establishment for the Harbour Works, and no alteration should be made therein except under the regular rules of the department as laid down in the Public Works Code, or the special authority granted by G.O., No. 2,016 W., dated 31st July 1879.

List of Officers and Subordinates drawing salaries of Rupees 20 and upwards and Rupee 1 and more as daily wages on the Madras Harbour Works.

Names.	Rank.	Salary per Month.	Wages per Day.	To what sub-head charged.
		RS.	RS. A. P.	
F. N. Thorowgood, Esq. ...	Superintendent ...	1,250	...	
N. St. B. Beardmore, Esq.	Assistant Superintendent.	700	...	
Mr. Bhumaya Saonna ...	Sub-Engineer ...	400	...	
" M. E. Ross	Superintendent of Quarries.	230	...	
Mr. J. Hart	Storekeeper ...	200	...	
" A. A. Hector	Assistant Storekeeper.	80	...	
" E. D'Castar	Manager	80	...	
" R. Rozario	Accountant ...	50	...	
C. Ramasawmy Naidu ...	Head Surveyor ...	50	...	
K. Muduanayagum Moodelly.	Cashkeeper ...	40	...	
P. Loganatha Moodelly ..	Draughtsman ...	35	...	
Mr. E. A. D'Vaz	Clerk	35	...	Establishment.
" J. E. Boyle	Do.	30	...	
" A. Johnson	Do.	20	...	
" G. W. Lowe	Foreman of Works.	400	...	
" G. Gunther	Mechanical Engineer.	275	...	
P. C. Dorasawmy Pillay ...	Time-keeper ...	40	...	
P. Narayanasawmy Naidu.	Clerk	25	...	
A. Jaganaicoolco Naidu ...	Draughtsman ...	20	...	
Mr. H. C. Scott	Carriage Examiner.	25	...	
" J. D'Silva	Inspector Intercepting Sewer.	40	...	
Moonesawmy Rao	Draughtsman ...	40	...	
Cadirvaloo Moodelly ...	Do. ...	20	...	
Mr. J. Manuel	Clerk	35	...	
Anasawmy	Godown-keeper ...	25	...	
C. Thanigachellum Moodelly	Clerk	25	...	
Mr. W. Allen	Foreman Diver ..	280	...	Divided in proportion to their time at different works.
" T. Carter	Do. Carpenter.	250	...	
" J. T. Duffy	Do. at South Pier.	250	...	
" G. C. Lowe	Foreman Block-maker.	120	...	Chiefly "Concrete Block-making."
" A. Muinie	Inch Machines and Stationary Engines.	80	...	
" Michael Claish... ...	Diver	200	...	Block setting North and South Piers.
" W. Marshall	Do.	140	...	
" H. Lucas	Do.	140	...	
" W. Chirry	Do.	130	...	
Mahomed Curriem	Do.	120	...	
Mr. J. Gray	Do.	120	...	
" Wyatt Johnson ...	Do.	100	...	
" J. Rapsey	Do.	120	...	
Laul Mahomed	Do.	45	...	
Vadivaloo	Do.	45	...	
Mr. H. Speldivinde ...	Life Lineman ...	80	...	
" R. Braithwaite ...	Do. ..	80	...	
" B. Gear	Do. ...	60	...	
" Solomon Fobler ...	Do. ...	60	...	
" H. Barrow	Boatswain for Surveying.	60	...	North Pier and South Pier Rubble Base.
" J. H. Britain	Inspector of Tipping Rubble Base.	60	...	

List of Officers and Subordinates drawing salaries of Rupees 20 and upwards, &c.—cont.

Names.	Rank.	Salary per Month.	Wages per Day.	To what sub-head charged.
		RS.	RS. A. P.	
Abdul Ryeman	North Pier Boat Syrang.	22	...	North Pier Setting Blocks.
Arokium	North Pier Catamaram man.	22	...	North Pier Rubble Base.
Bauboo	South Pier Boat Serang.	20	...	South Pier Setting Blocks.
Lazar	South Pier Catamaram man.	22	...	South Pier Rubble Base.
Sawmy Cunnoo	North Pier Boat Watchman.	20	...	North Pier Setting Blocks.
Rajagopaul	South Pier Boat Watchman.	20	...	South Pier Setting Blocks.
Venceta Reddy	Boat Syrang ...	30	...	North Pier Rubble Base / South Pier Rubble Base and Surveys.
Suthiah	Boatman	20	...	
Goorish	Do.	20	...	
Nanamah	Do.	28	...	
Anthiah	Do.	20	...	
Appasawmy	Do.	20	...	
Achiah	Do.	20	...	
C. Soobrayen	Clerk	30	...	North and South Piers Rubble Base.
Mr. E. J. Chauntler ...	Inspector of South Indian Railway Quarries.	60	...	South Pier Rubble Base and Concrete Block-making.
„ P. Pistoll	Locomotive Engine Driver.	...	5 0 0	Divided in proportion to his time at different works.
„ G. Westropp	Do. do.		4 8 0	Divided in proportion to their time at the different works.
„ F. Lovedey	Do. do.		4 8 0	
„ C. Trotter	Titan Driver		3 8 0	North Pier Setting Blocks.
„ Reed	Do.		3 8 0	South Pier Setting Blocks.
Paul	Fitter		2 0 0	Divided in proportion to their time at different works.
Mr. P. Mooney	Do.		3 8 0	

SPECIAL ESTABLISHMENT ON BOARD THE STEAM HOPPER BARGES.

Barge "Hobart."

Mr. G. W. Pundt	Commander ...	250	...	North Pier and South Pier Rubble Base.
„ W. Croft	Engineer	225	...	
A. Suthiah	Syrang	22	...	
M. Fakier	Fireman	20	...	
James D'Costa	Do.	20	...	
F. Piere	Do.	20	...	
James D'Costa	Do.	20	...	

Barge "Salisbury."

Mr. A. C. Berlie	Commander ...	250	...	
„ R. Palmer	Engineer	225	...	
Gumpul Naidu	Syrang	22	...	
F. Fredericks	Fireman	20	...	
C. D'Costa	Do.	20	...	
H. Hoffland	Do.	20	...	
W. Rozario	Do.	20	...	

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
„ Secretary, Harbour Works Committee.
„ Examiner of Public Works Accounts.

Exd. S. T. Austin.
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BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1879} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS.

&c., &c., &c.

Dated September 3rd.

Issued

Read.

Encl.

G. O., 3rd September 1879, No. 2,251 W.

SEPTEMBER.

Nos. 9-10.

List of employés on the Madras Harbour Works and the Sub-heads to which their salaries are charged.—Remarks on the —.

2948/8

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

3rd April 1880, No. 854 W.

Buildings and Roads.
Civil Works.

Read the following papers:—

No. 9. From W. PARKES, Esq., to the Secretary to the Government of Madras, Public Works Department, dated 23 Abingdon Street, 29th May 1879.

Madras Harbour Moorings.

IN the G.O. No. 862 W., of 22nd March 1879, I am requested to submit a plan of moorings with only half the number of buoys originally proposed, but in such positions that the others can be added hereafter if required.

2. Referring to the letter of the Master Attendant on which the above order is founded, I find that he considers it desirable, in the first instance at any rate, to place the buoys at greater distances apart than was originally proposed, so as to give more room for working the ships to and from their berths. In this I entirely concur, and the system proposed lends itself very advantageously to such an arrangement, but it will, I think, be readily understood that if a greater distance is allowed between the berths, the cost of half the number of berths will be more than half that of the whole system.

3. I beg to submit herewith two charts, "No. 1 Close system," being with the exception of a slight modification identical with that which I originally proposed to Captain Taylor, and "No. 2 Open system," that which I now recommend as the first step towards the ultimate accomplishment of No. 1 in accordance with the instructions quoted above.

4. The modification of the original plan above alluded to consists in the suppression of the row of six buoys nearest the shore, which being in shallow water would only be available for light and small ships, and substituting for them twelve smaller buoys attached directly to the innermost row of screw moorings which would be equally useful for such vessels as steam tugs, native craft, large cargo boats, &c., which would have room to swing freely to the wind in the space between the buoys.

5. The total cost of this complete system would be £28,065 or, taking the rupee at 1/7½, rupees 3,45,415. The details are given in the accompanying estimate, and are based on information furnished by Mr. G. Wells, who having laid down the

screw moorings in the Hooghly, and also erected the screw pile pier at Madras, has had an exceptional amount of local experience in this class of work. The prices are those at which Mr. Wells would be prepared at the present time to supply the materials, but they are of course ruled by the market price of iron and the cost of labour.

6. The plan "No. 2, Open system," may be generally described as consisting of every alternate buoy of No. 1. The number of screws is the same as in No. 1 and the whole of them would be immediately required except six, viz., the outer ones in the rows C, D and E. These would lie idle until it becomes desirable to attach the ground chains and buoys to them, but I should recommend them to be fixed at the same time as the others, as the cost would be small, while the special screwing machinery and staff are at work, and I think the berths which would depend upon them would not improbably be among the first to be added when further accommodation is wanted.

7. The accommodation in the first instance afforded by this system would be as follows:—For ships up to 360 feet long there would be in rows B, C, D, E and F, fourteen free swinging berths, and for shorter ships five more besides the twelve inshore berths for small craft. Ships of greater length than 360 feet must be moored head and stern in ordinary times, and for these the combination of rows A and C with B and F respectively would provide fixed berths at the expense of course of an equal number of swinging berths.

8. The cost of this scheme would be £17,936 or Rs. 2,20,752 rather less than two-thirds of No. 1. Additions could be made at any time by merely attaching the ground chains and buoys to the screws already fixed, which can be done by an ordinary diver. The ultimate cost of completing the scheme would not be enhanced by deferring the attachment of the alternate buoys till they are required, as the whole of the work involving special machinery and skilled superintendence would have been completed as part of the open system first carried out.

9. It will be seen that the essential difference of these two schemes is that while in No. 1, the close system, every ship must be moored head and stern, in No. 2, the open system, all ships below a limit of length, which would at present include the great majority, may swing freely at all times. There are few harbours in which ships of exceptional length can lie at swinging berths, so that Madras will not be peculiar in requiring such ships to be moored head and stern under ordinary circumstances. In case of necessity however seven berths (B, 1, 5—C, 4—D, 2—E, 4—F, 1, 5) could, by the removal of such of the buoys as are within the radius of the ship's length, be made available for such ships to swing freely round them.

10. This would be provided for in the construction of the buoys, which could be instantly freed by driving out a steel key on the top of the buoy. By this means the bridle-chain would drop to the bottom, and the buoy could be floated away. The bridle-chain would have to be afterwards recovered by a diver.

11. The change from the system of swinging moorings to that of fixed moorings for ships of moderate length would be made gradually, as the requirement for it arises. In order to give the full amount of accommodation to such vessels however special arrangements for stern moorings will have to be made. The distances between the rows of buoys are, 430 feet. The whole of this space would be occupied by a tier of very long ships, so that to maintain a free passage between their sterns and the heads of the next tier of ships the adjoining space of 430 feet must be left unoccupied. But in the case of shorter vessels there would be ample space for passage between their sterns and the next row of buoys if it be not obstructed by their stern moorings.

12. To obviate such obstruction I propose to attach to each screw, where suitably situated for the purpose, a light supplementary chain cable of 12 fathoms in length continued by a still lighter hand chain of 20 fathoms, the end of which when it is out of use would be hung on the neighbouring buoy. When in use this hand chain would be taken on board the ship, and the ship's own tackle made fast to the light chain cable

2058/9

on either side, thus securing her stern in any required direction. By this means a passage of 130 feet wide would be left between the stern, of a ship 300 feet long and the heads of the ships secured to the buoys in the next row. Provision for 120 such supplementary stern chains is made in the estimate for Plan No. 1 at a cost of £1,244.

13. It may be desirable to give a few particulars of the construction of the proposed moorings. The ground attachments of each buoy will consist of four screws, 4 feet diameter, sunk 20 feet in the ground at the four corners of a square of 200 feet. To each screw will be attached 21 feet of open link $2\frac{1}{4}$-inch chain, the last link of which will therefore remain above the surface of the ground. To each of these last links will be attached by means of a suitable shackle the end of a "ground chain," a $2\frac{1}{4}$-inch stud link cable, $24\frac{1}{3}$ fathoms long, the other ends of which will meet in the centre of the square. To these four ends will be attached one end of a $2\frac{1}{2}$-inch stud link chain (the bridle) of a length one fathom less than the depth of water at mean tide, the other end being attached to a spindle of round iron $3\frac{1}{2}$-inches diameter, which will pass through the buoy and be secured on the top by a steel key, which will also connect it to a strong ring or eye to which the ship's tackle will be made fast. On this key being driven out, as described in paragraph 10, the buoy will be detached from its moorings.

14. The length allowed for the ground chains, $24\frac{1}{2}$ fathoms, is one fathom more than the actual distance from the angle to the centre of the square, so that there will be a fathom of slack in each of the four. This will allow the buoy to rise and fall with the tide or with such waves as there may be within the harbour. The strain of a ship upon the mooring will first lift this slack, and then lift the one or two of the ground chains which may lie to windward, off the ground, and ultimately under a force sufficient to lift the whole length of chain, the strain will be thrown upon the screw or divided between two screws some 30 fathoms distant and buried 20 feet in the ground. The result of the greatest possible strain upon the chains will be to allow the buoy to describe a circle of about 42 feet radius round the central point of the square which is its normal position. Thus 42 feet added to the length of the ship will give the radius of the circle which a ship can describe under the influence of a gale of wind veering all round the compass, though the actual attachment to the ground will never be at a less distance than 30 fathoms.

15. The strength given to every detail of the parts of these moorings which are liable to the greatest strain is in excess of that specified by Lloyd's rules for the tackle to be carried by the largest class of merchant ships, steamers of 5,000 and sailing vessels of 3,000 gross tonnage. Thus the weakest link in the chain of attachment will be that which is on board the ship itself and under constant authoritative inspection. For vessels of a size beyond the limits of the scale recognized by Lloyd's, if such should visit the port, exceptional arrangements will have to be made.

16. In the charts showing the proposed arrangement of the berths I have indicated the depths by the contours taken from the survey of February 1878. The disturbance of the bottom in the following south-west monsoon would affect a few of the berths for small vessels in the extreme south-west angle of the harbour, but as I anticipate further changes in this locality, and that the ultimate form of the bottom will probably be more like that shown by the contours of February 1878 than by those of more recent surveys, I have thought it would only complicate the question to show an exceptional state of things which will certainly change if it do not entirely pass away. It will of course be understood that the moorings should not be laid down till there is good evidence that no further important disturbance of the bottom is likely to occur, but I hope the present south-west monsoon will afford materials for a final settlement of that question.

17. I may be permitted to request that this matter should have early attention. Three months from the date of order will be required for the preparation and shipment of the materials required to commence operations, and if the moorings are

to be ready for use in November 1880 advantage should be taken of the favorable season of January and February next for laying them down.

ESTIMATE OF MOORINGS.

No. 1, Close System.

	£	s.	d.
134 screws 4 feet diameter with 21 feet of 2¼″ open link chain at £22 each	2,948	0	0
180 lengths of 2¼″ stud ground chain, each 24½ fathoms—560 tons at £17	9,520	0	0
30 lengths of 1½″ stud ground chain for Harbour side moorings of lines A and C, each 24½ fathoms—52½ tons at £16 ...	840	0	0
54 lengths of 2½″ stud bridle-chain, from 3 to 6½ fathoms—42 tons at £17	714	0	0
12 lengths of 1¾″ stud bridle-chain, each 4½ fathoms, for inner line of buoys—3½ tons at £16	52	0	0
Shackles for connections—15½ tons at £35	542	10	0
54 wrought iron buoys 10′ × 9′—126 tons at £35	4,410	0	0
12 do. do. 6′ × 5′ 8¾ do. £40	350	0	0
120 lengths of 1½″ stud chain for stern moorings, each 12 fathoms, 1,440 fathoms at ¾ cwt.—54 tons at £16... ...	864	0	0
120 lengths of ⅝″ hand chain for do., each 20 fathoms, 2,400 fathoms—24 tons at £15	360	0	0
Screwing machinery	600	0	0
Portable engine and boiler	290	0	0
Contingencies and extras 5 per cent.	1,074	10	0
Total cost of materials shipped f.o.b. in the Tyne ...	22,565	0	0
Freight for 1,000 tons at 60′	3,000	0	0
Local materials and labour, say	2,000	0	0
Special superintendence	500	0	0
	28,065	0	0

or Rs. at 1/7½, Rs. 3,45,415.

(Signed) W. PARKES.

No. 2, Open System.

	£	s.	d.
134 screws 4 feet diameter with 21 feet of 2¼″ open link chain at £22 each	2,948	0	0
96 lengths of 2¼″ stud ground chain, each 24½ fathoms—300 tons at £17	5,100	0	0
20 lengths of 1½″ stud ground chain for Harbour side moorings of lines A and C, each 24½ fathoms—29½ tons at £16.	472	0	0
29 lengths of 2½″ stud bridle-chains, from 3 to 6½ fathoms—22 tons at £17	374	0	0
12 lengths of 1½″ stud bridle-chains each 4½ fathoms for inner line of buoys—3½ tons at £16	52	0	0
Shackles for connections, 12 tons at £35	420	0	0
29 wrought iron boys 10′ × 9′ 68 tons at £35	2,380	0	0
12 „ „ „ 6′ × 5′ 8¾ „ at £40	350	0	0
Screwing machinery	600	0	0
Portable engine and boiler	290	0	0
Contingencies and extras 5 per cent.	650	0	0
Total cost of materials shipped f.o.b. in the Tyne ...	13,636	0	0
Freight for 600 tons at 60′	1,800	0	0
Local materials and labour, say	2,000	0	0
Special superintendence	500	0	0
	17,936	0	0

or Rs. at 1/7½, Rs. 2,20,752.

(Signed) W. PARKES.

No. 2,377.

REFERRED to the Harbour Committee for early remarks.

(By Order.)

(Signed) J. PENNYCUICK, Major, R.E.,
Under Secy. to Govt., P.W.D.

27th June 1879.

To the President, Harbour Committee.

No. 9-A. Proceedings of the Madras Harbour Works Committee in circulation, dated 10th July 1879.

Read letter from Mr. Marshall, Port Conservator, regarding Mr. Parkes' system of moorings suggesting certain modifications.

Letter referred to Captain Taylor and Mr. Thorowgood for careful consideration. On the explanation offered by these officers the Committee beg to *recommend that Mr. Parkes' open* system of moorings, "*vide* plan* and description," be adopted by Government as a commencement. If it should be found afterwards that a still more open style as advice by Mr. Marshall is necessary, the removal and return of the tier of buoys adjoining the harbour wall in either monsoon can be effected without assistance from England, and if the close system of Mr. Parkes is even brought into action the screws being already in position it will only be necessary to attach chains and buoys.

* B.

(Signed) P. MACFADYEN.
(„) J. H. TAYLOR.
(„) R. C. WALKER.
(„) J. PENNYCUICK.

No. 9-B. From F. N. THOROWGOOD, Esq., M. INST. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, Buildings and Roads, dated Madras, 23rd March 1880, No. 68 W.

I HAVE the honor to submit the following reply to your memorandum No. 933, of yesterday's date, in which you ask me whether I believe the savings on the estimate of Rs. 58,50,790 for these works will be sufficient to cover the cost of the lesser scheme of moorings estimated by Mr. Parkes to cost Rs. 2,20,752, (*vide* his letter to the Madras Government, May 29th, paragraph 7.)

2. I have now gone carefully through the whole items of expenditure up to the end of February, and am able to estimate very fairly what the work will cost apart from serious accidents. I am able to show that the saving will be very nearly sufficient to cover the cost of the moorings.

3. The main heads under which excess or saving occur are as follow :—

Excesses.	Rs.	*Savings.*	Rs.
Preliminary works	68,258	Block-making	1,27,790
Rubble bases	1,00,000	Block setting	2,62,246
Establishment	1,36,077	Contingencies	1,34,472
Total Excesses ...	3,04,335	Total Savings ...	5,24,508

4. In all the above items I have estimated quite fairly, the calculations being based on what has gone before. The large excess estimated to occur in "Establishment" arises from my allowing for twenty-four months more to run at the present rates of pay, but Rs. 20,000 of the amount should by Mr. Parkes's estimate go to "*Works*" and not to *Establishment*. It is charged to the latter in obedience to G.O., 2,254 W., of 3rd September 1879.

5. In the items on which there are to be savings it will be observed that I have allowed Rs. 1,34,472 to be saved from "Contingencies." I arrive at this by taking the total amount now expended on contingencies and adding to it *twice as much* again, which I think to be giving a liberal margin.

6. It will be seen then the total probable excesses over estimate amount to Rs. 3,04,335, while the probable savings will be Rs. 5,24,508, giving a nett saving of Rs. 2,20,173 against Rs. 2,20,752, the estimated cost of the moorings allowing for exchange at 1*s.* 7½*d.* per rupee.

No. 10. ORDER THEREON, 3rd April 1880, No. 854 W.

ORDERED that the Government of India be addressed on the subject of the moorings, a copy of the letter being forwarded to the Secretary of State for information.

(Here enter No. 855 W., dated 3rd April 1880.)

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

Lieut: R. H. Works

Exd. S. T. Austin.
Spare Copies

10-A

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of [1880] Madras.

PUBLIC WORKS.

To

Dated April, 3rd.

Recd.

Encl.

G. O., 3rd April 1880, No. 854 W.

APRIL.

Nos. 9-10.

Moorings for the Madras Harbour Works. —The Government of India addressed on the subject of the —.

PUBLIC WORKS DEPARTMENT.

2068
11

Buildings and Roads.
Civil Works.

No. 855 W.

No. 11.

FROM

THE SECRETARY TO THE GOVERNMENT OF MADRAS,

Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

Public Works Department.

SIR,—I am directed to forward correspondence relating to the provision of mooring apparatus for the Madras Harbour.

2. On the recommendation of the Madras Harbour Committee, this Government have resolved on the adoption, as a commencement, of the open system of mooring proposed by Mr. Parkes. It has been ascertained that the Calcutta and Bombay dockyards are unable to supply any of the requisite gear, and it will therefore be necessary that the Secretary of State invite tenders in the open market for the whole of the apparatus, such tenders being submitted for choice to the ordinary Engineering advisers of the India Office.

3. The cost of the moorings will amount to about £18,000; and as this Government are of opinion that the item might properly have been included in the general estimate for the Harbour Works, it appears desirable to adopt the suggestion made in the 29th paragraph of Mr. Parkes' report, dated 25th February last, and to provide for the mooring from the sanctioned estimate of £628,000.*

* Inclusive of £43,000 for interest on loan.

4. It is considered by the Superintendent that there is no reasonable ground for doubting that such provision may with safety be made. On this point I am directed to invite attention to his letter bearing date the 23rd March, No. 68 W.

5. His Grace the Governor in Council would be glad to have early sanction to this proposal communicated, and I am to request that, as the matter is very pressing, the Secretary of State, to whom a copy of this letter has been sent for information, may be advised by telegraph of the approval of His Excellency the Governor-General in Council to the proposal.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
3rd April 1880.

Exd. S. T. Austin.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1880} Madras.

PUBLIC WORKS.

To

THE SECRETARY TO THE
GOVERNMENT OF INDIA.

Dated April, 3rd.

Issued

Read. *Encl.*

G. O., 3rd April 1880, No. 855 W.

APRIL.
No. 11.

MOORING APPARATUS FOR THE MADRAS HARBOUR WORKS.

2048
17

PUBLIC WORKS DEPARTMENT.

No. 19

TO THE RIGHT HONORABLE THE SECRETARY OF STATE FOR INDIA.

MY LORD,—We have the honor to forward, for your Lordship's information, a copy of a letter that has been addressed by us to the Government of India.

2. We would request that, on receipt of the approval of the Government of India to our proposal in regard to the provision of funds for the moorings from the sanctioned estimate of £628,000, you will have tenders for the supply of the moorings invited and approved by the Engineering advisers of the India Office.

Including £43,000 for interest on loan.

3. It will be necessary that specially trained men be sent out to fix the moorings, and we presume, though the point is doubtful, that the sum named by Mr. Parkes (£18,000) will cover all expenses connected with such workmen, including their passage to and from Madras, and their pay while employed here.

We have the honor to be,

My Lord,

Your Lordship's most obedient, humble servants,

(Signed) BUCKINGHAM AND CHANDOS.
(„) W. HUDLESTON.
(„) DAVID F. CARMICHAEL.

FORT ST. GEORGE,
20th April 1880.

Exd. S. T. Austin.

FORT ST. GEORGE.

PUBLIC WORKS DEPARTMENT.

Letter to the Right Honorable the Secretary of State for India.

Dated 20th April.

No. 194 of 1880.

Mooring apparatus for the Madras Harbour Works.

2088/14

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

10th May 1880, No. 1,120-A W.

Buildings and Roads.
Civil Works.

Read the following paper :—

No. 12-A. From F. N. THOROWGOOD, Esq., M. Inst. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, Buildings and Roads, dated Madras, 6th May 1880, No. 9 W.

I hasten to correct an error made by me in the impression which I have conveyed to Government in my letter No. 68 W. of March 23rd, regarding the defraying the cost of the harbour moorings. Fortunately the correction of my mistake places the question in a more favorable position.

2. In going through the *details* of each head of the estimate and expenditure I neglected to keep in view the total estimate of Rs. 58,50,790 and compared each item with *Mr. Parkes' estimate* for such item, consequently there still remains untouched the additional Rs. 2,00,000 suggested by General Walker.

3. I did not observe this until Mr. Parkes himself drew my attention to it in a letter received this day, and I do not lose any time in pointing out my error to Government.

4. The wording of your memorandum No. 933 of March 22nd was so perfectly clear that there is no excuse for having failed to bear in mind that I had to compare the probable future expenditure with the larger estimate of Rs. 58,50,790.

5. The only explanation I have to offer is, as I have stated, that I took by itself each sub-head of Mr. Parkes' estimate under which work had been done, and entered against it the probable total cost based upon what had been completed already, the result of such comparison resulting in an estimated saving of Rs. 2,20,173. And as the Rs. 2,00,000 of General Walker did not appear in Mr. Parkes' estimate nor was there any work done to set off against this sub-head, I entirely overlooked the sum.

6. The total estimated saving on the works may, therefore, be reckoned at Rs. 4,20,173.

7. It is with the greatest regret that I have to reflect upon having conveyed a wrong impression to Government after having received such clear instructions, and my error is only in a small way compensated for by the fact that the correction is most satisfactory in its results.'

8. Having at once reported the mistake on discovery and expressed this regret, I can do no more.'

No. 12-B. ORDER THEREON, 10th May 1880, No. 1,120-A W.

ORDERED that the following telegram be sent to the Government of India :—

"My 855 W., April 3rd. Thorowgood now reports moorings can be paid for within estimate even excluding additional two lakhs sanctioned for extra rubble."

(Here enter No. 1,120-B W., dated 10th May 1880.)

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Marine Department.
" Secretary, Harbour Works Committee.

Exd. E. C. Shunker.
Spare Copies

15

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of [1880] Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT, MADRAS
HARBOUR WORKS,

&c., &c., &c.

Dated May, 10th.

Issued

Recd. *Encl.*

G. O., 10th *May* 1880, *No.* 1,120-A W.

MAY.

Nos. 12-A-12-B.

Madras Harbour Works.—Ordered that the Government of India be informed that the cost of the moorings for the — can be met from the estimate sanctioned for it.

2948/12

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

No. 1,120-B W.

No. 12-C.

FROM

THE SECRETARY TO THE GOVERNMENT OF MADRAS,
Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
Public Works Department.

SIR,—In continuation of my telegram of this day I am directed to forward a further letter* received from the Superintendent of the Madras Harbour Works on the subject of the proposed moorings.

* G.O., No. 1,120-A W, dated 10th May 1880.

2. It will be seen that, even setting aside the sanctioned addition of two lakhs for the cost of extra rubble, a sufficient saving on the estimate to provide the set of moorings is anticipated by Mr. Thorowgood.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
10th May 1880.

Exd. E. C. Shunker.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of [1880] Madras.

PUBLIC WORKS.

To

THE SECRETARY TO THE
GOVERNMENT OF INDIA.

Dated May, 10th.

Issued

Recd. Encl.

G. O., 10th May 1880, No. 1,120-B W.

MAY.

No. 12-C.

MADRAS HARBOUR WORKS.—Informing that the cost of the moorings for the — can be met from the estimate sanctioned for it.

2048/17

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

4th June 1880, No. 1,315 W.

Buildings and Roads.
Civil Works.

Read the following paper:—

No. 3. From the Secretary to the Government of India, Public Works Department, (Civil Works—Miscellaneous,) to the Secretary to the Government of Madras, Public Works Department, dated Simla, 20th May 1880, No. 141 M.

REFERRING to your letter No. 855 W., dated the 3rd April 1880, I am directed to state that the Government of India approves of the proposal of the Madras Government to adopt Mr. Parkes' open system of mooring for the Madras Harbour, and accordingly sanctions these materials being procured at an estimated cost of £18,000. I am to request that the Madras Government will set aside the necessary funds to cover the outlay on this account from the current year's grant, as it is not probable that any addition can be made to the grant already assigned for outlay on the harbour works during the current year.

2. I am to add that the Secretary of State has been advised by telegram of the approval of His Excellency the Governor-General in Council of the estimate for providing mooring apparatus for the Madras Harbour.

No. 4. ORDER THEREON, 4th June 1880, No. 1,315 W.

COMMUNICATED to the Superintendent of the Madras Harbour Works.

2. As serious delay to the progress of the works would be caused by setting aside two lakhs out of the budget grant for the current year, in which no provision for the moorings was included, the Secretary of State will be requested so to time the despatch of the gear as to allow of the payments on its account falling in 1881-82 instead of the current official year.

3. Ordered that a copy of these Proceedings and of the despatch to the Secretary of State be forwarded to the Government of India for information.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Marine Department.
" Examiner of Public Works Accounts.
" Secretary, Harbour Committee.

No. 5. (DOCKET No. 1,316 W., dated 4th June 1880.)

COPY forwarded accordingly.

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

Exd. E. C. Shunker.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1880} Madras

PUBLIC WORKS.

To

THE SECRETARY TO THE
GOVERNMENT OF INDIA.

Dated June, 4th.

Issued

Recd. *Encl.*

G. O., 4th June 1880, No. 1,316 W.

JUNE.
Nos. 3-5.

MOORINGS FOR THE MADRAS HARBOUR WORKS.—Forwarding copy of Proceedings and Despatch to the Secretary of State relative to the purchase and payment of —.

PUBLIC WORKS DEPARTMENT.

No. 29.

TO THE RIGHT HONORABLE THE SECRETARY OF STATE FOR INDIA.

MY LORD,—In continuation of our despatch of the 20th April, No. 19-A, and of the marginal telegram of the 2nd June, we have the honor to forward copy of our Proceedings, under date the 4th June, No. 1,315 W.

"Time despatch harbour moorings to allow payments to be made after March next."

2. We observe that your Lordship was advised by telegram of the approval of the Government of India to the estimate for providing mooring apparatus for the Madras Harbour.

3. When estimating the outlay during the current year, no provision was made on account of these moorings, and as it is of very great importance that the progress of the works should in no wise be retarded, we would request that their despatch may be so timed as to allow of the payments being made in 1881-82 instead of the current official year.

4. We take the opportunity of forwarding copy of the Proceedings and letter noted in the margin.

Nos. 1,120-A W., and 1,120-B W, of the 10th May 1880.

We have the honor to be,
My Lord,
Your Lordship's most obedient, humble servants,

(Signed) BUCKINGHAM AND CHANDOS.
(„) N. B. CHAMBERLAIN.
(„) W. HUDLESTON.
(„) DAVID F. CARMICHAEL.

OOTACAMUND,
10th June 1880.

Exd. E. C. Shunker.

OOTACAMUND.

PUBLIC WORKS DEPARTMENT.

Letter to the Right Honorable the Secretary of State for India.

Dated 12th June.

No. 29 of 1880.

REQUESTING to time the despatch of the Harbour mooring apparatus so as to allow of the payments for it being made in 1881-82.

To London
Secy of State.

2d July 1880.

Yours Pirch. No funds at our disposal for payment mooring till april Pirch.

Hagg 24/8

20484

India Office. London,
29th July 1880.

Vol 18
24

Public Works

No. 13.

From Secretary of State to Governor of Madras &c. 1 July 1880.
From Governor of Madras to Secretary of State 4th July 1880.

My Lord Duke

With reference to your Grace's Letters. Nos 19 & 29. dated 20th April & 12th June last, and to the telegrams noted in the margin, I have to acquaint you that the supply of — mooring apparatus for the Madras Harbour Works indented for by you, is being proceeded with in this country and that the stores will probably be despatched to Madras by the end of October next.

I

His Excellency,
The Most Noble,
The Governor in Council
Fort St George.

2. I enclose copy of a despatch which I have recently addressed to the Government of India, by which your Grace will learn that I have not deemed it advisable to delay the purchase of the stores, and that I have accordingly requested the Government of India, in consultation with your Government, to make the necessary arrangements for meeting the cost of the supply during the current financial year.

I have the honour to be
My Lord Duke
Your Grace's most obedient
humble Servant

Hastings

N°22 d/29 July 1870

22

fo. 854 R. 3-4-80.
— 833 R. — —
Desk. Dy. 20-3-80
fo. 1120 Ab. 10-5-80.
— 1120 18 R — —
— 1316 R. 4-6-80
Desk - Dy. - 12-6-80

№ 13.

P.W.D. Public Works
30 UC80
No 5485 29th July 1880.

The
Secy to Govt St. George

№ 13.

Desk
24/8/80

Cir. 25.8.80. Rect. 27.8.80 —
P.R. Shut: 52 Supt.

Copy of Public Works Despatch to Govt of India № 22 dated 29th July 1880.

The Government of Elladras have recently requested the purchase in this country of mooring apparatus for the Elladras Harbour Works, intimating at the same time, their inability to meet the cost of the supply, about £18,000, till the 1st April 1881.

2 Mr Parkes, the Engineer of the Harbour Works has represented to me that the supply of the apparatus is urgent as the harbour will in all probability be sufficiently advanced by the end of this year to afford shelter to shipping supposing moorings are placed in it by that time.

The importance of using the harbour at as early a date as possible is obvious, and I have decided therefore on proceeding at once with the supply of the mooring apparatus, and request that your Government, in consultation with the Government of Elladras, will make

20 B 27 such

such arrangements as may be necessary for
meeting the cost of the supply before the close of
the current financial year

The stores it is expected will be ready
for shipment to Madras by the end of next
October

No 4

1271

Copy of Public Works Despatch to India No. 22 dated 29th July 1880.

P.W.D.

30 AUG 80

No

Referred to the Public Works Secretary to Madras No 13 A/29th July 1880 Para: 2

No 2040 W — 3

Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the ~~30th August 1880~~
30th August 1880.
Read the following:—

From

The Secretary of State for India — (No. 13 A/29th July 1880)

Communicated to the Superintendent, Madras Harbour Works, and to the Marine Dept.

2. The Government of India will ~~without~~ doubt address this Government in regard to the provision of funds for the moorings.

Supt. M. H. Works.
Marine Dept.
Examiner P.W. Accts.
Secy: Harbour Works Committee
Editors Table —
9-9-80
24/8

Cer 26.8.80 Rec 27.8.80
Ad Sheet 52 Augt

P. W. 2-7-80 No. 1538 and Encl.

5485

Govt. of (1879) Madras.

PUBLIC WORKS.

115.

Dated

Recd.

Read.

G. O. 30th August 80 No. 204845.

Ron. 91-81

Mooring apparatus for the Madras Harbour Works &c. —

Despatch from the Secy: of State intimating that the — is being proceeded with and will be despatched to Madras by the end of Oct: next and forwarding copy of despatch by 30th to arrange for the cost of the same being met in current financial year Comd & the Dept to work to the Marine Dept.