Proceedings of the Madras Government, Public Works Department,
9th December 1876. *No.* 3,343.

Read the following papers:—

No. 212. From WILLIAM PARKES, Esq., M. Inst. C. E., Engineer-in-Chief of the Madras Harbour Works, to Major-General G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Madras, 30th November 1876.

MADRAS HARBOUR.

Report on the progress and present state of the Works.

I think I shall best introduce the subject of the following report by giving a short sketch of the proceedings in connection with these works since they received the sanction of the Secretary of State in March 1875. So much of these proceedings as took place in England has not I believe as yet been laid before the Government of Madras in view of its connection with the works which have been carried on on the spot.

2. At the time the final sanction was given I was myself abroad, but before my departure from England, two months previously, I had recommended Mr. James May to the Secretary of State as Superintendent, and upon this recommendation he was appointed from the 1st April 1875.

3. I myself spent a week in Madras on my way home from the East, and arranged some further details as to the works, and the organization for their superintendence, and I returned to England on the 26th April.

4. Mr. May met me in London on the following day, and we spent between two and three weeks in discussing the details of every department of the work. I may here state that there is no truth whatever in the suggestion that Mr. May held some views about the works and the mode of carrying them on different from mine. Before he accepted the appointment he satisfied himself of the design being not only practicable, but the best that could be made under the circumstances, and he was further well aware that it was competent to him to suggest to me, and, if necessary, to carry out on his own authority, any modifications that his increasing local information might indicate. It was not his business to criticize or to answer criticisms to others, but it would have been a grave fault in him to be silent to me in respect to any part of the work which he did not approve. He committed no such fault.

5. I need scarcely remind you that, with the exception of the first stages, this work is intended to be carried on by means of machinery of special construction. This machinery had for the most part to be manufactured in England, and it was therefore arranged that while Mr. May proceeded at Madras with those preliminary works which required no special appliances, I should apply to the Secretary of State to depart from the usual course of ordering plant and machinery only on indent from Madras, and, under the peculiar circumstances of the case, to anticipate the more urgent requirements of the work on my recommendation.

6. Mr. May and myself therefore arranged the details of the work both in England and at Madras in such a manner that we might act in concert, and our conclusions were embodied in a memorandum of instructions for the Superintendent, and in various plans showing the intended new works in detail, which he brought out with him.

7. The points to which his first att ention was to be directed were—

I.—The opening of the laterite q uarries at Ambatoor.

II.—The formation of the approac n to the north pier (surf bank).

III.—The preparation of the concre te-mixing station and the block ground.

8. Mr. May left London on the 12t h May and arrived in Madras on the 9th June.

9. In the mean time I submitted o n the 21st May to the Secretary of State an application for the following :—

(1.) Twenty light tipping trucks.

(2.) Two hundred and fifty tons r ails (50 lbs. to the yard) with ten sets of points and crossings and all faste ings.

(3.) A tank locomotive engine.

(4.) Five Blake's stone breakers.

(5.) Twelve concrete-mixers, with the necessary engines and gearing for working them and the stone breake rs.

10. This application was sanction ed by the Secretary of State on the 11th June, and authority given for the purchase of the several articles.

11. About the same time I app lied to several shipbuilding firms in London, Liverpool and the Clyde to furnish me w th plans and estimates of the cost of two steam hopper barges suitable for depositing the rubble bases of the piers. After much discussion and consideration of the vari us plans, I recommended the Secretary of State on the 15th July to give the order to Mes srs. Thomas Wingate and Co. of Glasgow.

12. The last special application w hich I made for plant was on September 13th, when I asked that tenders might be inv ted for the construction of four light overhead "Trinity" travellers intended to facilit ate the placing of the fresh mixed concrete in the block moulds. The tender of Messrs . Stothert and Pitt for these was ultimately accepted.

13. It will be easily understood how materially the work was advanced by the Secretary of State taking the initiative n respect of the above articles instead of waiting for the ordinary routine of an indent fr om the Government of Madras. Such an indent must in any case have been prepared b y myself in England, as Mr. May would not at that time have had the local knowledg nor the familiarity with the various details of the work, some of which were new to him, necessary to enable him to prepare it.

14. By the arrangement actuall adopted, I undertook the whole of the organi- zation so far as it depended on special plant and machinery, while Mr. May was left free to carry out the preliminary loc l operations, and prepare the ground for the reception of the machinery, of the e act nature and purposes of which he was fully informed. He was at the same time advised that my initiative would be absolutely limited to the list of articles just enu erated, and that any further requirements must be made the subject of a regular inde t to be submitted to the Madras Government in the usual manner.

15. The cost of the articles thus furnished by direct authority of the Secretary of State has been as under—

	£	s.	d.	£	s.	d.
Twenty light tipping trucks	340	0	0			
Freight	135	0	0	475	0	0
Rails, 50 lbs. to the yard, 257 tons 13 cwt. 1 qr. 23 lbs.	1,996	19	3			
Fishes and fastenings	393	15	1			
Points and crossings, ten sets	240	0	0			
Freight	646	14	11	3,277	9	3
Stone breakers, No. 5	1,063	8	4			
Freight	151	1	3	1,214	9	7
Tank locomotive, with duplicate parts ...	1,745	10	0			
Freight	98	0	0	1,843	10	0
Two Steam Hopper Barges...	10,400	5	6			
Navigating expenses	1,633	2	11	12,033	8	5
Concrete-making machinery	4,128	0	6			
Freight	723	16	10	4,851	17	4
Overhead travellers, No. 4	1,884	9	0			
Freight	251	0	9	2,135	9	9
			Total ...	25,831	4	4

16. The first of the above articles were shipped in September 1875, and the last in April 1876 ; the whole are now on the ground, some being in actual use, and the remainder being prepared for use. They comprise, with the exception of some small articles procured or procurable on the spot, the whole of the plant necessary for the formation of the surf banks and the rubble stone bases of the piers, and for the formation of concrete blocks for the superstructure of the piers.

17. The plant and machinery for lifting, transporting, and setting the blocks of the north pier have been transferred from Kurrachee, while that for the south pier is being manufactured in England in compliance with regular indents furnished from Madras.

18. The above brief sketch will show that the operations in connection with the Madras Harbour were by no means confined to the somewhat crude and uninteresting local labor of forming a bank of laterite rubble through the surf. It was indeed fortunate that this preliminary work was of so simple a character and required so few special appliances. Had it been necessary to provide rolling stock or quarry machinery, as much time and money would have been expended upon their provision as has sufficed for the actual construction of the bank.

19. The first works which Mr. May had to carry out were then of a very ordinary character, nothing more in fact than to make a bank of rubble stone on the sand, but about this no time was lost. He arrived in Madras on the 9th June. On the 12th July he started a native quarryman to get stone at Ambatoor, and on the 3rd August the first train of laterite was deposited in the surf bank of the north pier.

20. As the event proved, this commencement of the local work was rather premature. After some progress had been made it became evident that the work done between the 3rd August and the 7th December had to be temporarily abandoned to avoid closing the mouth of the sewer.

21. Then followed the visit of His Royal Highness the Prince of Wales, and the preparations for this diverted for a time attention from all other subjects. So soon however as that event was passed, preparations were made for making a fresh start with the surf bank to the southward of the sewer, so as to leave the outfall free.

22. In the meantime the tipping wagons and railway materials, ordered on my recommendation by the Secretary of State, had arrived, and the new work was started with every prospect of rapid execution. But to make this fresh start some considerable length of new railway had to be laid, and it was not till the 28th January that the surf bank was recommenced in the present line.

23. But now a new obstacle to the satisfactory progress of the work as a whole unfortunately arose. Mr. May's health began to fail, and in this circumstance is, I believe, to be found the origin of that feeling of dissatisfaction on the part of the public, and of some distrust on the part of Government, which have been only too apparent for the last few months.

24. Mr. May having been not only the head of the local staff, but the first on the ground, had naturally taken the initiative in everything. He was ably seconded, but the circumstances were such that no assistants could supply what might be wanting in the chief. He evidently so struggled against his failing powers that his loss of energy was not apparent to others at the time, and possibly he was almost unconscious of it himself, but the result was undoubted. From the commencement of this year works already started were carried on with some vigor, but *nothing new was started.*

25. It will be remembered that three points were especially recommended to Mr. May's attention on his arrival at Madras—

(1.) The opening of the laterite quarries at Ambatoor.

(2.) The formation of the north surf bank.

(3.) The preparation of the concrete-mixing station and the block ground.

26. The first two of these were satisfactorily carried out, but the last was unfortunately neglected. It was necessarily delayed pending the settlement of the question of the sewer, but that was settled in December, and after the Prince of Wales' departure these works should have been undertaken *at once.* They were not however commenced till after Mr. May gave up charge of the works in April, though I believe that during his illness he expressed a desire that they should be commenced.

27. Had the concrete-making machinery been ready for work at the end of July instead of the end of November, it would have been at least another element in the question of how to deal with the exposed end of the surf bank which was then becoming a source of some anxiety, but it is useless to speculate upon what might have been done. I prefer to think, and there is good reason for doing so, that after the building work of the piers shall have been fairly started, this delay of four months in one department of the works will not be looked upon as having had any seriously damaging effect on their general progress.

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28. I believe, however, that a greater activity in this and in some other departments of the work in the early part of the year would have done much to avert the evil from which the undertaking is now temporarily suffering, viz., a want of confidence in it on the part of the public. While the only evidence of the progress of the Harbour Works was a miserable rubble stone bank scattered in every direction by the waves as fast or faster than it was made, and of which the only apparent result was the accumulation of a large body of sand to the serious present injury of the business of the port and threatening still worse evils—while this was all that the outside public could see, I do not wonder that confidence was withheld. It is not surprising that at the same time a host of amateurs, utterly ignorant of the real intentions of the designers of the work, should put forward criticisms based on no better foundation than their own imagination of what was beyond their actual view, and it is only natural that the public should have given some credence to such criticisms.

29. I cannot but think, however, that if there had been evidence that the Harbour Works consisted of something more than the surf bank; if the modern appliances of engineering had been obvious in the rapid manufacture of large concrete blocks ready to be placed in position by the Titan crane as soon as a favorable opportunity occurred for a commencement of the real construction of the pier, the surf bank and its troubles real, apparent, and imaginary would have taken their proper place in the mind of an unprejudiced observer, and some credit would have been given to the Engineers for seeing their way to a more substantial description of work. The surf bank would have appeared in its true light as a rough and ready expedient for getting over a rough difficulty—the surf. Ordinary common sense would have easily apprehended even if it had not suggested, that on such a work detailed design, nice calculations, and modern appliances would be alike thrown away.

30. The great misfortune of the Madras Harbour Works has hitherto been that they have exposed their worst face to the comment and criticism of the public and of the Government. If the criticism had taken a wider view, it would have been more favorable. If it had been prominently before the Government that preparations for the permanent building of the piers were in full activity, I venture to think that less might have been said in Government Orders about the insufficient quantity of stone deposited in the surf bank, or the quantity dispersed by the last heavy surf. Had 700 or 800 large concrete blocks been on the ground, as ought to have been the case, the petty and temporary difficulties of the surf bank would have had less prominence, and the question of the readiest mode of protecting it would have had an obvious solution.

31. It must not be concluded, however, that I admit the surf bank to be in any sense a failure. I only ask that it shall be looked upon as a preliminary work rather than as a specimen of the system on which the whole works are to be carried out. In itself, it is a success. Its sole object was to get through the surf, and that it has done. The estimate of its cost was at best a very rough one; for though the price of stone per ton was definite enough, the number of tons required was dependent on conditions which it was absolutely impossible to anticipate. Rough as the estimate was, however, it has proved to have been more than sufficient, for only two-thirds of it has been expended, and the bank is at its intended termination. Such further expenditure as may remain to be debited to it will still leave a large balance of the estimate untouched.

Crude then as the design may have appeared, and clumsy as the mode of execution might seem, I submit the conclusion that both design and execution have been more suitable to the circumstances than would have been a system of work involving more imposing mechanical appliances, for the preparation of which time and money more than an equivalent for their value would have been required.

32. From this time forward a different system of construction will be adopted. The washed down surf bank will form a good foundation on which large concrete blocks, too heavy for an ordinary sea to disturb, will be built up in as regular a form as possible by the Titan. These will be afterwards further protected by flanking blocks on either side. The building cannot be quite regular till a sufficient depth of water is attained for divers to work in to level the bottom for the foundation blocks, and at first the pier will take the form of a random pile rather than of a regular wall, but the principle will be to use large blocks rather than loose rubble as hitherto. This is quite in accordance with the original intentions of the design, though the details have to be adapted to existing circumstances. There will only be rather a longer length than was originally contemplated of a system of work transitional between the rubble and the regular built work.

33. The present state of the undertaking then is as follows :—

a. The north surf bank is carried out to its intended extent. Its sides are for the present efficiently protected, but some further protection of a more permanent character will become necessary, as the laterite exposed to the action of the waves wears away. Its end, hitherto the most vulnerable point, will be efficiently protected by the advance of the concrete block building.

b. About 200 blocks, mostly of twenty-seven tons each, have been made by hand-labor ready to be built into the work, and this work is proceeding at the rate of four per day.

c. The machinery for making concrete blocks at the rate of thirty-six large blocks per day is on the point of completion.

d. The whole of the machinery for transporting and setting the blocks of the north pier is on the ground and in working order, and that for the south pier is contracted for in England.

e. One-third of the whole quantity of Portland cement required for the works is contracted for and is being delivered. The last shipments under existing contracts will be made in January next, after which the supply will be for a time suspended until the progress of the works requires a fresh supply.

34. The above results represent an expenditure of about £117,000 of which one-third has been local. It may be divided as under —

	£
Surf bank	16,000
Plant and preliminaries	71,000
Cement	30,000
Total ...	117,000

Each of these heads compares favorably with the estimate. The estimate for the surf bank was £23,700. That for plant and preliminaries was £80,000, and the unexpended £9,000 will be sufficient to complete this item. At my estimated rate of 90 shillings per ton the cement would have cost £32,400.

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35. For the future the great bulk of the expenditure will of course be local. I will only say, in anticipation of it, that arrangements calculated to effect important savings upon my estimate have already been made, of which the most important is the substitution of Chinnamapett for Tritany as a source of supply of stone for concrete. It is possible however that other modifications, having an opposite tendency, may become desirable, but not to a serious extent. Of course the Superintendent will duly report to the Government on such points as they may arise.

36. Passing now to the subject of the immediate future, the following are the works requiring to be at once undertaken :—

1. The south surf bank.
2. The building of the north pier.
3. The arrangements for depositing rubble stone from the hopper barges.

37. With respect to the south surf bank, I shall be glad if the suggested arrangements for the use of the South Indian Railway can be carried out. It will avoid the passage of stone trains along the beach in its present crowded state. It will avoid possible interference with the work by the still more urgent famine traffic of the Madras Railway, and it will furnish a better material for the purpose than laterite. These advantages will justify some increase of cost if such be necessary.

38. With respect to the other two works, I would say that the details of the mode of carrying them out must be to some extent tentative. Where nature is working by the agency of waves and currents as well as ourselves we must accommodate our proceedings to hers. General principles, based on past experience, may be and have been laid down, but precise plans or instructions would be useless. The work is in the hands of intelligent and experienced persons who thoroughly understand the requirements. There are no doubt questions connected with both these works which cannot be immediately solved, but there are no formidable difficulties, and the few weeks at least of quiet weather which we may now anticipate will, with the appliances now on the ground, suffice to put the work into a much more systematic form, and present a very different appearance from the present.

39. With respect to the rate of progress past and future, I would refer to paragraph 69 of my Report of 4th November 1873. It runs as follows :—

"The first operation would of course be the formation of the curved approaches. These might be commenced immediately, and while they are in progress the necessary plant and machinery could be collected. The actual building of the piers could be completed in three years, or, say, four years from the time of the approaches being commenced."

Now, when this anticipation of a year for preliminary works, local and English, is compared with the present state of things, and allowance made for the unlooked for delays caused by the "false start," the Prince of Wales' visit, and the subsequent lamentable incapacity from illness and death of the first Superintendent, I do not think that the result is unfavorable to the actual work.

40. With regard to the future rate I can only add to what I said in 1873, that all the appliances furnished under my superintendence are calculated for that rate of work, and that it appears that the supplies of local labor and materials will be amply sufficient for the same purpose. More than this it would not be right to say at present.

41. I have now to deal with the question whether the large accumulation of sand which has formed to the southward of the surf bank is so great as to suggest any modification of the conclusion adopted by the Government two years ago, that the future deterioration of the Harbour is so distant that it need not be taken into consideration.

42. To make my reply clear it is desirable that I should remind you of the nature of the conclusion which I submitted in my Report of 1873. I pointed to the fact that while short piers and groynes had been repeatedly buried by the sand or shingle driven alongshore, long piers had always been successful in arresting it, showing that as a *general rule* the alongshore movement was within the limits of engineering control. With regard to the particular case of Madras, I said that I saw no reason why it should prove an exception to the general rule; that the local materials were insufficient for a definite conclusion, but so far as they went, they led to one quite consistent with that general rule.

43. Now, it will be observed that the primary part of the proposition here enunciated is one which is open to be contested by persons who have no local knowledge of Madras,and it was therefore open to a wide field of criticism. Nor were opportunities of criticism wanting. The scheme passed the authorities of Madras with the single voice of the late Master Attendant in opposition, but it was evidently subjected to a searching criticism at Calcutta, and it is well known that it met with a vigorous opposition from influential persons in London. Altogether it was under pretty constant discussion in one quarter or another for upwards of twelve months, yet no denial of this vitally important and, if incorrect most assailable, proposition was attempted. As a last measure the Secretary of State referred this and two other questions to Mr. Bateman, a Civil Engineer of great eminence and experience, and he quite confirmed my view.

44. The argument from analogy therefore must be considered as far stronger now than it was in 1873-74, and if it is to be met by arguments based on local considerations, these must be of a very definite and conclusive character.

45. What then are the new facts? There has been a large and formidable looking triangular accumulation of sand to the southward of the surf bank, advancing the shore line 550 feet at the bank and reaching alongshore about three-quarters of a mile. Now, if this accumulation had all remained, and we assumed that an equal quantity was liable to be added every year, it would have required between fifty and sixty years for sufficient to accumulate for it to pass the end of the pier and *begin* to shoal the entrance.* But as a matter of fact one-half of this accumulation has since been removed, so that the time required for the injury to the Harbour to commence is extended beyond the century, while if we take into further account that this has been a most exceptional season in the long continuance of southerly winds, and the paucity of northerly winds, it would really seem within the scope of reasonable expectation that the north and south movements will ultimately balance one another, and a line of shore be established, permanent within certain limits, and those limits well within the line to which the Harbour will project.

* This calculation is based on the following data :—The 4-fathom line remains unaltered at present, but it is assumed that future accumulations would advance the 4-fathom line equally with the shore line, and by successive annual increments of equal cubical contents it would at last reach the bend of the piers and allow of a north and south movement along their eastern face and across the entrance.

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46. This conclusion is met by the plausible supposition that the quantity of sand arrested by the surf bank does not represent the whole quantity set in motion. It is suggested that some has passed the end of the bank which would have been intercepted by a still longer bank, and this of course would affect the calculation of the number of years required for the total accumulation. I admit that some sand may have passed the end of the bank; the outer line of surf broke outside it, and the current would carry the sand lifted by the surf to the northward, but it is so certain that the great preponderance of the movement is close inshore where the breaking wave itself drives the particles of sand before it that the omission is not of importance. Moreover, if there had been any such passage of sand at all commensurate with the quantity arrested, it must have shown itself by an obvious deposit in the eddy on the north side of the pier, and there was a little deposit, such but so small as to show how inconsiderable was the action which caused it.

47. I believe that much misconception is prevalent upon this subject by the loose manner in which the movement of sand alongshore is attributed to the *currents*. A very little consideration will show that the accumulations and erosions are effected mainly by wave action. A current by itself could not deposit sand 4 or 5 feet above the level of the water, and the accumulation would be found on the other side of the groynes, on the *down-stream* rather than the *up-stream* side, as is the case on the Madras beach. Moreover, the investigations which have been made into the movements of shingle beach, which are precisely similar to the movements of sand at Madras and elsewhere, show clearly that the wave alone striking the shore obliquely is the real transporting agency, for current could have no effect on shingle, and the effect is produced where no current exists. The currents at Madras no doubt do their share of the work, but it is small compared with that of the wave, and the examinations that have been made of the bottom at a distance from shore show conclusively that the current has little or no effect there. The movement of sand, whether alongshore or at right angles to the shore, is undoubtedly greatest near the shore and diminishes as the depth increases. We may not be able to draw a precise line at which it entirely stops, but for all practical purposes it is within the outer line of the Harbour in 7 fathoms.

48. On the whole, therefore, I submit that the new data obtained during the past season are confirmatory of the conclusion that no practical deterioration of the Harbour is to be anticipated from the arrest of the sand by the piers.

No. 213. MEMORANDUM.

The Chief Engineer is of opinion that in this report Mr. Parkes has not touched the only grounds on which the Government or the public have real cause for dissatisfaction. Very shortly after his return from England, in a memorandum of 11th September recorded in G.O., No. 2,910, of 12th October 1875, Major-General Walker urged the necessity of starting the southern pier in sufficient time to obviate deposit of sand within harbour limits. The Harbour Superintendent took no action on this warning; neglect of which has led to the results which have so shaken the confidence of the Government and of the public in the scheme. To the present day no sign has been given of commencement of the beach railway, which was essential for construction of the southern surf pier, before the extension of the South Indian Railway was thought of. Mr. Parkes has now been authorized to proceed with the latter.

Paras. 41, *&c.*—The Chief Engineer sees no reason to believe that the deposit of sand in any one monsoon, taking into consideration what is scoured away by the opposite monsoon, will ever be so great as to get round the harbour piers 1,200 yards in length, and cause a deposit in front of the harbour mouth. A mistake has been made in allowing any deposit to occur within harbour limits. But the Government is now committed to the project; and the practical points which should now be insisted on are, the commencement of the southern surf bank without more delay, and the building of the north pier. Mr. Parkes has fully recognized the primary importance of these works. And he is understood to have given all necessary instructions regarding them to his executive staff.

(Signed) G. W. WALKER, Major-General, R.E.,
Chief Engineer, P.W.D.

No. 214. ORDER THEREON, 9th December 1876, No. 3,343.

CIVIL WORKS, No. 13.

WITH regard to the progress of the works it is satisfactory to His Grace the Governor in Council to know that what *has* been done has been done within the estimated cost; and the Government are pleased to learn that the machinery necessary for block-making and depositing is so well advanced.

2. With respect to the progress and effect of the north surf bank, as described in paragraph 31 of the report, the Government are unable to admit that it has as yet been carried through the surf. But they doubt not that the efforts now being made to carry it forward with concrete blocks, until the intended abutment of regular block courses originally planned is reached, will speedily effect the object.

3. In conclusion His Grace in Council considers that in the present state of the works it is Mr. Parkes' imperative duty to remain at Madras until the result of this change of system is seen to be successful; and until, by diving or by some other means, it is clearly ascertained that there is no such quantity of sand in suspension in the water, or in movement on the bottom, at the site of the intended harbour mouth, as to render it likely that an accumulation should at once form there. A likelihood of which occurrence would probably necessitate reconsideration of the proposed form of mouth.

(True Extract.)

(Signed) G. W. WALKER, Major-General, R.E.,
Secretary to Government.

To W. Parkes, Esq., M. INST. C. E.
To the Superintendent, Madras Harbour Works.

Exd. E. C. Shunker.
Spare Copies

15/4/35

Govt. of {1876} Madras.

PUBLIC WORKS.

To

W. PARKES, Esq., M. Inst. C. E.,

&c., &c., &c.

Dated December 9th.

Issued

Recd. *Encl.*

G. O., 9th December 1876, No. 3,343.

DECEMBER.

Nos. 212-214.

Madras Harbour Works.—Passing orders on Mr. Parkes' report on the progress and present state of the —.

21st February 1883, No. 121, Marine.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

Read—the following papers :—

From the Committee appointed under G.O., No. 463, Marine, dated 18th November 1882, to the Chief Secretary to Government, dated Madras, 31st January 1883, No. 41.

In obedience to G.O., No. 463, Marine, dated the 18th November 1882, we have the honor to submit, for approval, the enclosed Draft Rules regarding Port Clearance.

2. We recommend sanction to the latter part of Rule 4 as a temporary measure, pending the adoption of a new Police scheme proposed to Government by Captain Taylor.

3. As regards G.O., No. 478, Marine, dated the 25th November 1882, we beg to state that we are unanimously of opinion that a Harbour Board, something on the lines of a Port Trust, should be constituted.

4. In reply to G.O., No. 7, Marine, dated 8th January 1883, a majority of us are of opinion that the Pier Contractor should be held responsible, in future contracts, for all goods on the Pier, throughout the twenty-four hours.

(Signed) R. W. BARLOW,
Collector of Madras.
(„) H. L. PRENDERGAST, Colonel,
Suptg. Engineer, Presidency Circle.
(„) J. H. TAYLOR,
Master Attendant.
(„) N. St. B. BEARDMORE, C.E.,
Harbour Works Engineer.
(„) C. A. AINSLIE,
Member of the Chamber of Commerce.
(„) T. R. TURNBULL,
Member of the Chamber of Commerce.
(„) L. STRANGE,
Member of the Chamber of Commerce.
(„) ROBERT ORR,
Chairman of the Trades Association.
(„) W. H. OAKES,
Member of the Trades Association.
(„) ERNEST BARCLAY,
Government Solicitor.

Enclosure.

DRAFT RULES.

Work after hours and at night.

Export.—Vessels are allowed to take on board, without reference to time, all cargo shipped in boats which have left the pier by 6 P.M.

Proviso.—No boat to commence loading cargo at the pier after 5½ P.M.

2. *Import.*—All cargo arriving at the pier in boats which have left the ship's side by 6 P.M. will be landed on arrival.

Proviso.—No ship to commence discharging cargo into a boat after 5½ P.M.

3. The rules as to Sunday work to remain as at present.

4. *Port Clearance* will be granted from 6 A.M. to 6 P.M. on application after due notice.

A vessel will be allowed to take her port clearance under guarantees, in advance of her actual sailing, and continue to take in and discharge cargo, provided she sails before 6 P.M. the following day.

(Signed) R. W. BARLOW,
Collector of Madras.
(„) H. L. PRENDERGAST, Colonel,
Suptg. Engineer, Presidency Circle.
(„) J. H. TAYLOR,
Master Attendant.
(„) N. St. B. BEARDMORE, C.E.,
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(„) T. R. TURNBULL,
Member of the Chamber of Commerce.
(„) L. STRANGE,
Member of the Chamber of Commerce.
(„) ROBERT ORR,
Chairman of the Trades Association.
(„) W. H. OAKES,
Member of the Trades Association.
(„) ERNEST BARCLAY,
Government Solicitor.

From R. W. BARLOW, Esq., Collector of Madras, to the Chief Secretary to Government, dated Madras, 31st January 1883, No. 42.

I have the honor to submit a few remarks on the Draft Port Clearance Rules forwarded to Government with the Committee's covering letter, No. 41, of this day.

2. Rules 1 and 3 were adopted unanimously at meetings held prior to my joining this district. I approve of them, but beg to point out, with reference to Rule 2, that it may become necessary to increase the establishment of tide waiters and peons, if it be found in practice that overtime work is materially increased by allowing all boats that have left the ship's side by 6 P.M. to unload cargo at the Pier "on arrival." Extra pay is now granted to the establishment for working on Sundays, authorized holidays, or over hours, and such remuneration (paid by Ships' Agents) must, of course, continue under the present Rules; but it is clear that the capacity for overtime work of any fixed establishment is limited.

3. I had grave doubts as to the legality of the latter part of Rule No. 4, and enclose copy of my letter * to the Government Solicitor on the subject and of his reply thereto, No. 44, dated 26th instant, from which it will appear that he inclines to the view that the Rule is legal, and, should Government concur, I would suggest that the Government Solicitor be directed to draw out stringent forms of guarantee in communication, if necessary, with the Master Attendant and myself.

* No. 61, dated 24th January 1883.

4. I have not, as yet, had an opportunity of offering an opinion on Captain Taylor's scheme now before Government, referred to in paragraph 2 of the Committee's letter; but I understand that an officer of Government—who will virtually Act as a Preventive Officer—will remain on board till the last minute before each vessel sails, and see that the provisions of the Indian† Ports and the Native Passengers‡ Ships Acts are not infringed, which is in accordance with the practice, I believe, now existing at the Ports of Bombay and Calcutta, where there are Preventive Establishments.

† XII of 1875.
‡ VIII of 1876.

Enclosures.

From R. W. BARLOW, Esq., Collector of Madras, to the Government Solicitor, Madras, dated 24th January 1883, No. 61.

Section 53, Act XII of 1875 (The Indian Port Act).
Section 9, Act VIII of 1876 (The Native Passengers Ships Act).
Chapter 7, Act VIII of 1878 (Sea Customs Act).

G.O., dated 11th January 1879, No. 15.
Board's Proceedings, dated 21st February 1879, No. 480.
G.O., dated 27th September 1879, No. 543.
Board's Proceedings, dated 20th October 1879, No. 2968.
G.O., dated 20th August 1880, No. 410.
„ „ 25th September 1880, No. 487.
„ „ 20th July 1881, „ 346.
„ „ 27th April 1882, „ 98.
„ „ 7th August „ „ 252.
„ „ 18th November „ „ 463.
Letter to Collectors of Customs, Calcutta and Bombay, dated 10th July 1882, Nos. 1659 and 1660.
Letter from the Collector of Customs, Bombay, dated 20th July 1882, No. 2365.
Letter from the Collector of Sea Customs, Calcutta, dated 23rd August 1882, No. 3119.

In forwarding the enclosed copy of the Resolution passed by the Committee appointed under G.O., No. 463, dated the 18th November 1882, Marine, at their meeting held at the Custom House, on Friday last, I have the honor to request that you will favor me, as soon as possible, with your opinion as to its legality with reference to the provisions of the marginally-noted Acts.

2. The marginal correspondence on the subject of the grant of port clearance is herewith sent in original for reference and return.

3. I trouble you with this reference as the Committee had not the advantage of your presence and opinion when the above Resolution was passed.

From E. BARCLAY, Esq., Government Solicitor, to the Collector of Madras, dated 26th January 1883, No. 44.

I beg to acknowledge receipt of your letter of the 24th instant, No. 61, with its enclosures.

2. There are two things for which security cannot, except as hereinafter mentioned, be given to obtain a port clearance. The first is under Section 53 of Act XII of 1875, Clause b, which prohibits the granting of a port clearance until all expenses under Section 228 of the Merchant Shipping Act, 1854, have been paid. These expenses are such as may be incurred in consequence of any hurt or injury of the master, seaman or apprentice of a vessel, his temporary removal from his ship on account of illness and his treatment and the expenses of medicines, surgical or medical advice and attendance, given to any master, seaman or apprentice on board. The payment of these expenses before grant of port clearance was compulsory, and if a vessel were granted port clearance on one day and need not sail until 6 P.M. the next day, and during such time were to be allowed to take in and land cargo, some of the expenses above enumerated might very easily be incurred after port clearance was granted, as for instance by a seaman or apprentice meeting with an injury whilst taking in or putting out cargo or the master or seaman or apprentice being suddenly taken ill and requiring either to be put on shore or treated on board.

3. The other thing which is absolutely required before port clearance can be granted, is under Section 9 of Act VIII of 1876, which prohibits the officer whose duty it is to grant port clearance from doing so in cases of ships intended to carry native passengers until the master shall hold the two certificates required by the Act. Here again if a ship were to be allowed to obtain port clearance on one day and were only bound to sail before 6 P.M. the following day, there would be nothing to prevent her shipping any number of passengers after she had obtained her certificates. If the port clearance were to be granted the day previous to that on which she had to sail, the certificates under Act VIII of 1876 must also be granted the previous day, for port clearance cannot be granted until the master holds those certificates, and that Act does not provide for the agents of the ship giving security that no more passengers will be shipped after the certificates are granted.

4. Section 66 of Act VIII of 1878, however, allows security to be given for the delivery of the manifest and other documents required by Section 63 of the Act, and Section 64 provides for security being given for payment of all port dues and *other charges* and *penalties* due by a vessel or by the owner or master thereof. It seems to me that the charges under Section 228 of the Merchant Shipping Act, 1854, are charges due by the owner of the vessel. The section expressly provides that those expenses shall be defrayed by the owner, and Clause b of Section 53 of Act XII of 1875 refers to the expenses as those which are to be borne by the owner. Then again Section 29 of Act VIII of 1876 provides penalties on owners and masters of vessels departing on voyages in contravention of Section 9; and Section 36, for having on board any number of passengers greater than the number allowed by the certificate. So far therefore as payment of the fines and expenses provided in Sections 29 and 36 of Act VIII of 1876 is concerned, security can, I think, be given under Section 64 of Act VIII of 1878. The only thing is that, under Section 36, the master of a vessel is liable to imprisonment; and, for this, no security can, of course, be given, but the security to be taken could be increased to meet this difficulty.

5. On the whole, therefore, I am of opinion that the terms of the Resolution passed by the Committee, copy of which is enclosed in your letter under reply, could be legally carried out; for, I do not think that Section 64 of Act VIII of 1878 is contrariant to Clause b, Section 53, Act XII of 1875, it merely enlarges your power and enables you, if you think fit, to take security instead of insisting on payment. The security to be taken in respect of passenger vessels will, in addition to that to be taken in respect of other vessels, have to cover the penalties provided in Sections 29 and 36 of Act VIII of 1876.

6. I return the enclosures to your letter under reply.

Order—dated 21st February 1883, No. 121, Marine.

G.O., 18th November 1882, No. 463, Marine.
„ 25th „ „ „ 478, „
„ 8th January 1883, „ 7, „

The Committee appointed under G.O., 18th November 1882, No. 463 (Marine), submit their report on the three questions referred to them relating to—

(I.) Port clearances.

(II.) Appointment of a Standing Committee on matters relating to Port and Harbour Administration.

(III.) Pier Contractor's responsibility for goods entrusted to him.

2. The draft rules regarding (I) port clearance (which form also the subject of the further correspondence read above) are approved with the reservation suggested, viz., that the latter part of Rule 4 shall operate temporarily only pending the adoption of any new Police scheme which may hereafter be approved by Government. Captain Taylor's proposals on this subject are, it is observed, now before the Committee (G.O., 1st February 1883, No. 69 (Marine).

The Collector will, with reference to paragraph 2 of his No. 42, read above, report in due course should Rule 2 in practice act so as materially to increase overtime work and thus necessitate an addition to the establishment of tide waiters and peons.

With reference to Rule 4, the Government Solicitor will, as suggested by the Collector, draw up stringent forms of guarantee in communication with the Master Attendant and Collector of Madras.

3. With reference to question (II) the gentlemen named in the marginally-noted orders will be requested to form a Standing Committee to advise Government on matters relating to the administration of the Port and Harbour.

G.O., 18th November 1882, No. 463.
„ 1st February 1883, No. 69.
„ 16th February 1883, No. —.

The Committee will be constituted as follows:—

Collector of Madras, *Chairman.*
Hon. A. Mackenzie.
The Superintending Engineer, Presidency Circle.
The Commissioner of Police.
The Master Attendant.
The Harbour Works Engineer.
Mr. C. A. Ainslie, Member, Chamber of Commerce.*
„ R. Turnbull, Member, Chamber of Commerce.*
„ L. Strange, Member, Chamber of Commerce.*
„ R. P. Orr, Chairman, Trades Association.
„ W. H. Oakes, Member, Trades Association.
The Government Solicitor.

4. In accordance with the Committee's recommendation on question (III) the Pier Contractor will be held responsible, in future contracts, for all goods on the pier throughout the twenty-four hours. The Master Attendant will carry out this change in due course.

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* Or three Members of the Chamber of Commerce to be selected by the Chamber, but no firm to have more [illegible] one representative.

5. The Government are indebted to the gentlemen forming the Committee for the assistance they have rendered in disposing of the questions referred to them.

(True Extract.)

C. G. MASTER,
Chief Secretary.

To the Collector of Madras.
„ the Hon. A. Mackenzie.
„ the Superintending Engineer, Presidency Circle.
„ the Commissioner of Police.
„ the Master Attendant, Madras.
„ the Chairman, Chamber of Commerce.
„ the Harbour Works Engineer.
„ C. A. Ainslie, Esq.
„ R. Turnbull, Esq.
„ L. Strange, Esq.
„ R. P. Orr, Esq.
„ W. H. Oakes, Esq.
„ the Government Solicitor.

Copy to Public Works Department.

Exd. J. Wright.

No. 674 Wdy 1st March/83

Recorded.

(2d) R.H.S.

Govt. of {1883} Madras.

MARINE.

Issued

Recd. *Encl.*

G.O., 21st February 1883, No. 121.

No. 674 Wdy 1st March/83.

FEBRUARY.

Port Clearances.

Passing orders on the report of the Committee appointed under G.O., No. 463 of 1882, on questions relating to Port Clearances; the appointment of a Standing Committee on matters relating to Port and Harbour Administration; and the Pier Contractor's responsibility for goods entrusted to him.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

Read—the following papers:—

From the Mill-owning Companies of Madras, to the Chief Secretary to Government of Madras, (Marine Department,) Ootacamund, dated Madars, 15th May, 1884.

We, the undersigned Companies, carrying on business in Madras as Mill-owners, &c., have the honor to bring to your notice the heavy burden imposed on us by the rate of Rupee 1-4 per ton in Schedule A appended to Notification under Madras Act VI of 1882 (The Madras Harbour Dues Act).

This charge is equal to an Import Duty of 5 per cent., and makes Coal and Patent Fuel dearer than ever. At present it costs us, delivered in the Roads, 10 per cent. more than in Bombay, chiefly owing to the heavy Madras Shipping Port Dues. Furthermore, the Madras Landing charges amount to Rupees 1-8 per ton as compared with 12 annas in Bombay, which latter rate includes all Port charges.

From the above it will be seen that the Madras Mill-owner already burns his coal at about Rupees 2-12 per ton more than his Bombay competitors.

The further additional charge now being levied on this necessary of Industry is unbearable: as above stated, it amounts to 5 per cent. as compared with a charge of only $\frac{1}{4}$ to 1 per cent. on articles of luxury, such as Fruits, &c., which pay the same per ton as coals.

The unfairness of charging Coals on a tonnage scale in the same way as Indigo, for instance, will be apparent when it is considered that Coals are worth Rupees 18 to 20 per ton of 20 cwts., while a ton of Indigo (of 50 cubic feet as per Schedule A) is worth Rupees 2,500.

We consider that Coals cannot bear a higher charge than 2 annas per ton of 20 cwt., and we have the honor to request you will be good enough to write or telegraph to the Master Attendant, authorising him to collect dues accordingly as several steamers are expected.

We have the honor to be,
Sir,
Your most obedient servants,
THE BUCKINGHAM MILL COMPANY, Limited,
By its Secretaries and Treasurers, Binny & Co.
THE CARNATIC MILL COMPANY, Limited,
Binny & Co., *Secretaries*.
WEAVING MILLS COMPANY, Limited,
Mooljee Jaitha & Co., *Secretaries & Treasurers*.
THE SOUTHERN INDIA SPINNING AND WEAVING COMPANY, Limited,
Cowasjee Bomanjee, *Manager*.

From T. E. MARSHALL, Esq., Acting Master Attendant, Administrative Department, Madras, to the HON'BLE E. FORSTER WEBSTER, Chief Secretary to Government, Marine Department, Fort Saint George, dated Madras, Marine Office, 29th May, 1884, No. 5216.

I have the honor to return herewith the letter from the Mill-owning Companies of Madras, forwarded to me for report with your endorsement No. 1141, of 27th instant, with the following remarks.

2. The Mill-owners complain of the heavy burden imposed on them by the levy of Harbour Dues at 1 rupee 4 annas per ton on all coal imported by them into Madras. The rate, however, is actually 1 rupee 5 annas 6 pies per ton. They complain that coal at Madras costs more than at Bombay, owing to the heavy Port dues levied at the former port, but as the Ship-owner, and not the Mill-owner, pays these dues, I fail to see that they have any grievance to complain of on this score. Freight outward bound from the United Kingdom to Madras has always, and will always, be somewhat higher than to Bombay for two reasons:—First, because a voyage to Bombay is much shorter than one to Madras; and secondly, because Bombay is a great commercial port, where a return freight to England or elsewhere is always obtainable. But even with all its advantages, Bombay, from the letter under notice, manages to land its coal at Rupees 2-12 per ton less than Madras, a result which can only reasonably be expected not only on coal, but on every article of foreign import.

3. The Mill-owners, however, further allege that the landing charges on coal at Madras is Rupees 1-8 per ton. The legal charge is Rs. 1-8 per Masula boat carrying one-and-a-half ton of 20 cwt., and is therefore equivalent to 1 rupee per ton, or 4 annas in excess of the Bombay rate. But it is a well known fact that since the construction of the Harbour, Masula boats have been permitted to land 25 to 50 per cent. over and above the quantity allowed by the Schedule under the Boat Act, the Master Attendant having the power to grant the concession. Boats are therefore constantly landing 45 to 50 bags of coal, which is equivalent to $2\frac{1}{2}$ tons, or 9 annas and 7 pies per ton, so that you will observe that even on the score of landing charges, the Madras Mill-owners have no cause to complain.

4. In reference to the comparison instituted by the Mill-owners between the relative value of Indigo and Coal, I would observe that the Harbour Committee, in their deliberations on the ways and means of levying the dues, appear to have decided upon levying them on the bulk or capacity of a package, and not on its value, and the Schedule was framed accordingly. The Chamber of Commerce, in a communication to this office, remarks as follows upon the principle on which the dues are levied—"It is a serious matter, as it is, for articles of comparatively small value, such as Ground Nuts, Castor Seed, and Turmeric to be taxed at Rupees 1-9-6 per ton of 20 cwt., say about 2 per cent. of value, while Indigo, Coffee, Cotton, &c., are let off for $\frac{1}{16}$ to $\frac{1}{4}$ per cent, and the hardship will be increased if the former articles are taxed according to Tonnage scale at 16, 15 and 14 cwts. respectively. The Tonnage scale was made for Freight purposes, and has nothing to do with Harbour Dues. Comparatively cheap goods should not be taxed for dues in the same way as costly ones. For example, Avaran Bark (used for tanning) worth Rs. 15 to Rs. 22 per candy, has to pay Rupees 1-9-6 per ton of 8 cwts., or as much as is levied upon Chinchona Bark, which is worth Rupees 350 to Rupees 400 per candy." I would therefore recommend that the Chamber be asked to appoint a special Sub-Committee to consider the question, and revise the Schedule upon an *ad valorem* basis, so arranging the incidence of the dues upon all articles of commerce, as to provide the Government in Revenue with a sum of 385,937 Rupees per annum or thereabout, as Harbour Dues, this sum being the amount originally estimated by the Harbour Committee. Pending this revision, I fail to see how any one class of goods can be eliminated from the Schedule and exempted from taxation, as the Harbour Dues are by law leviable on "all goods."

From T. E. MARSHALL, Esq., Acting Master Attendant, Administrative Department, Madras, to the HON'BLE E. FORSTER WEBSTER, Chief Secretary to Government, Marine Department, Fort Saint George, dated Madras, Marine Office, 2nd June, 1884, No. 5291.

I have the honor to bring to your notice that on certain representations made by Messrs. Wilson and Company and other shippers, the Master Attendant placed himself in communication with the Chamber of Commerce, with a view to a few slight alterations in the Schedule A of Act VI of 1882.

2. It was proposed by the Merchants, and approved by the Chamber, that Turmeric, Castor seeds, and Ground nut kernels should be charged at 20 cwt. per ton, respectively, instead of at 14, 15, and 16 cwt. per ton, as per Schedule. Moreover, Corals, which are valuable, are not inserted in the Schedule, and these it is proposed to charge for as bullion at one rupee per box, which charge the Chamber also approve of.

3. In anticipation of the approval of Government to the proposed revision of the schedules referred to above, I beg to submit a draft notification for publication.

OOTACAMUND, 1884.

NOTIFICATION.

Under Section 5 of the Madras Harbour Dues Act VI of 1882, the Right Honorable the Governor in Council has made the following addition and alterations in Schedule A annexed to the notification, dated February 5th, 1884.

Addition	cwt. per ton net.	cubic feet per ton.
Coral.....	One Rupee per package.	
Alterations.		
Castor seeds, (in lieu of 15 cwt.).....	20	,,
Turmeric, (do. 14 cwt.).....	20	,,
Ground nut shelled or kernels, (in lieu of 16 cwt.)	20	,,

T. E. MARSHALL,
Acting Master Attendant.

From T. E. MARSHALL, Esq., Acting Master Attendant, Administrative Department, Madras, to the HONORABLE E. FORSTER WEBSTER, Chief Secretary to Government, Marine Department, Fort St. George, dated Madras, Marine Office, 2nd June 1884, No. 5299.

I have the honor to submit, for the information of Government, copies of a letter received from the Chairman of the Chamber of Commerce, and my reply thereto, relating to the rate of Harbour Dues levied on coal landed at this port.

ENCLOSURES.

From the Chairman, Chamber of Commerce, Madras, to the Master Attendant, Madras, dated 31st May, 1884.

The Chamber is anxious to draw your attention to the severe incidence of the demand of Rs. 1-5-6 per ton of 20 cwts; of coal on account of Harbour Dues. This represents a tax, or Import duty of 6 to 7 per cent. on a commodity of the first necessity in this part of the country; and, it is calculated to affect very seriously and prejudicially a branch of the local trade which has peculiarly strong claims on the consideration of Government. The Chamber is so satisfied that you will immediately recognise the impolicy of the tax that I need say no more than beg you to telegraph to the Government for authority to reduce the demand to 3 (three) annas per ton which is equal to about 1 per cent on value.

I am desired to avail myself of this opportunity to point out the inconsistency and hardship of taxing articles for Harbour Dues, according to shipping bulk, instead of at the rate of 20 cwts: to the ton. The Schedule of Harbour Dues, published with the Notification of Government of the 5th February last, has been found in practice to be so full of anomalies, that the Chamber is very anxious to submit a revised Schedule to the Government without delay. It will, therefore, be obliged by your mentioning in your communication to the Government the desire of the Chamber to have the List ammended. The letters that you have already addressed to the Chamber on the subject seem to show that the defects of the Schedule have not escaped your own notice; and that, pending a general alteration of the Schedule, it seems urgently necessary at once to relieve articles such as Ground Nut kernels and Turmeric which are now in season, and the trade in which is being seriously interfered with, from an overcharge in weight which is manifestly unjust or not intended.

(Signed) J. A. BOYSON,
Vice-Chairman.

From the Acting Master Attendant Madras, to the Chairman of Chamber of Commerce, dated Madras, 2nd June 1884, No. 5290.

I have the honor to acknowledge receipt of your letter of the 31st ultimo, remarking upon the severe incidence of the demand for Harbour Dues on coal.

2. You request me to wire Government for authority to reduce the demand to 3 annas per ton, a request I regret exceedingly I cannot comply with, consistent with my duty to Government, to the Harbour Committee, and to the general Mercantile Community, both European and Native, whose interests are quite as much at stake under the present system of levying Harbour Dues as importers of coal. Besides, large sums of money, amounting in all to nearly 15,000 Rupees, have already been paid without any demur by importers of coal, so that you will observe that the objection to the present rate of dues on coal, which, indeed, is the uniform rate of Rs. 1-5-6 per ton, is not a general one.

4. The only practicable and indeed legal way of making any alteration in the schedule under Act VI of 1882 is to revise it on an *ad valorem* basis, and submit it to Government for sanction, but the incidence of taxation must be so arranged as to provide for a revenue of Rs. 3,85,937 per annum, estimated for by the Harbour Committee. I would add that I have already suggested this course to Government for approval.

4. I would take this opportunity of calling the attention of the Chamber to the fact that the Government are in no way to blame for the levy of the Dues in their present form. The Harbour Dues Act was passed and published so far back as December 1882. A committee was formed on the 21st February 1883 for the express purpose of consulting on the most advantageous ways and means of working the Act, and advising the Government thereon. On this Committee were several Mercantile gentlemen. After various meetings were held, the deliberations of the committee were submitted to Government, who, acting solely on the suggestions of the Committee, notified the rates for Harbour Dues and the tonnage schedule prepared by the Committee for general information in the Gazette of the 17th July 1883, so that both the Chamber of Commerce and the Mercantile Community generally had ample notice afforded them prior to the introduction of the tax, in order to either object to the tax itself, or to the incidence of the same. Two months have now elapsed since the Dues were first collected on goods of every description from Saltfish and Bone manure to Indigo and Corals, and the Act is in full working order, and I think your Chamber will agree with me when I assert that it would be extremely unwise and impolitic on the part of the Government to suddenly, and without any previous notice, rescind or reduce the Dues on any one particular article of Commerce, and in justice to all sections of the

Mercantile Community any such concession must be a general one, with reference to all other commodities, besides coal, which suffer from the present incidence of the tax.

(Signed) T. E. MARSHALL,
Acting Master Attendant.

From Messrs. T. A. TAYLOR & CO., to the Chief Secretary to Government Ootacamund, dated Madras, 5th June 1884.

We have the honor to request that you will bring before His Excellency the Governor in Council the grievous oppression of Harbour Dues levied under Act VI of 1882 on Imports of Bar Iron, and to beg that some remission of the dues be ordered in the case we now lay before you.

On the 18th February and 1st March 1884, we ordered from England two shipments of Bar Iron, together about 170 tons, for a native constituent of ours in Madras, who placed the order with us as Agent for other natives in Bimlipatam for whom the Bar Iron was eventually destined.

The notification that Harbour Dues would be levied from 1st April was not published in Madras when the first portion of the order was sent, and the Bimlipatam Merchants knew nothing of its incidence on shipments *viâ* Madras, when the second portion was placed.

The iron was landed at Madras about 80 tons by the S. S. "Clan Maclean," about 90 tons by the S. S. "Clan Macintosh" and has to pay Harbour Dues of Rs. 1-5-6 per ton, not only on the landing but also the re-shipping to Bimlipatam, that is Rs. 2-11-0 per ton, or very nearly 3½ per cent. on the cost (about Rs. 80 per ton) of the iron.

It is with much difficulty this port has been able to compete with Bombay and Calcutta for the trade of the Coast Ports of the Madras Presidency, and if this impost on the import of Bar Iron is to be permitted the native dealers will find it greatly to their advantage to buy iron in Calcutta, or order direct from England, for transhipment at Bombay to the British India Steamers, and by them to be delivered at the Ports on the Coast of Madras.

A difference of 12*s*. 6*d*. to 16*s*. per ton generally exists between freight to Bombay and Madras, and the British India Steamers often carry cargo as cheaply from Bombay to a Port on the Madras Coast, as they will do from Madras to the Madras coast ports, so that not only might the Madras Harbour Dues of Rs. 2-11-0 per ton be saved, but possibly the Iron could be landed at Bimlipatam *viâ* Bombay, cheaper than we could do it *viâ* Madras, even supposing no Harbour Dues were levied.

The fact that it has not yet been attempted is owing to the conservatism of Native trade, which continues in the old groove, as long as it can be conducted profitably in the accustomed channels.

But an extra 3½ per cent. on the cost of a shipment of iron will necessitate an endeavour to avoid the heavy costs of transhipment at Madras, and it will be found that other articles can also be obtained without the intervention of Madras. The re-export trade of Madras will suffer, and as a consequence, its imports will gradually fall off.

We beg to suggest that as steamers having paid Port Dues, are not liable on their return, if within 90 days, the same indulgence be extended to the Imports of Madras, re-exported within the same time, say 90 days, and to request that a refund be ordered of the Export Harbour Dues paid on the Iron to which we have had the honor to call your especial attention.

ORDER—dated 18th June 1884, No. 251, Marine.

These papers relating to the revision of the rates of Harbour Dues will be referred for the consideration and report of the Committee appointed under G.O., 21st February 1883, No. 121.

2. The Committee will bear in mind that a certain amount of revenue has to be raised and that in revising the rates of dues this must be kept prominently in view.

3. The Master Attendant will prepare a statement shewing the monthly revenue derived from each item, and submit it for the consideration of the Committee.

(True Extract.)

Chief Secretary.

To the Collector of Madras.
„ the Honorable A. Mackenzie.
„ the Superintending Engineer, Presidency Circle.
„ the Commissioner of Police.
„ the Master Attendant.
„ the Chairman, Chamber of Commerce.
„ the Harbour Works Engineer.
„ J. A Boyson, Esq.
„ R. Turnbull, Esq.
„ J. C. Shaw, Esq.
„ F. W. Emery, Esq.
„ H. R. Dawson, Esq.
The Government Solicitor.
Copy to the Public Works Department.

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24711-29-9-85

No 1667 W of 3d July 1884

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Cl. 2.7.84

Ms 2.7.84

P.C.

B.2.1910W.10-7-84.

Govt. of {1884} Madras.

MARINE.

Issued

Recd. 1/7/84 Encl.

G.O., dated 18th June 1884, No. 251.

No 1667 W of 3d July 1884

JUNE.

Madras Harbour.

Referring to a Committee for report question of revised rates of Harbour Dues.

Withdrawn

Withdrawn

26TH JUNE 1884, No. 275, MARINE.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

READ—the following paper:—

From J. C. SHAW, Esq., Chairman, Chamber of Commerce, Madras, to the Chief Secretary to Government, dated Madras, 20th June 1884.

The Acting Master Attendant having been prevented, by conscientious scruples, from complying with the Chamber's request to seek from the Government authority to reduce the harbour dues demanded on coal, it has become necessary for the Chamber to address the Government direct on the subject instead of through the channel of the Marine department. The Chamber made no demand that need have shocked the Acting Master Attendant's sense of official propriety. It may be taken for granted that the Government, while anxious to secure a revenue from the harbour, is indisposed to sanction the continuance of burdens that are found, by experience, to be detrimental to the interests of trade and the general well-being of the community. Coal is an article of import that is already so weighted by freight that peculiar care is needed in apportioning the burden upon it on account of harbour dues. But the harbour demand is Rs. 1-5-6 per ton of 20 cwts., which represents a tax or import duty on a foreign product of 6 to 7 per cent. The Chamber need not dwell upon the expediency of encouraging local industries, such as spinning and weaving mills, or on the inexpediency of imposing a tax on the fuel, which is more or less essential to the successful working of those mills.

2. The Acting Master Attendant sees force in the argument that "large sums of money, amounting in all to nearly Rs. 15,000, have already been paid without any demur by importers of coal." The Chamber cannot but presume that the importers referred to include the railway companies, which, under existing conditions, have not the pressing need to study comparatively small economies that is experienced by private importers of coal. But the magnitude of the sum raised to date seems to the Chamber to strengthen, rather than weaken, the case for the reduction of so onerous, however for the moment lucrative, a demand as is now made. The Acting Master Attendant demurs to the proposition for a reduction of that demand on the ground that the harbour dues were adjusted by a committee on which were several members of the mercantile community, and that ample time was allowed to the Chamber and the mercantile community generally to find and express objections to those dues. The Chamber is not prepared to say that the schedule received as minute attention as it deserved from those whose interest it was destined to affect. There has been, it may be frankly admitted, some lack of symmetry in the views regarding harbour taxation that have been expressed by the Chamber from time to time since the harbour was prospected. But the gift of infallibility is not bestowed upon Chambers of Commerce any more than upon Governments, and it is easy to make too much of slight inconsistencies between present and former executives of public bodies. The Chamber wishes now, as always, to see the port provided with a complete harbour, but it also desires to see the trade protected from oppressive taxation. Harbour advantages will be obtained at too high a price if that price tends to prohibit trade. A schedule that admits of so important a commodity as coal being taxed 6 to 7 per cent. on value must be in need of immediate revision.

3. I am, therefore, desired to represent to the Government the necessity for that revision, and to say that the Chamber will be glad to co-operate (with the aid of the experience acquired since the schedule came into force) in the scrutiny which is demanded, in view to the equitable re-adjustment of the incidence of harbour taxation.

ORDER—dated 26th June 1884, No. 275, Marine.

The expediency of re-adjusting the harbour dues had, previous to the receipt of their Chairman's letter, been under the consideration of Government, and the Committee constituted to advise on matters connected with the harbour administration have been requested to assemble in view to a revision of the schedule of rates. The letter from the Chamber will be forwarded to the committee.

(True Extract.)

Chief Secretary.

To the Chairman, Chamber of Commerce.
„ the Collector of Madras.
„ the Hon. A. Mackenzie.
„ the Superintending Engineer, Presidency Circle.
„ the Commissioner of Police.
„ the Master Attendant, Madras.
„ the Harbour Works Engineer.
„ J. A. Boyson, Esq.
„ R. Turnbull, Esq.
„ J. C. Shaw, Esq.
„ F. W. Emery, Esq.
„ H. R. Dawson, Esq.
„ the Government Solicitor.

Copy to the Public Works department.

Exd. C. Howarth.

P.P.C.

1667 W 3.7.84
2419 W 29.8.83.
674 W 1.3.83.

No. 1710 W dy 10th July/84

Recorded in continuation of GO No. 1667 W d/ 3d July 1884.

9.7.84

2.C.

S.No. 2891 W. 19-11-84.

Govt. of {1884} Madras.

MARINE.

Rec'd 5/10

S.L.C.

Issued

Recd. 8/7/84 *Encl.*

G.O., 26th June 1884, No. 275.

No. 1710 W dy 10th July/84

JUNE.

Harbour Dues.

Forwarding, with remarks, to the committee constituted to advise on matters connected with the harbour administration letter from the Chamber of Commerce regarding the revision of — on coal.

fwd 11/7

Rs. 12/7 Jan/7

10TH NOVEMBER 1884, No. 495, MARINE.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

READ—the following paper:—

From J. C. SHAW, Esq., Chairman, Chamber of Commerce, to the Chief Secretary to Government, dated Madras, 9th October 1884.

The Chamber has instructed me to address you once again on the subject of the Harbour dues. In its order of the 2nd ultimo, on the Chamber's letter of the 8th August, the Government expresses its doubt of the expediency of taking action in a direction "which will materially reduce the income of the Trust just on the eve of transfer." The Government has, therefore, resolved to refrain from giving effect to the reductions proposed alike by the Harbour Committee and the Chamber, and to leave the matter to the Trustees "when they have had time to estimate the exact financial position of the Trust to make such reductions in the rate of tolls as may seem to them practicable and expedient."

2. More than a month has passed since the order under reference was passed, and no public intimation has yet been given that the Port Trust will occupy at an early date the attention of the Legislative Council. Meanwhile a serious injustice is being done to the trade of the port. The Secretary of State has taken into the most liberal consideration the Imperial character of the harbour; and, on the 18th instant, it will be one year since he was pleased to authorize the reduction of the charges to such a point as would suffice to yield interest at the rate of 4 per cent. per annum on a sum of 15 lakhs of rupees, to be eventually supplemented by interest on all expenditure required for the completion of the work. The Secretary of State did not leave the matter open for further discussion, but he promptly took action in the matter with the result, as stated in a return to Parliament, of the "Total Net Expenditure upon all sorts of Public Works in India from 1875-76 to 1884-85," dated India Office, 22nd May 1884, that £533,100 on account of the Madras Harbour Works, charged in former years as capital outlay on "Productive Public Works," was transferred in 1883-84 to "Ordinary Works." In the Financial Statement of the Government of India for 1884-85, it is remarked "in 1883-84, the whole expenditure on Madras Harbour Works to date was transferred from Productive Public Works to Civil Buildings, Roads and Services."

3. The Secretary of State's despatch was forwarded last January, by the Supreme Government, for an early expression of opinion, and the Madras Government, in its reply of the 20th March, asked the Supreme Government to allow the constitution of a formal Port Trust "to lie over for the present." In the seven months that have since elapsed, the total yield of Harbour dues need not have exceeded Rs. 5,000 per mensem, or Rs. 35,000 in all; whereas it appears from the published statements of the Master Attendant of actual collections from 1st April 1884 to 31st August 1884 that dues to the extent of Rs. 1,69,675 have been collected, or say, at the rate of Rs. 34,000 per mensem. A large reserve fund has, therefore, been formed on which the Government could draw should any loss result from the reduction of rates.

4. The "change in the management" cannot affect the right of the port to the full and immediate benefit of the advantages bestowed upon it by the Secretary of State. The "exact financial position" of the port may not be known at the moment,

though the Chamber is reluctant to suppose that the Accountant-General could not soon satisfy the Government on this point; but the exact financial responsibility of shippers, in regard to dues, has been clearly defined. The Government admits that the net revenue obtained from the Harbour is already "more than sufficient to meet the interest charge on the probable capital outlay during the next two or three years," but it is indisposed to order the immediate reduction of dues that are obviously far beyond the legitimate current liabilities of the port. The Government says "that it was never intended that the maximum rates should continue to be levied if experience showed that the income was likely to be in excess of requirements." But whatever the original intention may have been, previous to the issue of the Secretary of State's decision on the subject, revenue very greatly in excess of requirements does continue to be levied, and no date is fixed for the termination of this anomaly.

5. The Harbour Committee has pointed out, in its letter to the Government of the 20th August, that there "is no necessity, under existing circumstances, for a levy of the present onerous rate of tolls which has been imposed by the Government." In this opinion the Chamber concurs, and I am, therefore, to solicit the Government to be pleased to state definitely when the Port Trust will be formed, and to sanction, as a tentative measure, the immediate reduction of Pier and Beach charges which has been recommended by the Harbour Committee.

Order—dated 10th November 1884, No. 495, Marine.

It will be seen from the proceedings of the Legislative Council which assembled at Ootacamund on the 22nd ultimo that the earliest opportunity was taken for bringing the Harbour Trust Bill again before the Council in view to its being passed into law with as little delay as possible. It is anticipated that the Act will be brought into operation and arrangements completed for transferring the administration of the Harbour to Trustees at the close of the official year.

2. His Excellency in Council adheres to the opinion recorded in G.O., dated 2nd September 1884, No. 389, Marine, that in view of the impending change it would be inexpedient to sanction any measure affecting the income at present derived from Harbour dues. Although their attention was directed to it in the Government order quoted, the Chamber of Commerce seem to ignore the fact that no inconsiderable expenditure, irrespective of the interest on capital outlay for construction, will have to be provided for by the Trustees out of Harbour revenue.

(True Extract.)

Chief Secretary.

To the Chairman, Chamber of Commerce.

Copy to the Harbour Committee.
" " Public Works department.

Exd. J. Wright.

1007 w 3-7-84

13 R= 1710 w a/ 18-7-84
B.№ 1667 w a/ 3-7-84
" 2419 w a/ 29-8-83
" 674 w a/ 1-3-83

B. №= 2871. W a/ 17 November

Recorded

Cl.
15.11.84

15-11-84

Govt. of {1884} Madras.

MARINE.

SECRETARIAT TO GOVERNMENT MADRAS
15 NOV 84
LAW DEPARTMENT

Issued

Recd. 15/11/84 *Encl.*

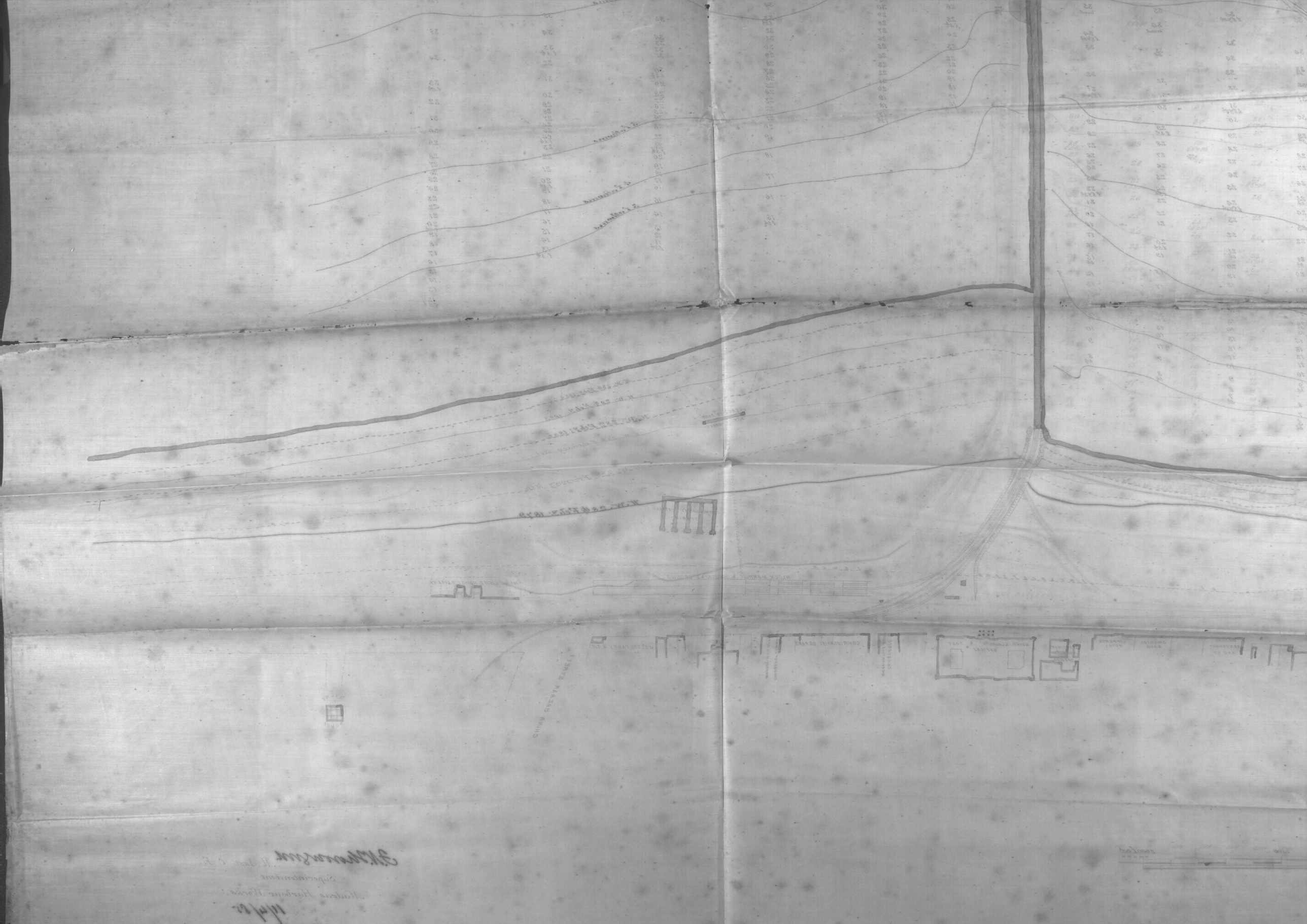
G.O., 10th November 1884, No. 495.

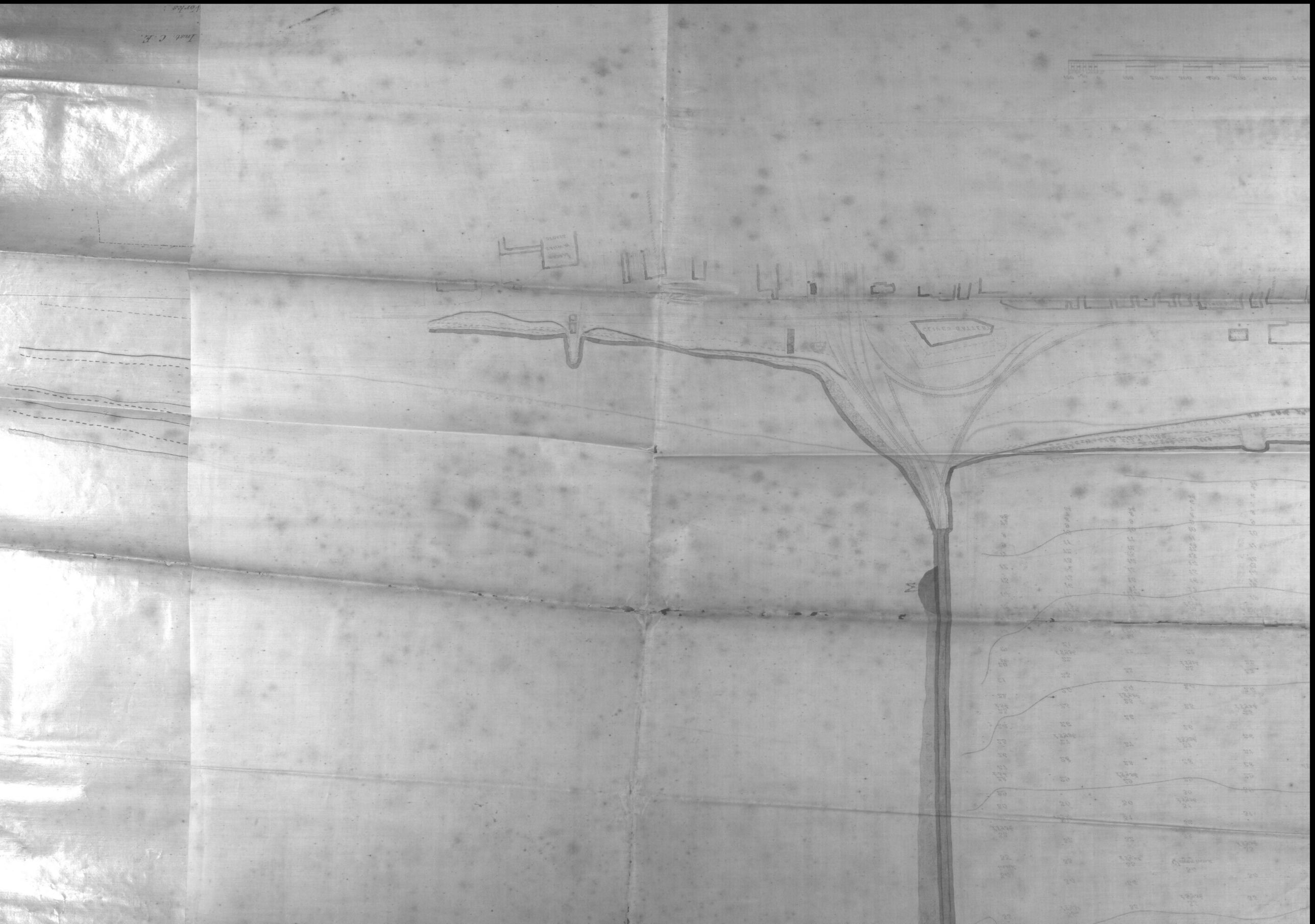
B №= 2871. W a/ 17 November

NOVEMBER.

Harbour Dues.

Passing orders on letter from the Chamber of Commerce, Madras, requesting Government to state definitely when the Port Trust will be formed, and to sanction, as a tentative measure, the immediate reduction of Pier and Beach charges recommended by the Harbour Committee.

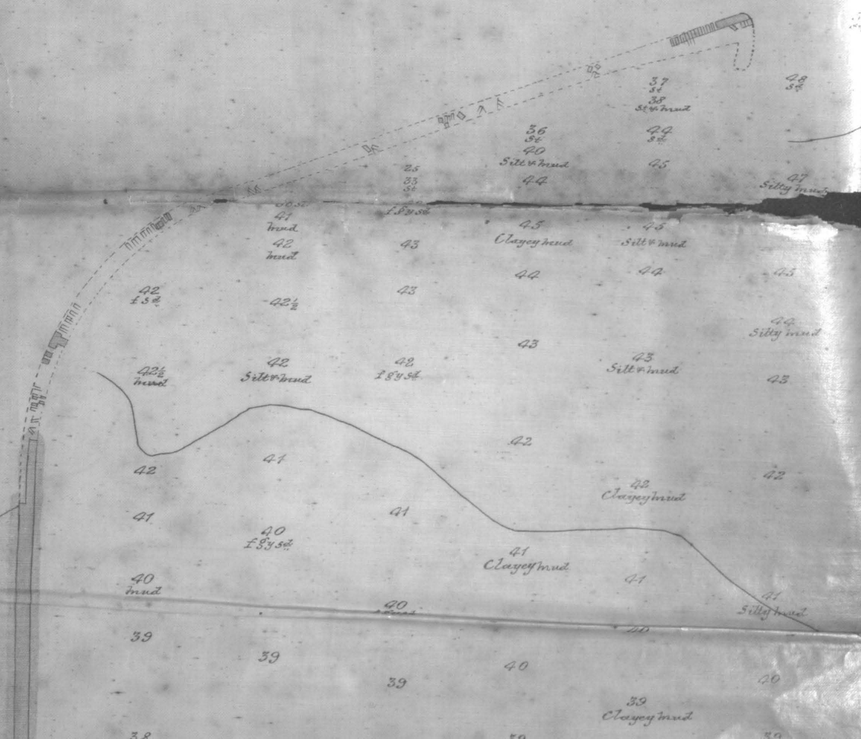




MADRA

Survey of Ha

NOTE = The black
The blue
Depths below



BOUR

rch 1885.

ea Level.

50 f.St.

50

49

49 f.St.

48 f.St.

48

47

47 f.St.

48

46

47

46

46 f.St.

45 f.St.

46

45

45

44

44

43

43 f.St.

44

43

42

42

41 f.St.

40

39

40 f.St.

38 St.

37

36

37 f.St.

36

35

35

38

39

Silty sand

35 St.

47 mud

32 St.

46

45

45 Silt

37 St.

44 mud

44 Silty mud

44 f.St.St.

43

43

43 Silt

43 mud

43 Silty mud

42

42

42 Silty mud

42

41 mud

41

40

40 mud

40 Silty mud

40

39

39

39

7 Fathoms

mud

mud

DEPOSITED

51 f.St.

50

50 f.St.

50

49

49 f.St.

49

48 f.St.

48

48

47

47

8 Fathoms

47 f.St.

46

46 f.St.

46

45

45

45 f.St.

44

44 f.St.

44

43

43

43

43 f.St.

42 f.St.

42

41

42

7 Fathoms

41

40

40 f.St.

40 f.St.

39

39 f.St.

39

31' annually

5 Fathoms

4 Fathoms

3 Fathoms

2 Fathoms

1 Fathom

H.W. 28th February 1885

H.W. 28th Feby. 1884

H.W. 28th Feby. 1883

H.W. 28th Feby. 1882

H.W. 28th February 1881

H.W. 28th Feby. 1880

S L N S — C/L — INTERCEPTING — SEWER

MEMORIAL STONE

BLOCK MAKING & STACKING GROUND

NEW LIGHT HOUSE BATTERY

MARINE OFFICE

HIGH COURT

MESSRS ARBUTHNOT AND CO

ORIENTAL BANK

LIPPERTS HOTEL

STATIONARY AND STAMP OFFICES

GOVT. TELEGRAPH & POST OFFICES

CHARTERED MERCANTILE BANK

COMMISSARIAT DEPART

CHAMBERS OF COMMERCE MADRAS MAIL OFFICE

SCOTT & CO

MESSRS PARRY & CO

COMMISSARIAT CATTLES STABLE

STANDING SHED FOR WORKERS

CHINA BAZAAR STREET

LIGHT HOUSE

1500 2000 feet

F. W. Thorowgood M. Inst. C.E.
Superintendent.
Madras Harbour Works.
11/4/85

N'E'W FORESHORE DEPOSIT

Mud

Clayey mud

Clayey

H.W. 28th February 1881

H.W. 28th Feby 1883

H.W. 28th February 1886

H.W. 28th Feby 1884

H.W. 28th Feby 1882

H.W. 28th Feby 1880

H.W. 28th Fe

GLIVES BATTERY

MARINE HOUSE

RICE WARE HOUSE

DYMES &C.

BIDEN HOME

MADRAS RAILWAY STORES

ROYAPURAM RAILWAY STATION

HARBOUR MASTER OFFICE

100 50 0 100 200 300 400 500 600 700

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following letter from F. N. THOROWGOOD, Esq., M. INST. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated 11th April 1885, No. 3 W.:—

I have the honor to submit, herewith, two plans and a report of the progress and general state of the Madras harbour works up to 31st March 1885, and I think that, as active operations are now resumed, it will be advisable to resume also the submission of monthly reports to Government as was done regularly up to end of 1881.

2. *Last report.*—My last report of progress was dated 4th November 1884, and in the fourth paragraph I drew attention to the special protective works that had been carried out at a spot 200 feet from the commencement of the north pier. I shall have occasion to refer to this again, and in the meantime will review what has been done during the financial year 1884-85.

3. *North pier foreshore work.*—The work of preparing the foreshore of the north pier for carrying the 30-ton blocks of the "wave-breaker" has been pushed steadily forward whenever the state of the weather would permit, and will be completed during the current month. The work consists merely in raising and widening the present foreshore in accordance with the approved design for restoration. During the year 43,357 tons of stone from Pallávaram have been used for this purpose, of which 39,167 tons were deposited from boats and the remainder thrown into the sea by hand. The South Indian Railway having now more wagons available for stone traffic I hope very shortly to bring this part of the work up to its proper rate of execution. The greater the quantity of work got through in a day the less per ton will be the cost, and as with the present state of affairs the cost of the foreshore deposited in the sea has been during the year only a fraction over Rs. 1-8-0 per ton (Mr. Parkes' estimate being Rs. 2), there is every prospect of a considerable saving being effected in this branch of the work.

4. *Storm of 20th November* 1884.—On 20th November a sudden and sharp cyclonic storm during the night raised a heavy sea from the north-east, and so great was the force of the waves that, at the spot referred to in paragraph 4 of my last report, the rubble protective mound, carrying 16 blocks of 30 tons weight each, was battered down very rapidly, causing 12 of the 30-ton blocks to fall over gently towards the sea and so take up the random position intended for them. A remarkable feature of the storm was that the attacking waves threw up some 50 tons of the boulders of the mound on to the surface of the pier and indeed over into the harbour during the night, yet at daybreak on the 21st the wind and sea were coming from the south of east, and the battered mound of rubble was in absolutely smooth water. It is noteworthy that high water occurred at 10-30 P.M., when the rise of tide was so

high that the self-registering tide gauge on the iron pier-head could not record it, the pencil running off the diagram paper.

5. *Position of blocks shown on plan.*—On the accompanying plan I have shown in red at the point marked M the site of this rubble mound, also the remaining four of the 30-ton blocks which have not yet fallen forward. There is also shown by red lines nearly parallel to the two piers the extent of the new foreshore deposited.

6. *South pier foreshore work.*—At the south pier during the past year only 19,538 tons of rubble were deposited in the foreshore, but this work only was commenced on 11th October 1884, and had to be stopped in February when the wind and waves came from the south of east.

7. *Plants and machinery on shore.*—Preparations on shore for the work of rebuilding the piers have been going steadily on throughout the year, but it was not until receiving the grant of Rs. 50,000 (G.O. No. 308 W., of 9th February 1885) that I was able to throw any briskness into the work. Since that date two platforms, each 1,134 feet in length, have been completed for making and storing the new concrete blocks required. This work, which I estimated would cost Rs. 3,037, has cost actually only Rs. 2,632. There remain now two more similar platforms to be altered at the north pier-yard and two of smaller dimensions at the south pier-yard. The work of altering three others, however, cannot be taken in hand until the concrete blocks now covering the sites can be deposited in the sea, and this cannot be done until the arrival of one of the cranes from England. With reference to these new block platforms I should remark that two tiers of blocks can be stacked on each platform, and at the same time the blocks can be placed much nearer together than was the case during the construction of the original works, and by these means the number of blocks on hand, as compared with the stock in former years, can nearly be trebled.

8. *Block moulds.*—There have been made twenty-four blocks moulds for the "wave-breaker" blocks, and these have been made mostly from old material. The block moulds for the new work of construction are being pushed rapidly forward. These are made from some very excellent teakwood supplied by the Superintendent of the Public Works Stores who has been good enough to arrange for a further supply, which will be necessary shortly.

9. *Light travellers.*—Three light travelling cranes are required for block-making, and of these one has been completed, another is well forward, and the third is in hand. All that can be done to repair and renew existing machinery has been carried out.

10. *Recovery of old blocks.*—Mr. Parkes' orders to me are to construct some apparatus for the recovery of those concrete blocks that lie under water in the line of the proposed new foundations. It will be necessary to obtain two powerful lighters, each capable of sustaining at least 20 tons for this purpose. I have hitherto not been successful in obtaining suitable boats, but am now trying to get two from Cocanada, to which port the Master Attendant recommended me to apply at first. I am not very sanguine of success in recovering the old blocks, but the value of each block recovered is so considerable that the experiment may well be made. In the meantime, I am blowing up with dynamite many of the old submerged blocks, thus converting each block into 432 cubic feet of rubble foundation, and preparing the way for depositing more rubble for the base of the new built work. At the present moment I have had to suspend this work owing to failure of the electric fuses lately supplied; others, however, are ordered from Bombay.

11. *Preparation for work tenders.*—With the prospect of heavy work going on for the next four years in connection with this harbour, I deemed it advisable to call for tenders by public advertisement for all those branches of the work which admit of working by contract. These are three, viz.,—

I. Deposit of rubble base in foundations.
II. Labor in making concrete blocks.
III. Quarrying and supplying stones.

12. Having prepared specifications for each of these works, together with forms of tender, I advertised in all the local papers. More than fifty persons applied for

specifications of each different work, the greater part of them probably not having the slightest knowledge of what was required, nor the slightest intention of tendering. For the first work (I) I received seventeen tenders, out of which I selected four as being fair and reasonable, and of the four I selected the tender whose rates gave the lowest total for the whole work, the name of the tenderer being Dhonadee Peddah Thumboo. For the second work (II) I received only ten tenders, all nearly equal, and I accepted the tender of the man who had done the work since the commencement, by name P. Annamalay Chetty. For the third work (III) I received only nine tenders, and, after rejecting two as out of all question too low, I accepted the lowest of the remaining seven, the contractor being G. M. Kazim Alí Nakvy Sáhib, who has hitherto done the work satisfactorily. The result of my calling for tenders in this way is that every branch of work will be executed at a less rate than heretofore, and consequently at a lower rate than we estimated.

13. *Survey of harbour.*—In February and March, Mr. Beardmore and I resurveyed the whole area of the harbour and much of the coast to the south. The result of our survey is shown on the plan accompanying this report, the depths being below DeHavilland's mean sea level, which is 2·7½ above low water spring tides. The weather having been peculiarly favorable, the soundings given on this chart may be relied on as absolutely correct. I have shown the successive positions of high water-mark from February 1879 (green line) to February 1885 (black line), and it will be seen that the advance of the shore is very regular and steady outside the harbour and to the south.

14. *Survey of* 1882.—The blue contour lines are taken from the survey of September and October 1882, and serve well for comparison. Commencing outside the harbour area it will be seen that where the 5 fathoms line fell in 1882 we now get depths of from 21 feet to 26 feet, and where the 3 fathoms line fell in 1882 there are now only from 13 to 16½ feet of water.

15. *Shoaling.*—This shoaling up to the south was always foreseen by Mr. Parkes, and is no way more rapid than was at first predicted by him—see G.O. No. 3343, dated 9th December 1876 (paragraphs 41 and seq. of Mr. Parkes' letter therewith).

16. *Depths inside harbour.*—Inside the harbour area there is also some shoaling as may be seen on looking at the soundings. The 7 fathom contour has not altered appreciably, but at the 3 fathom line of 1882 there is a shoaling of from 1 to 1½ feet and at the 2 fathom line of from 1 to 3 feet. The H.W. line of 1879 (green) is 120 feet further back at the iron pier than the present H.W. line.

17. *Commissary-General's remarks on H.W. line.*—Before leaving this subject of the H.W. line, I would call special attention to the fact that, in 1879, its position cuts the present site of the Commissariat mule lines—a fact which the Commissary-General appears to disbelieve in his letter attached to the proceedings of Government recorded with G.O. of 19th December 1884, No. 3127 W.

18. *Expenditure.*—The expenditure during the year has been Rs. 2,04,244, of which Rs. 29,775 was incurred during the past month of March.

19. *Dates for new establishment to begin.*—In conclusion, I would respectfully ask if 1st April may not be taken as the date from which the new scale of establishment sanctioned in G.Os. No. 3574 W., dated 14th December 1883, and No. 292 W., dated 7th February 1885, may take effect, active operations being now resumed.

ORDER—dated 27th April 1885, No. 989 W., Public Works.

The Government have read this report with great interest, and are especially pleased to learn the success which has attended Mr. Thorowgood's endeavours to secure the execution of the work by contract at comparatively low rates.

2. The scale of establishment sanctioned in G.O. No. 3574 W., dated 14th December 1883, may have effect from 1st April 1885.

3. The Superintendent's proposal to resume the submission of monthly progress reports is approved.

4. Prior to the cyclone of November 1881, special quarterly progress reports were submitted for the information of the Government of India. That Government will be requested to state whether they wish that practice to be resumed.

(Here enter No. 990 W., dated 27th April 1885.)

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

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

Exd. A. Grubert.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1885} Madras.

PUBLIC WORKS.

Dated April, 27th.

Recd.

Encl.

G.O., 27th April 1885, No. 989 W.

APRIL.

Madras Harbour Works

Orders on progress report of the — up to 31st March 1885.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

LETTER—from

COLONEL J. SHAW-STEWART, R.E.,

Secretary to the Government of Madras,

Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

Adverting to this office endorsement No. 2677 W., dated 1st November 1881, I am directed to inquire whether the Government of India wish the submission of quarterly reports on the progress of the Madras harbour works to be resumed, now that active operations for the reconstruction of the harbour have been commenced.

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

Colonel, R.E.,
Secretary to Government, P.W.D.

OOTACAMUND,
27th April 1885.

Exd. A. Grubert.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1885} Madras.

PUBLIC WORKS.

Dated April, 27th.

Recd. *Encl.*

27th April 1885, No. 990 W.

APRIL.

Madras Harbour Works

Inquiring whether quarterly reports on the progress of the — are required to be submitted.

27th April 1885 No 990 W
2 Encls.

Received after completion

No. 311.

From

The SUPERINTENDENT,
MADRAS HARBOUR WORKS,

To

The Secretary to Government,
P. W. Department.

Sir,

Madras, 11th April 1885.

I have the honour to submit herewith two plans and a report of the progress and general state of the Madras Harbour Works up to March 31st 1885, and I think that as active operations are now resumed, it will be advisable to resume also the submission of monthly reports to Government as was done regularly up to end of 1881.

Last report

2. My last report of progress was dated 4th November 1884 and in the 4th paragraph I drew attention to the special protective works that had been carried out at a spot 200 ft. from the commencement of the North Pier. I shall have occasion to refer to this again, and in the meantime will review what has been done during the financial year 1884-85.—

North Pier Foreshore work.

3. The work of preparing the foreshore of the North Pier for carrying the 30 ton blocks of the "wave breaker" has been pushed steadily forward

whenever the state of the weather would permit, and will be completed during the current month. The work consists merely in raising and widening the present foreshore in accordance with the approved design for restoration. During the year 43,357 tons of stone from Pallavaram have been used for this purpose, of which 39,167 tons were deposited from boats and the remainder thrown into the sea by hand. The South Indian Railway having now more wagons available for stone traffic I hope very shortly to bring this part of the work up to its proper rate of execution. The greater the quantity of work got through in a day the less per ton will be the cost and as with the present state of affairs the cost of the Foreshore deposited in the sea has been during the year only a fraction over Rs 1½ per ton (Mr. Parkes' Estimate being Rs 2) there is every prospect of a considerable saving being effected in this branch of the work.

Storm of November 20th 1884.

4. On November 20th a sudden and sharp cyclonic storm during the night raised a heavy sea from the North East, and so great was the force of the waves that, at the spot referred to in para 4 of my last report, the rubble protective mound carrying

16 blocks of 30 tons weight each, was battered down very rapidly, causing twelve of the 30 ton blocks to fall over gently towards the sea and so take up the random position intended for them. A remarkable feature of the storm was that the attacking waves threw up some 50 tons of the boulders of the mound on to the surface of the pier and indeed over into the Harbour during the night, yet at daybreak on the 21st the wind and sea were coming from the South of East and the battered mound of rubble was in absolutely smooth water. It is noteworthy that High Water occurred at 10·30 P.M. when the rise of tide was so high that the self registering Tide Gauge on the Iron Pier Head could not record it, the pencil running off the diagram paper.

Position of blocks shewn on plan

5 On the accompanying plan I have shewn in red at the point marked M the site of this rubble mound, also the remaining four of the 30 ton blocks which have not yet fallen forward. There is also shewn by red lines nearly parallel to the two piers the extent of the new foreshore deposited.

South Pier Foreshore Work

6 At the South Pier during the past year only 19,538 tons of rubble were deposited in the foreshore, but this work only was commenced on October 11th 1884 and had to be stopped in February when the wind and waves came from the South of East.

Plants and Machinery on shore.

7 Preparations on shore for the work of rebuilding the piers have been going steadily on throughout the year, but it was not until receiving

the grant of Rs 50,000 (Gt O. 308 W. of February 9th 1885) that I was able to throw any briskness into the work. Since that date two platforms each 1134 feet in length have been completed for making and storing the new concrete blocks required. This work which I estimated would cost Rs 3037 has cost actually only Rs 2632. There remain now two more similar platforms to be altered at the North Pier Yard and two of smaller dimensions at the South Pier Yard - The work of altering these others however cannot be taken in hand until the concrete blocks now covering the sites can be deposited in the sea, and this cannot be done until the arrival of one of the cranes from England. With reference to these new block platforms I should remark that two tiers of blocks can be stacked on each platform, and at the same time the blocks can be placed much nearer together than was the case during the construction of the original works, and by these means the number of blocks on hand as compared with the stock in former years can nearly be trebled. -

Block moulds

8 There have been made 24 block moulds for the "wave breaker" blocks and these have been made mostly from old material - The block moulds for the new work of construction are being pushed rapidly forward. These are made from some very excellent teakwood supplied by the Superintendent of the P.W. Stores who has been good enough to arrange for a further supply which will be necessary shortly. -

Light Travellers

9. Three light travelling cranes are required for block-making and of these one has been completed, another is well forward and the third is in hand. All that can be done to repair and renew existing machinery has been carried out.

Recovery of old Blocks.

10 Mr Parkes's orders to me are to construct some apparatus for the recovery of those concrete blocks that lie under water in the line of the proposed new foundations - It will be necessary to obtain two powerful lighters each capable of sustaining at least 20 tons for this purpose - I have hitherto not been successful in obtaining suitable boats, but am now trying to get two from Cocanada, to which port the Master Attendant recommended me to apply at first. I am not very sanguine of success in recovering the old blocks, but the value of each block recovered is so considerable that the experiment may well be made. In the meantime I am blowing up with dynamite many of the old submerged blocks, thus converting each block into 432 cubic feet of rubble foundation, and preparing the way for depositing more rubble for the base of the new built work. At the present moment I have had to suspend this work owing to failure of the electric fuses lately supplied, others however are ordered from Bombay. -

Preparation for work Tenders

11. With the prospect of heavy work going on for the next four years in connection with this Harbour I deemed it advisable to call for tenders by public advertisement for all those branches of the work which admit of working by

contract

contract - These are three, viz.

I Deposit of Rubble Base in foundations.

II Labour in making concrete Blocks.

III Quarrying and supplying stone.

12. Having prepared specifications for each of these works together with forms of tender I advertised in all the local papers - More than fifty persons applied for specifications of each different work, the greater part of them probably not having the slightest knowledge of what was required nor the slightest intention of tendering - For the first work (I) I received 17 tenders out of which I selected four as being fair and reasonable, and of the four I selected the tender whose rates gave the lowest total for the whole work, the name of the tenderer being Dhonadee Peddah Thumboo - For the second work (II) I received only 10 tenders, all nearly equal and I accepted the tender of the man who had done the work since the commencement - by name P. Annamalay Chetty. For the third work (III) I received only nine tenders and after rejecting two as out of all question two low I accepted the lowest of the remaining seven, the contractor being Sy. M. Razim Ali Sahib who has hitherto done the work satisfactorily - The result of my calling for tenders in this way is that every branch of work will be executed at a less rate than heretofore, and consequently at a lower rate than we estimated. -

Two?

Survey of Harbour.

13 In February and March Mr. Beardmore and I re-surveyed the whole area of the Harbour and much of the coast to the South. The result of our survey is shewn on the plan accompanying this report the depths being below Dr. Havilland's Mean Sea Level which is 2. 7½ above Low Water Spring Tides. The weather having been peculiarly favourable the soundings given on this chart may be relied on as absolutely correct. I have shewn the successive positions of High Water Mark from February 1879 (green line) to February 1885 (black line) and it will be seen that the advance of the shore is very regular and steady outside the Harbour and to the South. -

Survey of 1882.

14 The blue contour lines are taken from the survey of September and October 1882, and serve well for comparison - Commencing outside the Harbour area it will be seen that where the 5 fathoms line fell in 1882 we now get depths of from 21 feet to 26 feet, and where the 3 fathoms line fell in 1882 there are now only from 13 to 16½ feet of water. -

Shoaling

15 This shoaling up to the South was always foreseen by Mr. Parkes, and is no way more rapid than was at first predicted by him freely O. No 3343. 9th December 1876 (paras 41 + seq: of Mr. Parkes's letter therewith). -

applied for 14/4/85

Depths inside Harbour.

16 Inside the Harbour area there is also some shoaling as may be seen on looking at the soundings. The 7 fathom contour has not altered appreciably, but at the 3 fathom line of 1882 there is a shoaling of from 1 to 1½ feet and at the 2 fathom line of from 1 to 3 feet - The H.W. Line of 1879 (green) is 120 feet further back at the Iron Pier than the present H.W. line.

Commsy. Genl's remarks on H.W. line.

17 Before leaving this subject of the H.W. Line I

would call special attention to the fact that in 1879 its position cuts the present site of the Commissariat Mule Lines, a fact which the Commissary General appears to disbelieve in his letter attached to the proceedings of Government recorded with G.O. of December 19th 1884 No 3127 W.

18. The expenditure during the year has been Rs 2,04,246, of which 29,775 was incurred during the past month of March. *Expenditure*

19 In conclusion I would respectfully ask if 1st April may not be taken as the date from which the new scale of establishment sanctioned in G O's No 3574 W dated 14th December 1883, and No. 292 W. dated 7th February 1885 may take effect, active operations being now resumed. *Dates for new establishment to begin.*

I have the honour to be.

Sir,

Your most Obedient Servt

F. N. Harewood. M. Inst. C.E.
Superintendent.

G.O. No 3106 W. 14-12-81
B. No 1310 W 21-5-81 X
" 2676 W.
X 2677 W 1-11-81 X
G.O. No 3343 9.12.76
" " 3574 W 14-12-83
" " 2875 W. 12-10-83
" " 3128 W 19-12-81
" " 292 W. 7-2-85.
" " 308 W. 9.2.85.
" " 2893 W. 19-11-84.

X-Encr 1028 of 1886

Rec 3327

Buildings & Roads

From

(5)

The Superintendent

Rr. Harbour Works

dated 11

Rec'd 13 April 1885.

No 3 W

No of Enclo 2. (Plans)

Submits progress

report up to 31 March 1885

G.L.S. 30/4 Cir 20/4

G.O. 18.4.83 R. 9.4.85

B & R

Cir

No 989 W PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 27th April

READ the following

Letter from the Superintendent Madras Harbour Works } (H.C. No 3 W dt 11th April 1885)

6

The Government have read this report with great interest, and are especially pleased to learn the success which has attended Mr. Thornycroft's endeavours to secure the execution of the work by contract, at comparatively low rates.

2. The scale of establishment sanctioned in G.O. No 3574 W dt 14th December 1883 may have effect from 1st April 1885.

3. The Superintendent's

Encl 2314

proposal to resume the submission of monthly progress reports is approved.

4. Prior to the cyclone of November 1881, special quarterly progress reports were submitted for the information of the Govt of India. That Government will be requested to state whether they wish that practice to be resumed.

(H.E. No. 990. W dt 27th April 85.

To,
The Secretary to the
Govt of India, P.W. Dept

Sir,

Adverting to this office endorsement No. 2677 W dt 1st November 1881, I am directed to inquire whether

D
5/5/85

To,
The Supt. M.H. Works.
" Ex. P.W. Accts.
" Marine dept.

Ex. Ed.

the Government of India wish the submission of quarterly reports on the progress of the Madras Harbour Works to be resumed, now that active operations for the reconstruction of the Harbour have been commenced.

Ed.
20.4.85

D
5/5/85

24 APR 55
DEPARTMENT OF THE INTERIOR

O.L. S. 56/4 Cir 20/4 Rec 24/4.

3327

Govt. of {1885} Madras.

PUBLIC WORKS.

Dated 29/4/85

Recd. Encl.

G.O. 27 April 1885, No. 989 W 990

Madras Harbour Works

Orders on progress report of the - up to 31 March 85

M. Harbours

Requiring the Quarterly reports on the progress of the — are required of the Madras

1d 3.30 1/28/4

29TH MARCH 1887, No. 418, FINANCIAL.

GOVERNMENT OF MADRAS.

FINANCIAL DEPARTMENT.

READ—the following papers :—

Office Note from Major C. H. P. CHRISTIE, R.E., Examiner of Public Works Accounts, to the Secretary to Government, Public Works Department, dated Madras, 22nd March 1887, No. 839.

The Superintendent of the Madras Harbour Works has applied for Rs. 30,000 for expenditure in April 1887, but according to your office note, No. 833 C., dated the 7th March 1887, the Madras Harbour works will cease to be a Public Works Division from 1st April next, and I cannot therefore provide him with funds for expenditure after that date.

2. I presume that the Harbour Trust Board should in future obtain funds directly from the Accountant-General, Madras, but G.O., No. 645-W., dated 3rd March 1887, does not seem to have been communicated to him and he may know nothing about it.

3. Arrangements should be made soon in communication with the Accountant-General, Madras, and in the meanwhile I propose to tell the Superintendent, Harbour Works, that he will have to obtain funds otherwise than through me.

No. 1141-C.

Forwarded, with advertence to G.O., No. 645-W., dated 3rd March 1887, to the Financial Department, in view to early arrangements being made for the supply of funds to the Harbour works from 1st April 1887.

2. The budget estimate of the Harbour works for 1887-88 was forwarded to the Government of India for sanction with Proceedings, dated 28th February 1887, No. 595-W.

24*th March* 1887. (Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Government, P.W.D.

To the Financial Department, with copy of G.O , No. 645-W.

From the Hon'ble R. W. BARLOW, C.S., Chairman, Harbour Trust Board, to the Secretary to Government, Public Works Department, dated Madras, 23rd March 1887, No. 2788.

I have the honor to enclose herewith copy of a memorandum addressed to the Superintendent, Madras Harbour Works, by the Examiner of Public Works Accounts, No. 60 B-L., dated 22nd March 1887, stating that, as the Madras Harbour Works will cease to be a Public Works Division from the 1st April next, the orders of Government are necessary as to the course that should be adopted for obtaining funds for harbour construction after that date.

2. In reference to this communication, I have the honor to inquire what arrangements will be made by Government to place at the disposal of the Harbour Trust Board the funds advanced by the Secretary of State for harbour construction for the financial year 1887-88.

3. Early orders are solicited in view to the Superintendent being placed in funds to meet the expenses of construction as necessary from time to time.

ENCLOSURE.

MEMORANDUM.

No. 60-B.L.

The Secretary to Government, Public Works Department, having communicated to this office that the Madras Harbour Works will cease to be a Public Works Division from the 1st April 1887, your application for Rs. 30,000 for expenditure in April has not been complied with, and it will be necessary for you to take the orders of Government as to the course that should be adopted for obtaining funds after the 1st April 1887.

MADRAS,
22nd March 1887.

(Signed) C. H. P. CHRISTIE, Major, R.E.,
Examiner of Public Works Accounts.

To the Superintendent, Madras Harbour Works.

No. 754 M.

Copy of the above is forwarded to the Chairman, Harbour Trust Board, Madras, for his information.

MADRAS,
23*rd March* 1887.

(Signed) F. N. THOROWGOOD,
Superintendent, Madras Harbour Works.

No. 1177-C.

Transferred to the Financial Department, in continuation of this office No. 1141-C., dated 24th March 1887.

25*th March* 1887.

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

ORDER—dated 29th March 1887, No. 418, Financial.

The Accountant-General will arrange, with effect from the 1st April, to place the funds in question at the disposal of the Harbour Trust Board as required, instead of transferring them to the Public Works Department.

(True Extract.)

H. E. STOKES,
Ag. Chief Secretary.

To the Accountant-General.
" Chairman, Harbour Trust Board.
" Public Works Department.

Exd. A. Raitt.

B. No. 999 W dy 1st April 1887

Communicated to the Examiner P. W. Accts.

(sd) J. O. H.
W

Govt. of {1887} Madras.

FINANCIAL.

Issued

Recd. *Encl.*

G.O., 29th March 1887, No. 418.

B. No. 999 W dy 1st April 1887

MARCH.

Madras Harbour Works.

Directing the Accountant-General to place at the disposal of the Harbour Trust Board, with effect from 1st April 1887, the funds required for the construction of the —.

Exr. P. W. Accts.

With order

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

READ—the following letter from the Honorable R. W. BARLOW, C.S., Chairman, Harbour Trust Board, Madras, to the Chief Secretary to Government, Marine Department, dated Madras, 15th January 1887, No. 1865 :—

I have the honor to submit, for the information of Government, the budget estimate of the Madras Harbour Works for the year 1887-88.

2. The delay in the transmission of the same has been caused by the Trustees desiring to make inquiries into the scale of establishment charges before transmitting the estimate, which they referred to a committee.

Transferred to the Public Works Department for disposal.

(Signed) H. E. STOKES,
Ag. Chief Secretary.

ORDER—dated 28th February 1887, No. 595 W., Public Works.

Ordered that the budget estimate of the Madras Harbour Works for 1887-88 be printed and forwarded for the sanction of the Government of India with recommendation that early orders be passed thereon.

(Here enter No. 596 W., dated 28th February 1887.)

(True Extract.)

Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chairman, Madras Harbour Trust Board.
„ Examiner, Public Works Accounts.
„ Financial Department.
„ Marine Department.

Exd. P. L. Pereira.
Spare Copies

GENERAL.
ACCOUNT.

Govt. of {1887} Madras.

PUBLIC WORKS.

Dated February, 28th.

Recd. *Encl.*

G.O., 28th Feb. 1887, No. 595 W.

FEBRUARY.

Madras Harbour Works

Budget Estimate for 1887-88.—The —, ordered to be forwarded to the Government of India.

BUDGET ESTIMATE OF EXPENDITURE ON THE HARBOUR WORKS IN MADRAS DURING THE YEAR 1887-88.

PART I—SECTION A.

—	Budget Estimate, 1887-88.	Revised Estimate, 1886-87.	Budget Estimate, 1886-87.	Actual, 1885-86.
	RS.	RS.	RS.	RS.
Reconstruction	10,54,529	8,57,500	8,48,900	4,54,348
Repairs	...	...	...	...
Establishment	66,071	66,600	66,600	55,929
Tools and plant	20,500	75,000	23,600	2,18,543
Suspense	20,000	20,000	80,000	1,41,586
Total ...	11,61,100	10,19,100	10,19,100	8,70,406

	RS.
Payments in England	47,075
Do. in India	11,14,025
Total ...	11,61,100

MADRAS,
12th November 1886.

(Signed) F. N. THOROWGOOD,
Superintendent, Madras Harbour Works.

GOVERNMENT OF MADRAS.

DETAIL of the Budget Estimate for Establishment for the Harbour Works in Madras for 1887-88.

Number. 1886-87.	Number. 1887-88.	Particulars.	Salary of office.	Estimate for 1887-88. Per mensem.	Per annum.	Total.	Estimate for 1886-87. Charges per annum.
		DIRECTION.	RS.	RS.	RS.	RS.	RS.
		Engineer Establishment.					
1	1	Engineer-in-Chief	...	...	6,575	...	6,234
1	1	Total, Direction Salaries ...	...	...	6,575	6,575	6,234
		CONSTRUCTION.					
		Engineer Establishment.					
1	1	Superintendent of Works	1,500	1,500	...	...	...
1	1	Assistant Superintendent	500	500	...	...	...
2	2	Total ...	...	2,000	24,000	...	24,000
		Upper Subordinate Establishment.					
1	1	Sub-Engineer	400	400	...	...	...
1	1	Head Foreman of Works	350	350	...	...	...
1	1	Mechanical or Foreman Engineer ...	350	350	...	...	...
1	1	Foreman Diver	350	350	...	...	...
1	1	Accountant, 4th grade	128	128	...	...	...
5	5	Total ...	...	1,578	18,936	...	18,132
		Petty Establishment.					
1	1	Chief Storekeeper	220	220	...	...	...
1	1	Assistant Storekeeper as clerk, 3rd class, 3rd grade	55	55	...	...	...
1	1	Godownkeeper, 4th class, 3rd grade ...	25	25	...	...	...
2	1	Lascar	7	7	...	...	...
5	4	Total ...	...	307	3,684	...	3,552
		OFFICE ESTABLISHMENT.					
		Superintendent of Works.					
1	1	Head Clerk, 3rd class, 1st grade ...	90	90	...	...	...
1	...	Clerk, 4th class, 1st grade	...	...	...	...	...
2	2	Clerks, 4th class, 2nd grade	35	70	...	...	...
1	1	Draftsman, 1st class	60	60	...	...	...
1	1	Do. 2nd ,, ...	42½	42½	...	...	...
3	3	Peons	7	21	...	...	...
9	8	Total ...	...	283½	3,402	...	...
		Assistant Superintendent.					
1	1	Clerk, 4th class, 1st grade	45	45	...	...	...
1	1	Surveyor as draftsman, 1st class ...	60	60	...	...	...
1	...	Draftsman, 3rd class	...	...	...	...	...
3	3	Peons	7	21	...	...	...
6	5	Total ...	...	126	1,512	...	...

Detail of the Budget Estimate for Establishment for the Harbour Works in Madras for 1887-88—*cont.*

Number. 1886-87.	Number. 1887-88.	Particulars.	Salary of office.	Estimate for 1887-88. Per mensem.	Per annum.	Total.	Estimate for 1886-87. Charges per annum.
		OFFICE ESTABLISHMENT—*cont.*	RS.	RS.	RS.	RS.	RS.
		Sub-Engineer.					
1	1	First clerk and timekeeper, 4th class, 1st grade	45	45	...	...	...
1	1	Second clerk, 4th class, 2nd grade ...	35	35	...	...	...
1	...	Clerk, 4th class, 3rd grade	...	...	...	...	...
1	1	Draftsman, 3rd class	25	25	...	...	...
2	2	Peons	7	14	...	...	...
6	5	Total ...	...	119	1,428	...	...
		Account Establishment.					
1	1	Cashier as clerk, 3rd class, 3rd grade ...	55	55	...	...	...
1	1	Clerk, 4th class, 1st grade	45	45	...	...	...
1	1	Do. 4th ,, 3rd ,, ...	25	25	...	...	...
...	1	Lascar	7	7	...	...	...
3	4	Total ...	...	132	1,584	...	...
		Total, Office Establishment ...	...	...	7,926	...	8,892
...	...	Presidency house-rent and allowance to Accountant	...	40	480	...	1,320
...	...	Total Construction salaries	...	...	...	55,026	55,896
...	...	Travelling allowances	...	...	...	3,000	3,000
...	...	Contingencies	...	...	...	1,470	1,470
		Grand Total ...	...	...	...	66,071	66,600

ABSTRACT of foregoing provision for Establishment.

—	Salaries.	Travelling allowance.	Contingencies.	Total. 1887-88.	Total. 1886-87.
	RS.	RS.	RS.	RS.	RS.
Direction	6,575	...	...	6,575	6,234
Construction	55,026	3,000	1,470	59,496	60,366
Total ...	61,601	3,000	1,470	66,071	66,600

MADRAS,
12th November 1886.

(Signed) F. N. THOROWGOOD,
Superintendent, Madras Harbour Works.

V. & Co. H. T. No.

Harbour Trust Board Office,

MADRAS, 15th January 1887.

No. 1865

FROM The Honorable R. W. Barlow C.S.

CHAIRMAN, HARBOUR TRUST BOARD,
MADRAS,

To The Honorable W. E. Stokes C.S.

Acting CHIEF SECRETARY TO GOVERNMENT,
Marine Department.
Fort Saint George

SIR;

I have the honor to submit for the information of Government the Budget Estimate of the Madras Harbour Works for the year 1887-88.

2. The delay in the transmission of the same, has been caused by the Trustees desiring to make enquiries into the scale of Establishment Charges before transmitting the estimate, which they referred to a Committee.

I have the honor to be
Sir
Your most Obedient servant

Sec
H.T.B.

W. W. Morton
Chairman
Harbour Trust Board.

I transferred to the Public Works Department for disposal.

W Elliott
Ag Chief Secretary.

No 1451 W d/11. 6. 86.
" 1705 W d/7. 7. 86
" 1831 W d/17. 7. 86
" 995 W d/16. 4. 86
" 305 W 2/5. 1. 86.
Act ii of 1886.

File / Corr. 2194/87

K.S.
To The Public Works Dept.
Corr. 24. 2. 87 L. 25/2/87

MARINE DEPARTMENT.

FROM P.W.C. No 855

THE CHAIRMAN,
HARBOUR TRUST BOARD,
MADRAS,

To Aq.
THE CHIEF SECRETARY TO GOVERNMENT,
Marine Department.
Fort St. George

DATED 15th January 1887
RECEIVED 20.1.87

ENCLOSURE I

No. 1865

CHIEF SECRETARY TO GOVERNMENT OF MADRAS 17 JAN 87

SUBJECT.

Submitting for the information of Govt the Budget Estimate of the Madras Harbour Works for the year 1887/88.

Transferred

Budget Estimate of Expenditure on the Harbour Works in Madras during the year 1887-88

Part I section A

	Budget Estimate 1887-88	Revised Estimate 1886-87	Budget Estimate 1886-87	Actual 1885-86
Reconstruction	10,54,529	8,57,500 / 8,72,500	8,48,900	4,54,348
Repairs	"	"	"	"
Establishment	66,071	66,600	66,600	55,929
Tools & Plant	20,500	60,000 / 75,000	23,600	2,18,543
Suspense	20,000	20,000	80,000	1,41,586
Total.	11,61,100	10,19,100	10,19,100	8,70,406

	Re.
Payments in England	47,075
Do. in India	1,14,025
Total Re.	11,61,100

Madras 12th November 1886.

H. Hargood
Superintendent
Madras Harbour Works
12.11.86.

P.T.O.

P.E. 11/11

Government of Madras

Detail of the Budget Estimate for Establishment for the Harbour Works in Madras for 1887-88.

Number 1886-87	Number 1887-88	Particulars	Salary of Office	Estimate for 1887-88 Per Mensem	Estimate for 1887-88 Per Annum	Estimate for 1887-88 Total	Estimate for 1886-87 charges per annum
			Rs	Rs	Rs	Rs	Rs
		Direction					
		Engineer Establishment					
1	1	Engineer-in-chief	.	.	6,575	.	6,234
1	1	Total Direction Salaries	.	.	6,575	6,575	6,234
		Construction					
		Engineer Establishment					
1	1	Superintendent of Works	1500	1500			
1	1	Asstt. Superintendent	500	500			
2	2	Total	.	2000	24,000	.	24,000
		Upper Subordinate Estabt.					
1	1	Sub Engineer	400	400			
1	1	Head Foreman of Works	350	350			
1	1	Mechanical or Foreman Engineer	350	350			
1	1	Foreman Diver	350	350			
1	1	Accountant 4th Grade	128	128			
5	5	Total	.	1578	18936	.	18,132
		Petty Establishment					
1	1	Chief Storekeeper	220	220			
1	1	Asstt. Storekeeper as clerk 3rd class 3rd grade	55	55			
1	1	Godownkeeper 4th class 3rd Grade	25	25			
2	1	Lascar	7	7			
5	4	Total	.	307	3,684	.	3,552
		Office Establishment					
		Superintendent of Works					
1	1	Head clerk 3rd class 1st grade	90	90			
1	.	clerk 4th class 1st grade	.	.			
2	2	clerks 4th class 2nd grade	35	70			
1	1	Draftsman 1st class	60	60			
1	1	Do 2nd class	42½	42½			
3	3	Peons	7	21			
9	8	Total	.	283½	3,402		

Detail of the Budget Estimate for Establishment for the Harbour Works in Madras for 1887-88 Contd.

Number 1886-87	Number 1887-88	Particulars	Salary of Office	Estimate for 1887-88 Per Mensem	Estimate for 1887-88 Per Annum	Estimate for 1887-88 Total	Estimate for 1886-87 charges per annum
		Office Establishment Contd.					
		Asstt. Superintendent					
1	1	Clerk 4th class 1st grade	45	45			
1	1	Surveyor as Draftsman 1st class	60	60			
1	.	Draftsman 3rd class	.	.			
3	3	Peons	7	21			
6	5	Total	.	126	1512		
		Sub Engineer					
1	1	1st clerk & Timekeeper 4th class 1st grade	45	45			
1	1	2nd clerk 4th class 2nd grade	35	35			
1	.	clerk 4th class 3rd grade	.	.			
1	1	Draftsman 3rd class	25	25			
2	2	Peons	7	14			
6	5	Total	.	119	1428		
		Account Establishment					
1	1	Cashier as clerk 3rd class 3rd grade	55	55			
1	1	Clerk 4th class 1st grade	45	45			
1	1	Clerk 4th class 3rd grade	25	25			
.	1	Lascar	7	7			
3	4	Total	.	132	1584		
		Total Office Estabt.	.	.	7926	.	8892
		Presidency house Rent & Allowance to Accountant	.	40	480		1320
		Total Construction Salaries	.	.	.	55026	55896
		Travelling Allowances	.	.	.	3000	3000
		Contingencies	.	.	.	1470	1470
		Grand Total	.	.	.	66071	66600

Abstract of foregoing provision for Establishment

	Salaries	Travelling Allowances	Contingencies	Total 1887-88	Total 1886-87
Direction	6,575	.	.	6,575	6,234
Construction	55,026	3,000	1,470	59,496	60,366
Total	61,601	3,000	1,470	66,071	66600

Madras 12th November 1886.

J. W. Harwood
Superintendent Madras Harbour Works

Genl Dept

PUBLIC WORKS DEPARTMENT.

W-595-W

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 28 July 1887

READ the following

From the Chairman, Harbour Trust Board, Madras No. 1865 dy 15-7-87.

Endt. thereon in the Financial Dept - dy -

Ordered that the Budget Estimate of the Madras Harbour Works for 1887-88 printed be forwarded for the sanction of the Govt. of India with recommendation that early orders be passed thereon.

2. The delay in the submission of the Budget Estimate is explained in para 2 of the letter from the Chairman, Harbour Trust Board, recorded above.

(H.D. No. 596. W dy 28 July 87)

To The Chairman Mr. H. T. Bd
The Examr. P.W. Accts
" Financial Dept
" Marine Dept

To Messrs the Govt of India
No Dept

Sir,

I am directed to forward

forward the Budget Estimate of the Madras Harbour works for the year 1887-88, prepared in the usual form, and to inquire whether it should continue to be submitted through the P.W. Dept. ~~the Board~~ or

11.2.87

The Hon: P. R. Hutchins

2 The delay in its submission is explained to have been due to inquiries instituted by the Trustees into the scale of establishment-charges with a view to their reduction -

Jott 22/2/87

Dc 4/3/87

Cir Cur. 24.2.87 Jl 28/2/87

655

Govt. of {1887} Madras.

PUBLIC WORKS.

Dated

Rcvd, Encl.

G.O., 28 July 1887, No. 595-596

Madras Harbour Works

The Budget Estimate for 1887-88. The — ordered to be forwarded to the Govt of India.

Madras Harbour Works.

Budget Estimate for 1887-88. The — forwarded to the Govt of India.

BUDGET ESTIMATE OF EXPENDITURE ON THE HARBOUR WORKS IN MADRAS DURING THE YEAR 1887-88.

PART I—SECTION A.

—	Budget Estimate, 1887-88.	Revised Estimate, 1886-87.	Budget Estimate, 1886-87.	Actual, 1885-86.
	RS.	RS.	RS.	RS.
Reconstruction	10,54,529	8,57,500	8,48,900	4,54,348
Repairs	...	...	...	...
Establishment	66,071	66,600	66,600	55,929
Tools and plant	20,500	75,000	23,600	2,18,543
Suspense	20,000	20,000	80,000	1,41,586
Total ...	11,61,100	10,19,100	10,19,100	8,70,406

	RS.
Payments in England	47,075
Do. in India	11,14,025
Total ...	11,61,100

MADRAS,
12th November 1886.

(Signed) F. N. THOROWGOOD,
Superintendent, Madras Harbour Works.

GOVERNMENT OF MADRAS.

DETAIL of the Budget Estimate for Establishment for the Harbour Works in Madras for 1887-88.

Number. 1886-87.	Number. 1887-88.	Particulars.	Salary of office.	Estimate for 1887-88. Per mensem.	Per annum.	Total.	Estimate for 1886-87. Charges per annum.
		DIRECTION.	RS.	RS.	RS.	RS.	RS.
		Engineer Establishment.					
1	1	Engineer-in-Chief	...	...	6,575	...	6,234
1	1	Total, Direction Salaries ...	...	...	6,575	6,575	6,234
		CONSTRUCTION.					
		Engineer Establishment.					
1	1	Superintendent of Works	1,500	1,500	...	...	...
1	1	Assistant Superintendent	500	500	...	...	...
2	2	Total ...	...	2,000	24,000	...	24,000
		Upper Subordinate Establishment.					
1	1	Sub-Engineer	400	400	...	...	...
1	1	Head Foreman of Works	350	350	...	...	...
1	1	Mechanical or Foreman Engineer ...	350	350	...	...	...
1	1	Foreman Diver	350	350	...	...	...
1	1	Accountant, 4th grade	128	128	...	...	...
5	5	Total ...	...	1,578	18,936	...	18,132
		Petty Establishment.					
1	1	Chief Storekeeper	220	220	...	...	...
1	1	Assistant Storekeeper as clerk, 3rd class, 3rd grade	55	55	...	...	...
1	1	Godownkeeper, 4th class, 3rd grade ...	25	25	...	...	...
2	1	Lascar	7	7	...	...	...
5	4	Total ...	...	307	3,684	...	3,552
		OFFICE ESTABLISHMENT.					
		Superintendent of Works.					
1	1	Head Clerk, 3rd class, 1st grade ...	90	90	...	...	...
1	...	Clerk, 4th class, 1st grade	...	...	...	...	...
2	2	Clerks, 4th class, 2nd grade	35	70	...	...	...
1	1	Draftsman, 1st class	60	60	...	...	...
1	1	Do. 2nd „	42½	42½	...	...	...
3	3	Peons	7	21	...	...	...
9	8	Total ...	...	283½	3,402	...	...
		Assistant Superintendent.					
1	1	Clerk, 4th class, 1st grade	45	45	...	...	...
1	1	Surveyor as draftsman, 1st class ...	60	60	...	...	...
1	...	Draftsman, 3rd class	...	...	...	...	...
3	3	Peons	7	21	...	...	...
6	5	Total ...	...	126	1,512	...	...

Detail of the Budget Estimate for Establishment for the Harbour Works in Madras for 1887-88—*cont.*

Number. 1886-87.	Number. 1887-88.	Particulars.	Salary of office.	Estimate for 1887-88. Per mensem.	Per annum.	Total.	Estimate for 1886-87. Charges per annum.
		OFFICE ESTABLISHMENT—*cont.*	RS.	RS.	RS.	RS.	RS.
		Sub-Engineer.					
1	1	First clerk and timekeeper, 4th class, 1st grade	45	45	...	...	...
1	1	Second clerk, 4th class, 2nd grade ...	35	35	...	...	...
1	...	Clerk, 4th class, 3rd grade	...	...	...	...	...
1	1	Draftsman, 3rd class	25	25	...	...	...
2	2	Peons	7	14	...	...	...
6	5	Total ...	...	119	1,428	...	...
		Account Establishment.					
1	1	Cashier as clerk, 3rd class, 3rd grade ...	55	55	...	...	...
1	1	Clerk, 4th class, 1st grade	45	45	...	...	...
1	1	Do. 4th „ 3rd „	25	25	...	...	...
...	1	Lascar	7	7	...	...	...
3	4	Total ...	...	132	1,584	...	...
		Total, Office Establishment ...	...	...	7,926	...	8,892
...	...	Presidency house-rent and allowance to Accountant	...	40	480	...	1,320
...	...	Total Construction salaries	...	...	...	55,026	55,896
...	...	Travelling allowances	...	...	...	3,000	3,000
...	...	Contingencies	...	...	...	1,470	1,470
		Grand Total ...	...	...	...	66,071	66,600

ABSTRACT of foregoing provision for Establishment.

—	Salaries.	Travelling allowance.	Contingencies.	Total. 1887-88.	Total. 1886-87.
	RS.	RS.	RS.	RS.	RS.
Direction	6,575	...	...	6,575	6,234
Construction	55,026	3,000	1,470	59,496	60,366
Total ...	61,601	3,000	1,470	66,071	66,600

MADRAS,
12th November 1886.

(Signed) F. N. THOROWGOOD,
Superintendent, Madras Harbour Works.

PUBLIC WORKS DEPARTMENT.

General.
Account.

LETTER—from

COLONEL J. O. HASTED, R.E.,

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 the budget estimate of the Madras Harbour Works for the year 1887-88, prepared in the usual form, and to inquire whether it should continue to be submitted through the Public Works Department.

2. The delay in its submission is explained to have been due to inquiries instituted by the Trustees into the scale of establishment charges with a view to their reduction.

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

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
28th February 1887.

Exd. P. L. Pereira.
Spare Copies

GENERAL.
ACCOUNT.

Govt. of {1887} Madras.

PUBLIC WORKS.

Dated February, 28*th.*

Recd. *Encl.*

28th Feb. 1887, No. 596 W.

FEBRUARY.

Madras Harbour Works

Budget Estimate for 1887-88.—The —, forwarded to the Government of India.

22ND APRIL 1887, No. 173, MARINE.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

ORDER—dated 22nd April 1887, No. 173, Marine.

Some confusion having arisen in the disposal of correspondence relating to the Harbour Trust, owing to uncertainty as to the department of Government to which it should be addressed, His Excellency in Council resolves to inform the Chairman that all communications relating to Harbour matters, other than professional questions connected with engineering works of whatever description carried out under the orders of the Harbour Board, should be addressed to Government in the Marine Department.

(True Extract.)

H. E. STOKES,
Ag. Chief Secretary.

To the Chairman, Harbour Trust Board.
" Public Works Department, with G.O.,
Mis. No. 70, dated 15th February 1887.

Exd. T. O'Connor.

Govt. of {1887} Madras.

MARINE.

Issued

Recd. Encl.

G.O., 22nd April 1887, No. 173.

B. No. 1282 Wdf 11 May 1887

Recorded

APRIL. (sd) J. O. H

W

Harbour Trust Board.

Passing orders in regard to the nature of the communications relating to Harbour matters that should be addressed to the Marine Department.

No 1418 dy 21st May 1887.

D

Letter from the Govt. of India, P.W. Department. No. 116 A. G. d/9th May 1887.

Para 1 of the foregoing letter from the Govt. of India will be referred to the Financial Department for favor of remarks with reference to the endorsement in that Department ~~on current No 84 of 1887.~~ printed with P.C. 415 5955 W & 29th Decr 1886.

MW

15.5.87

is this right?

Jm

Jall

21/6/87.

To

Dup 21/5/87

The Financial Department.

Maj

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following letter from F. N. THOROWGOOD, Esq., M. INST.C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 4th November 1884, No. 25 W. :—

I have not submitted, for the information of His Excellency the Governor in Council, any report upon these works since 3rd October 1883 (G.O., dated 12th October 1883, No. 2875 W). The reason of this is that the work that has been done has, until the last few months, been confined to repairing machines and cranes. I now have the honor to submit a general report of the state of the works at present.

2. *North Pier—Foreshore Work.*—On 19th May last, in accordance with the sanction given in G.O., dated 25th April 1884, No. 1056 W., the work of tipping rubble foreshore to the north of the north pier was commenced. The position and section of the foreshore to be made up were such as was shown on the plans of the Home Committee under the presidency of Sir John Hawkshaw, and were in no way affected by what appeared at the time to be the somewhat doubtful question of the position of the entrance to the harbour. The South Indian Railway Company at first were able to provide only one train daily from the quarry at Pallávaram to the works, but after a time more wagons were available and two trains of 24 wagons each were sent down daily when the weather permitted of work being done.

3. The stone has been deposited in its place by means of large cargo boats and cooly labor, and I am inclined to think that if we can get a sufficiently strong fleet of these craft nothing in the way of hopper barges (either for hand or steam power) will be required. No provision for any special craft is yet made in England, nor was such a requirement anticipated when I left, on 20th August.

4. From 19th May to 11th October (at which date the sea put an end to work at the north pier) there were deposited in the foreshore 32,124 tons of stone. This amount has almost completed the extra section required from 250 feet to 1,925 feet from the commencement of the breakwater. At a specially weak spot in the breakwater, about 200 feet from the commencement, an additional protection has been made by building on the top of the new rubble foreshore sixteen wave-breaker blocks, each weighing 30 tons. These are of interest in a general way as showing the size and shape of the blocks to be deposited as foreshore to the restored works.

5. *Concrete Blocks.*—All this time I regret to state that it is not possible to proceed with making blocks for the new work of restoration as there are at present only sufficient funds at my disposal to keep the foreshore work going on. There is no longer any doubt as to the section and shape of the blocks to be made, as during my visit to England, from 20th May to 18th September, I received from Mr. Parkes full instructions in a general way on this head.

6. The block yards on which the blocks are made need very considerable alterations, which will cost not less than Rs. 10,000, and these cannot well be proceeded with until more funds are available. It seems to me therefore to be better to go on with the useful and necessary work of depositing rubble foreshore rather than to make a new departure before it is quite settled where the funds for such a purpose are to come from.

7. *South Pier—Rubble Foreshore.*—After 11th October, the wind getting to the north of east, it became necessary to transfer stone trains and cargo boats to the south side of the south pier, since which date 2,691 tons of stone have been deposited as foreshore in accordance with Mr. Parkes's instructions received in Westminster.

As at the north pier, this foreshore so deposited, although the amount at present is insignificant, will form the foundation of the very substantial screens of wave-breaker blocks which are to protect the walls of the breakwaters.

8. *Plant and Machinery.*—I am able to report that the Titan cranes for setting blocks and one of the wave-breaker cranes are in hand in England, and I hope that by January next one may be delivered here. It is hardly necessary to point out that until one of these machines is erected it is impossible to deposit a single block in the breakwater.

9. Here on the spot extensive renewals and repairs have been going on (with very few workmen) to the cranes, locomotives and trucks for carrying blocks. I only recently discovered that the timber work of the 40-ton Goliath crane at the south block-yard was much decayed, and needed entire rebuilding. The block carrying trucks also, I find, are very unsafe, and all need new frames. All these works give full employment to the skilled hands reduced in number to a minimum.

10. *Divers and Diving.*—During October the diving staff were employed in making a species of submarine survey of the line of the foundation of the new work. This was carried on with much elaboration and care, and I have plotted the results on a plan of large size. The conclusion one is able to arrive at on inspecting the result is that the work of preparing the new foundation will not probably be so formidable as was at first anticipated.

11. *Encroachment to the North.*—The sea continues to encroach to the north but not to any very serious extent. Some bungalows are becoming of less value owing to the encroachment, and many cocoanut trees belonging to Government have been washed away. The charge of this property is now entirely in the hands of the Collector of Madras, with the single exception of Carlton House, the rent of which is paid into this office.

12. With reference to this matter I feel bound, in justice to myself and staff, to correct a wrong impression that may have been conveyed to His Excellency the Governor in Council regarding the cost of collecting the rents of this harbour works property. In his letter attached to G.O., No. 998, dated 9th September 1884, Revenue, the Collector states that, whereas the monthly salaries of the staff collecting rents while under my charge amounted to Rs. 294, his people can do the work for Rs. 79. It must be borne in mind that carpenters and masons for repairs, surveyors, chainmen and draughtsmen are included in the higher amount, and are not included in the Collector's list.

ORDER—dated 19th November 1884, No. 2893 W., Public Works.

The report will be recorded, with remark, as regards paragraph 5, that the revised budget providing for additional expenditure on the works this year, in accordance with the conclusions adopted in London, has been recommended for the sanction of the Government of India.

2. Adverting to paragraph 11, there seems no reason why the charge of the Carlton House property should be retained by the harbour works staff. The property will be dealt with in the same manner as other properties referred to in G.O., No. 200, dated 9th February 1884, Revenue Department.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Examiner, Public Works Accounts.
" Revenue Department.

Exd. E. Fernandez.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated November, 19th.

Recd.

Encl.

G.O., 19th Nov. 1884, No. 2893 W.

NOVEMBER.

Madras Harbour Works

Orders on report submitted by the Superintendent on the present state of the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following papers :—

Despatch from the Right Honorable the Secretary of State for India, to His Excellency the Most Honorable the Governor-General of India in Council, dated India Office, London, 25th September 1884, No. 56, Public Works.

Your Excellency's Public Works letter, No. 32, dated 4th July 1884, on the subject of the Madras Harbour works, has received my consideration in Council.

2. Your Excellency forwards a communication addressed to you by the Government of Madras, together with a letter from the Chairman of the Madras Chamber of Commerce, reiterating objections to certain features in the plan of restoration of the harbour works as settled by the committee, to whom the matter had been specially referred in this country, and you state that you concur generally in the views held by the Madras Government.

3. It is recognized by every one that the chief objects which have to be kept in view in carrying out the works of restoration are (1) the structural stability of the pier walls, (2) the selection of the best position for the entrance, in view to providing a safe and easy ingress and egress for ships, and (3) the security and accommodation to be given to shipping, especially local craft, by obtaining stiller water within the harbour.

4. It is to the position of the entrance to the harbour advocated by the committee, and to its supposed unfavorable effect on the stillness of the water within, that the objections taken by local opinion appear to apply, and I have anxiously considered what course I should follow in consequence of this much to be regretted divergence of judgment.

5. The engineering questions discussed in the correspondence now forwarded to me have been so recently investigated a second time by Sir John Hawkshaw's committee, the engineer members of which are regarded as among the greatest living authorities on works of the description in question, and who were in possession of and carefully considered all the views before expressed by the authorities at Madras and of your own professional advisers, to which I cannot find that any argument or statement of fact have now been added, that, without underrating the value of local knowledge and opinions, I have felt that it would be useless again to ask the committee to reconsider their recommendations.

6. It appeared to me that, after consulting the best authorities available on the subject, no choice was left to me but to accept their decision on the questions raised, the whole of which are of an eminently technical nature, and trustworthy opinions on which can only be formed upon prolonged and extensive experience such as that possessed by Sir John Hawkshaw and Sir J. Coode, and in my despatch, No. 23, of 24th April last, I informed your Excellency that this was the conclusion at which I had arrived, and I am not now able to see any sufficient reason for changing it.

7. In the accompanying report * which Mr. Parkes, in communication with Mr. Thorowgood, has made on the subject of future operations, he expresses concurrence with the conclusions of the committee. He points out that the larger vessels should have no difficulty in getting out to sea when a severe storm is threatened, and

* Dated 21st August 1884.

that of the approach of such storms timely warning can be, and in fact always has been, given, while, as regards the smaller craft, he is of opinion that the provision of floating docks or basins, which he shows might be formed on the land reclaimed on the south side of the harbour, would protect them from danger. Nor is it anticipated that, in ordinary weather, the quietude of the water within the harbour would be better secured by a change in the entrance. These suggestions are in conformity with the views expressed in the report of Sir John Hawkshaw's committee, and, if acted upon judiciously, appear to offer a means by which to accomplish the object sought without changing the position of the entrance. Mr. Thorowgood, who is in full possession of Mr. Parkes' views, and of the reasons which have led him and the committee to adhere to the eastern entrance, has already started on his return to Madras, and will be able to furnish the authorities there with any additional particulars they may require, and it is to be hoped that conflicting views may be reconciled by further discussion. Meanwhile, the plan of operations which Mr. Parkes has proposed will not preclude the further consideration of the position of the entrance of the harbour for several months at least, and possibly for another working season, and his plans should be followed generally, on the understanding that if any additional facts or arguments are adduced bearing on the question of the entrance which appear of sufficient weight to justifiy the step, a further reference to engineering authority in this country may become desirable.

Two Titan cranes.
One crane travelling wave-breaker.

8. In the meantime the machinery, noted in the margin, has been ordered and will be despatched to Madras.

9. With regard to the estimates which form the appendices to Mr. Parkes' letter, I beg that they may be examined, and that I may be duly informed whether they are such as may be accepted.

Enclosures.

Madras Harbour.

P.W. 1612/84.

23, Abingdon Street,
21st August 1884.

In the concluding paragraph of my letter to you, dated 5th July last, I stated that I was preparing a report, in which I proposed to deal with the various questions which have accumulated in the last two years, and which would include a more detailed explanation and estimate of the proposed works of restoration, together with a classified statement of the operations carried on, and the expenditure incurred, during the period of the general suspension of work. I have now the honor to submit that report.

2. I will begin with the proposed works of restoration. The general character and extent of these works will be as laid down in the first joint report of the committee, consisting of Sir John Hawkshaw, Sir John Coode, and Professor Stokes, dated 23rd January 1883, which I accept as my implied instructions. But the proposals I am about to submit are the result of a careful reconsideration of the existing state of the works, based on records of later date than those laid before the committee above mentioned, and aided by personal conference with Mr. Thorowgood. The details of the new work have been independently designed, but where my conclusions differed from those of the committee I have carefully investigated the grounds of difference, and when I thought there was reason for doing so, I have not scrupled to increase the dimensions given by the committee, and to introduce some additional precautions.

3. There are on the other hand one or two features of the committee's plan, of which I think it only right to state that I am not myself satisfied of the necessity, but I have included these in my own design and estimate in deference to the opinion of the committee. They are works for the execution of which no immediate provision can be made, and if I feel it my duty at some future time to raise the question of their being carried into execution, it will be in consequence of some definite confirmation of my present doubts.

4. On the accompanying general plan of the harbour, to a scale of 200 feet to an inch, the new works are shown in red, and on the sheet of cross sections the character of the work at the different points is shown.

5. Commencing with the shore end of the north pier, and noting that the numbers represent the distance in feet from the point B, the first cross section from 200 to 250 shows the addition required to a special weak point. It is simply the continuation of a form of protection which was applied in 1877 as far as 200, and was so far very effective. There was at that time no occasion to carry it further, but the rubble foreshore has since been worn away by the action

of the sea, and requires feeding and protection. This is shown not only by the foreshore being rather bare in front of the wall, but also by the fact of the centre joint having latterly opened a little, which indicates a settlement. It will be seen by the section that the superstructure is only two blocks high at this part, so that it is founded at a depth at which the action of the sea is considerable, and a wide sloping foreshore is the only protection. Beyond the site of this special protection the superstructure is three blocks high, and founded at a lower level. The protective work consists of a rubble bank 50 feet long and 22 feet wide at the top, and tapered off at either end for a further length of 40 feet. On the top of this rubble 16 concrete blocks, each 9 feet × 9 feet × 6 feet and weighing 30 tons, will be built during the ensuing three months, when the wind and sea may be expected to be invariably from the southward. The northerly seas of the next north-east monsoon will wash down the rubble bank, and the concrete blocks will drop and form a facing for the submerged foreshore, as was the case with similar work in 1877. As this work can be done with appliances now on the ground, as it is of importance to carry it out during the present season, and as it may fairly be considered included in the sanction already given for the protection of existing works, Mr. Beardmore has been instructed to proceed with it; 2,500 tons of rubble and 288 cubic yards of concrete blocks will be required, and the cost will be about Rs. 7,500.

6. The above work will occupy the length from 160 to 290. In the remainder of the length, from 0 to 400, all that is required is to fill up the existing foreshore with a little additional rubble as may be required. This is in accordance with section I of the committee.

7. At 400 the line of continuous protection by random blocks will commence, but from 400 to 900 it will be of gradually increasing dimensions, from a single block laid against the foot of the wall at 400 to a mound 20 feet wide at the level of high water at 900. Within this length the depth of water is such that any waves of sufficient height to be formidable will have been broken outside, and a wave-breaker, as such, is not required. All that is required is a protection against the scour of the foreshore.

8. At 900, where the depth at high water is 25 feet, and from thence outwards, the dimensions of the wave-breaker are intended to be such as to prevent the blow of the wave from falling with its maximum force on the superstructure. What these dimensions should be are not determinable, so far as I am aware, by any recognised rule, whether based on theory or experience. It is a matter in which each engineer must use his own judgment, and mine, based on the best data I am acquainted with, would give rather greater dimensions than those shown by the committee. The difference so far as cost is concerned is not very great. If the additions were made by increasing the quantity of concrete blocks, the increase of cost would be about a lakh and a half, but if made (as I think may be done without any infringement of the essential principles laid down by the committee) by forming the interior of the mound of large rubble, the increase of cost would be only half a lakh. I think I am justified in asking the Government to sanction this modification of the design, so that it may cover my own conceptions of the required conditions of stability, but I shall, of course, be prepared to submit my conclusions to further consideration if it is considered desirable to do so.

9. It will be understood then that the following dimensions for the wave-breaker are rather in excess of those shown by the committee, but the excess is obtained by forming a nucleus of large rubble against the face of the wall and covering it with blocks. This large rubble will be deposited immediately before the blocks, so that it may not be exposed to the wash of the sea before being covered with blocks.

10. At 900 feet, then, as before said, the width of wave-breaker at high water (taken as one foot above De Haviland's mean sea level) will be 20 feet, and the width will gradually increase to 28 feet at 2,200 (see sections at these points). The blocks will be allowed to form their own slope to seaward, each block being simply carried out by the wave-breaker crane to the required distance and dropped into the sea, till the mound has reached the required height. If future storms should draw the mound down to a flatter slope more blocks will have to be added to maintain the designed width at high water level. The slope of 1½ to 1 shown on the sections is that at which it is anticipated the mound will be ultimately permanent in form, but this, of course, cannot be guaranteed.

11. The point 2,200 is the limit to which the existing work can be utilized as a built structure. Since the storm of November 1881 the upper blocks have been tied together with pieces of bent railway bars cemented into them, and the top has been levelled with concrete. Nothing more will be done till, as a final operation, after the whole length of the piers shall have been completed, the capping of concrete in mass about six feet high recommended by the committee is placed upon it.

12. From this point forwards the system of construction will be in a certain sense reversed. Instead of placing a new wave-breaker in front of the old work, the old work will be treated as part of the wave-breaker, and a new wall constructed inside it. By this arrangement the old work will be utilized to the fullest extent, while in the execution of the new work the elements of uncertainty will be reduced to a minimum. It will be a continuance of the system of work hitherto carried on with much success as an executive operation, and of which the cost is well

known. Some modifications and some special works, however, will have to be introduced, which to a small extent will involve new conditions.

13. The mode of passing from one system to the other is shown upon the plan. The old building is standing complete to 2,200, and from that point the new building will commence as a complete section, but in order to form a continuous line along which the setting machines and the blocks and other materials can pass without interruption, it is proposed to build a wall 12 feet wide for a length of 160 feet back, starting at 2,040. This wall will curve away from the old wall (the space between the two being filled in with rubble and concrete) till sufficient space is gained to build the section to the full width of 24 feet.

14. The new building will be of the same general character and dimensions as its predecessor, but there will be some modifications of detail. The original building consisted of two independent walls placed in contact, but not tied together. It is recommended that for the future the blocks should be bonded together, so as to form one wall, and in this recommendation I concur. The unbonded system has great advantages in 'comparatively shallow water, in which the waves have little effect on the blocks themselves, but much on the foundations, while in deeper water the action of the sea on the foundations is less, but that on the blocks themselves is greater, and this fact turns the scale in favor of bond for the outer portions of the piers. At the same time the bond rather increases in some respects the difficulties inseparable from a compressible foundation, and new difficulties are introduced by the special circumstances of the case.

15. It will be seen from the sections that the new rubble base will be deposited over the inner slope of the old, and upon that slope some of the overthrown blocks are lying. All the blocks which lie under the line of the new building will have to be removed, either bodily or by blasting, for if they are allowed to remain they will cause inequalities in the settlement, which will be highly injurious to the superstructure above. In order to avoid these blocks as much as possible I have increased the distance at which the committee proposed to place the new pier from the old one by 9 feet, and this will also place the line of new building more clear of the old rubble.

16. But even with these precautions of removing the old blocks, and increasing the distance from the old work, there will still be a greater liability than there was in the original work to unequal settlement. The sea side of the new building will still partially rest on the old rubble, which has been consolidated by four or five years' exposure to the sea. The new rubble will be in the same position as the old was when first built upon, that is, it will be liable to be compressed to the extent of a foot or 18 inches within a few hours after the weight of the blocks is placed upon it, and to a slower settlement subsequently extending over months, and perhaps years. This latter slow process of settlement, however, is not injurious to the work. But the first is so, it subjects the blocks to great and irregular strains, and is, I think, the most fruitful cause of many of the original blocks having been broken. The evils would be materially aggravated by the fact of one side being more liable to settlement than the other.

17. It is, however, possible materially to reduce these evils, if not to prevent them altogether, and it is proposed to do this by subjecting each length of bed after it is prepared by the divers, and before the blocks are set, to a compression rather greater than that of the blocks themselves. This will be accomplished by placing in front of the work a pile of iron (old rails, with the interstices filled up with cheap cast-iron bars), covering the same area as a row of blocks, and having a weight rather greater than that of the blocks. This "compressor" will be moved forward in advance of the building by the Titan. If, after its removal, it is found to have compressed a bed unequally, the hollow parts will be fitted up with suitable flat pieces of stone before the blocks are set.

18. I propose to introduce another departure from the original design, which will also diminish the evils of settlement. In the original work the foundation blocks were 6 feet high, and above this there were three courses of blocks, each 8 feet high, the whole being 4½ feet wide. It is intended now to use blocks 6 feet high and 6 feet wide, of which there will be five courses, including the foundation course. These blocks will be stronger than those 4½ feet wide, and less liable to break. There is also the incidental advantage that the iron compressors would have to be advanced in stages of 6 feet instead of 4½ feet, and this would accord better with a fair rate of progress of one row per day.

19. It will be seen by the cross sections that the foundation course consists of two blocks of equal length (each 14 feet), the upper courses of blocks of 14 and 10 feet alternately breaking joint. Thus the foundation course will not be bonded. The reason for this is that there would be a practical difficulty in manipulating both the 16 feet and the 12 feet blocks in that situation. I pointed out these difficulties to the committee, and obtained their concurrence to this small departure from their recommendation. The importance of bonding is greatest in the top course, and diminishes in descending. In the bottom course it is practically *nil*.

20. The blocks will be further locked together by means of a projection on the top of one block fitting into a corresponding recess in the bottom of the block above. This principle was adopted in the original work, and was certainly successful in preventing the blocks from sliding on one another, as they had been found to do at Kurrachee and elsewhere. In the present case a

connection of a similar kind will be made between the ends of the 14 feet blocks on one side with the ends of the 14 feet blocks in the courses above and below on the other side, which overlap them, and there will also be hollows and projections on a somewhat similar principle in the backs and faces of the two top courses, thus giving additional ties throughout the whole width. A further tie will be given by means of a bent rail cemented into the two blocks of the top course in every row, but the cramp which is shown in the committee's sections in the second course from the top may, I think, be dispensed with, in consideration of the additional ties provided by the projections and hollows in the blocks themselves. The cramp could be only very imperfectly fixed, as it would be constantly in the wash of the sea, and the necessity of fixing it before setting the top course would be a serious obstruction to the work.

21. There will be an interval of about 45 feet between the face of the new wall and the back of the old one, and in this space the great bulk of the overthrown blocks are lying. The remainder of the space will be filled up with random blocks to form the wave-breaker, of which the remains of the old work will form the sea slope. Any of the old blocks of the two upper courses that remain in place will be removed to the body of the wave-breaker so as to leave the sea face fairly uniform. The two lower courses, of the sea wall at any rate, are very nearly perfect and will form a continuous toe to the slope of the wave-breaker very much as shown in the average section from 2,600 to 3,800.

22. There are now in stock 800 blocks which will be available for use in the wave-breaker. They are not of the best form for the purpose, but they will be used in the under parts where this is not of consequence. About 6,000 additional blocks will be required to complete the wave-breakers, and there will be uniformly 9 feet × 9 feet × 6 feet, and weigh 30 tons each.

23. The same system of work will be continued to the pier head, but the new built work will be curved round as shown on the plan, so as to avoid a great mass of fallen blocks among which the "Titan" is lying embedded, and also to obtain an entirely new foundation for the additional 50 feet of length required to obtain the narrower entrance. The old pier head is standing with the lower courses almost perfect, the interval between the ends of the old and the new work will be built up with a solid wall of concrete blocks, and the enclosed space behind filled in with random blocks. The last 200 feet of the new pier, including the portion facing the entrance, will be made 38 feet wide, instead of 24 feet, and will be founded 12 feet lower than that within the harbour, or 34 feet below mean sea level. Its toe will be protected by an apron of concrete blocks laid on the foreshore.

24. The work at the south pier will be generally similar to that at the north, except that, in consequence of the advance of sand, the protection works need not be commenced so near the shore, and there is no place requiring special protection like that proposed for from 200 to 250 at the north pier. There has been some advance of the sand since the date of the latest survey (1882), and in execution rather less work will be required than is shown upon the accompanying plan and sections, but for the present I have thought it better to base my estimates on the latest complete survey.

25. According to this then the protection by concrete blocks will commence at 1,000, and will gradually increase up to a high-water width of 20 feet at 1,300, where the depth at high water is 25 feet. It then continues with the width gradually increasing to 28 feet at 2,550, up to which point the existing pier is perfect.

26. At 2,550 the new pier commences, being connected with the existing work in the same manner as at the north pier, and is carried on to the head with only such variations as the different circumstances require. The line shown on the plan passes between the overthrown blocks and the Titan. The Titan is not in this case encumbered with blocks, and can be removed by blasting if it should be necessary to do so. The new head will be connected with the old one in the same manner as at the north pier. The difference in the form of the two heads is rendered necessary by the different positions of the fallen Titans, but there is no objection to it, as it will be scarcely noticeable from any accessible point of view.

27. I estimate that the above works will require 3½ years from the recommencement of blocksetting in June next, or till about the end of 1888. The estimated cost is Rs. 45,90,051, including 7½ per cent. for establishment, and 2½ for contingencies, but this estimate does not give a basis for determining the total cost of the harbour as completely restored, without taking into account the expenditure since the storm of November 1881, and the relation of that expenditure to the previous outlay on the one hand, and to the future outlay on the other, I shall show (in paragraph 42 *post*) that a sum of Rs. 2,96,334 has been already expended on works and materials included in this estimate.

28. The total expenditure up to 31st October 1881 was Rs. 58,72,082 including Rs. 1,53,945 expended in the purchase and partial fixing of moorings which were the subject of a different sanction from that of the harbour works proper. It also included the value of certain materials which had been acquired for the completion of the work and are still available.

29. Between 31st October 1881 and 30th April 1884 Rs. 9,08,088 have been expended, and regular monthly statements purporting to account for the details of this expenditure have been

regularly submitted to Government, but as, in conformity with the inflexible rule of the Public Works Department system, all charges are referred to heads for which there is a corresponding sanctioned estimate, the accounts would show that expenditure has gone on increasing for works to which no addition has been made It is obvious that the present form of the accounts can only be viewed as provisional, and that any real explanation of the expenditure must be based on an entire re-arrangement of the statement.

30. At my request Mr. Thorowgood has made such a re-arrangement, of which I append a copy (appendix A). From this it would appear that the total expenditure may be classed as follows:—

	Rs.
1. Actual work, and purchase of materials for work	4,43,972
2. Purchase of land threatened with erosion, and compensation for land washed away	2,58,075
3. Establishment, and salaries of foremen under agreement ...	2,06,041
Total ...	9,08,088

But as the first and second of these items were incurred under the superintendence of the harbour works' staff, they should bear their fair charge for the cost of such, which I place at 10 per cent. for the first, and the sum of Rs. 6,650 (the actual salaries of the persons employed) for the second. With these corrections the items would stand thus:—

	Rs.
1. Actual work, &c.	4,88,369
2. Purchase of land, &c.	2,64,725
3. Establishment. Cost during suspension of work	1,54,994
Total ...	9,08,088

31. Now I would submit that the last two of these items, although fairly debitable to the harbour *undertaking*, are not fairly chargeable to the *works*, and should be kept distinct in any statement of expenditure. I shall have occasion further on to explain the circumstances under which the outlay under the second head was incurred, and I will only now say that it ought to appear in a statement of gain and loss of land, in which there is a credit as well as a debit side. With regard to the third, I need only say that to add it to the item of "Establishment" in the accounts of either the old or the new works could only mislead. I submit that it should appear as an item by itself.

32. There remains to be accounted for the sum of Rs. 4,43,972, or, including cost of management, Rs. 4,88,369, little more than half the total of the official statement. This may be classed under four heads, as under:—

	Rs.
A. Stone revetment for protection of shore north of harbour ...	1,13,618
B. Expenditure debitable to the original design	1,17,769
C. Expenditure consequent on the storm of November 1881 ...	39,509
D. Expenditure in anticipation of the restoration works	1,73,076
Total ...	4,43,972

33. The first of these items is part of a total of Rs. 2,04,627 expended on this object and hitherto charged to "Contingencies." I think it might fairly be placed in the same category as the purchase of land, for which it is simply an alternative, but, at any rate, it should be kept apart as an exceptional item of expenditure.

34. Item B consists of Rs. 75,029 expended on levelling and clamping the injured portions of the piers, and this would have been done even if the remaining portions of the work had not been damaged by the storm; Rs. 15,328 is the expenditure on moorings in the month of November 1881 previous to the storm. The remainder of this item, Rs. 27,412, covers Rs. 16,013 expended on an extension of the town sewer at a spot more than half a mile from the harbour, and chargeable to the harbour funds on rather questionable grounds. This leaves Rs. 11,399 for various small contingent expenses.

35. Item C consists of Rs. 16,485 expended in clearing away the wrecks of the two hopper barges sunk in the storm, and this has to be reduced by more than half of a sum of Rs. 12,835 (the proceeds of a sale of the recovered materials of the barges and some other old materials not easily separable); Rs. 17,803 expended on the recovery, removal, painting, and tarring and stowing away for future use of mooring materials, and Rs. 5,221, repairs to private property damaged in the storm.

36. Item D consists of Rs. 87,230 for new concrete blocks, Rs. 58,079 for various repairs and renewals of plant and machinery, and Rs. 27,767, the net increase in the value of unissued stores and materials since November 1881. The expenditure under this item (D) are charges against the estimate for the restoration works.

37. I have appended (appendix B) a statement of the total expenditure from the commencement of the works to 30th April last, classified under five principal heads, which I would submit for adoption in future accounts. The following is a summary:—

Sanctioned estimate. Rs.	Name of account.	Expenditure. Rs.
56,50,000	I. Original design	56,57,840
2,00,000	II. Moorings	1,90,589
	III. Cost of establishment during suspension of works	1,54,994
	IV. Gain and loss of land	4,82,114
	V. Restoration works	2,96,334
	Total as per official return ...	67,81,871

38. The first of these, I would suggest, may be considered a *closed account*. The official statement of expenditure up to 31st October 1881 has been amended by the addition of such subsequent works as are fairly debitable to the design, and by the removal from it of charges which must still be kept open, some being transferred, as shown in the appendix to account IV and some to account V.

39. The second (moorings) must be kept open, but no further expenditure will be incurred till the restoration works are further advanced. An amended estimate, though not a very large one, will then have to be submitted.

40. The third (cost of establishment during suspension of works) I would suggest should be treated as a *closed account*. A liberal allowance has been made for the legitimate cost of superintendence of such works as have been going on during the general suspension, and the sum of Rs. 1,54,994 is the remainder.

41. The fourth (gain and loss of land) I shall explain more fully further on, and show that it should be treated from henceforth as one side of a Dr. and Cr. account.

42. The fifth will be absorbed in the regular accounts of expenditure on the restoration works, and will appear under the proper heads. Sanction is asked for an estimate of Rs. 45,90,051, against which this amount of Rs. 2,96,334 will be the first charge. The estimate itself, in the form which I submit for adoption, is given in appendix C.

43. I beg now to return to the subject above named, the gain and loss of land. This subject has been treated in former reports as the "sand difficulty" and the "changes of the coast line," but the two latter descriptions are now imperfectly applicable to it, while the first represents the result which is now most prominent.

44. It will be remembered that from the commencement of the works it became manifest that there were movements of sand up and down the coast in opposite directions in the two monsoons, of which the movement from south to north during the south-west monsoon was the greater. This movement being obstructed by the harbour piers the result was an annual advance of the shore line on the south of the harbour, and an annual retreat of the same on the north. The plans show the former in its successive steps for the last seven years. Each blue line shows the most shoreward position of high-water mark for the year. It advances every year from about March to about October, and then retreats from October to March. The rate of increment decreases with fair regularity from year to year, as the length of shore to be covered and the depth of water to be filled increase. It is clear on the one hand that there is no indication of a limit to the advance, and on the other that, considering the decreasing ratio in the rate of advance, the time when it will be injurious to the harbour is still very remote. The area of land gained from the sea up to the present time is 70 acres.

45. Within the harbour there has also been an advance of the shore line, but this took place almost entirely during the years 1876 and 1877, when the north pier formed the only barrier to the northerly movement, the south pier not having then advanced sufficiently to arrest it. Since the latter year there have been some variations in the positions of the high-water line, due to local causes, but no persistent annual advance. The area of land gained within the harbour is 18 acres.

46. To the north of the harbour the result is as might be anticipated, the reverse of that to the south. The preponderating northerly movement of sand causes an annual erosion instead of an accumulation. But the progress is much less regular. This is due to two causes, the one natural, the other artificial. The natural cause is this. The sand within the influence of the waves is subject to two distinct movements, the alongshore movement due to the oblique stroke

of the wave (and this is greatest in moderate weather), the other a transverse movement which is *on* or *off* shore according as the wind is *off* or *on* shore. Thus the *off* shore wind in itself accumulative all along the coast acts with an accumulative alongshore movement to the south, and an erosive movement to the north, and the *on* shore wind of the remainder of the year, erosive all along the coast, acts with the erosive alongshore movement to the south, and the accumulative to the north. Hence the forces are in both seasons acting in concert to the south, and in opposition to the north, and the result is much greater irregularity in the annual changes where they are in opposition.

47. The artificial cause of irregularity is that whenever erosion is manifested protective measures are naturally at once taken, and these counteract the local erosion, even if they drive it to some other locality. As a whole, however, the protective measures appear to have been efficient, for while the gain of land to the south of the harbour has been, as already stated, 70 acres, the loss to the north has been only 41 acres, and this, of course, entirely beyond the limit of the protective works.

48. For the above reasons the conclusions to be drawn from the records of erosion north of the harbour are much less definite than those drawn from the records of the accumulation to the south. We know that erosion is going on, but both the rate of it and the locality for the future are very uncertain. Nevertheless, I think a provisional settlement has now been made upon a tolerably satisfactory basis, and I would ask for a confirmation of it.

49. To explain the present state of the question I must go back to the early stages of the work. The part of the shore affected extends for about two miles northward from the north pier. For three quarters of a mile there was a made road along the shore, and on the landward side of this road stand in succession the Madras Railway Company's Ráyapuram terminus and offices, the Biden Seamen's Home (these are shown on the plan), some merchants' godowns, a first-class bungalow and compound belonging to the late Honorable J. G. Coleman (lately purchased by the Government), and a cluster of small brick-built native houses. Beyond this there was no regular road, but the shore was occupied by hut villages, with few permanent buildings, and timber yards. A little inland are five second-class bungalows standing in compounds having a depth of some 400 feet, beyond which is a good road parallel with the shore. To the northward of the last of these bungalows is a native village with a bazaar, but few permanent buildings, and beyond this agricultural land.

50. As the north pier advanced into the sea in 1876 the first effects of erosion were felt opposite the railway terminus. These were immediately met by the deposit of stone and bags of concrete, and little inconvenience resulted. As the pier advanced further seaward the locality of erosion was thrown further to the northward, and the protective works assumed the form of a continuous stone revetment between the road and the sea, and upon this had been expended up to 31st October 1881 the sum of Rs. 91,009. It extended to a point 3,450 feet from the north pier and a little beyond Mr. Coleman's property.

51. The storm of November 1881 showed, as had been anticipated, that this revetment required an addition of stone, as the first was worked into the sand by the action of the sea. Some of the buildings close to the road were damaged, and were repaired at the expense of the harbour works, but, on the whole, the results of the storm were not serious so far as the revetment extended.

52. But the question was now prominently presented: How far is this protective revetment to be carried? It was effective as far as it went, but costly, and it became evident that it would be possible to spend more in protecting the land than the land itself was worth. In the early part of 1882, therefore, while at Madras, I investigated this question, and satisfied myself that though the revetment was fully justifiable as far as it had gone, for up to that point the evil of erosion would be even greater than the loss of the value of the land, this would not be the case much further on. I therefore recommended that the existing revetment should be strengthened, and that it should be extended northwards sufficiently to make a fair junction with the new line of shore, but that beyond that no further protection should be attempted. All the land abutting on the shore for some two miles northward should be purchased by the Government, so that no further questions of compensation to private owners should arise.

53. These recommendations have since been carried out. The revetment has been completed and extended at a cost of Rs. 1,13,618 and 140 acres of land have been purchased, or its loss compensated for, at a cost of Rs. 2,59,475, and these sums, together with the Rs. 91,009 spent on the original revetment, and the cost of management, make up the sum of Rs. 4,82,114, which I put forward in paragraph 37 as the *debit* side of the "Gain and Loss of Land Account."

54. I have now to show on what the credit side of this account will be based, and while I allow that the great bulk of this is still in the future, yet I submit that the longer the opening of the account is delayed the greater will be the difficulty in establishing it.

55. I have mentioned that 140 acres of land were purchased; of these 41 have been washed away, so that 99 acres remain. The rents of these are collected, and under present orders are to be credited to the harbour works funds. These at any rate should be placed in the new account.

56. Then there have been gained within the harbour limits, as stated in paragraph 45, 18 acres of land. A great part of this has been utilized, and two large godowns have been erected upon it by the Marine Department for port revenue purposes. The value of the accommodation thus given should be credited to the same account, either by the land being transferred to the Marine Department at its fair value, or by an annual payment proportioned to the use made of the land. This payment would no doubt increase from year to year.

57. To the south of the harbour 70 acres have been gained. The Commissariat Department have appropriated an advantageous site, which, five years ago, was in the surf, on which a building, 200 feet by 120 feet, has been erected. Another site has been appropriated in a similar manner by the Marine Department, on which was erected a shed for horses landed from ships. Other buildings of the same kind will no doubt follow, for the situation is a valuable one, and though it is no doubt gratifying to see it utilized, it is somewhat inconsistent that the outlay by which it has been acquired should be debited to one department, and the returns credited to another.

58. The above are Government appropriations, but private individuals are also profiting by the new site. The dealers whose timber yards north of the harbour were purchased at a high price out of harbour works funds are occupying the new beach south of the harbour for the same purpose *rent free*, or if rent is paid it is not credited to the harbour works accounts.

59. I am well aware that if revenue were collected from the sources I have indicated it would make at present but a small show in comparison with the expenditure, but it is certain that it would increase, and it is also desirable that the new land should be recognized as a property which has been acquired by the Government, at a cost of nearly five lakhs of rupees, and that some control should be exercised over its occupation. I would add that I am about to point out a mode of utilization of a portion of a site which would ultimately add materially to the value of the whole.

60. I would now beg to submit some remarks on the future utilization of the harbour, which, although they can only be followed up by definite recommendations for immediate action to a small extent, are, I think, especially called for at the present time, because the subject has been lately under discussion from another point of view. A proposal had been made to alter the position of the entrance, with the view of obtaining stiller water in the harbour, but as this proposal was not approved by Sir John Hawkshaw, Sir John Coode, and Professor Stokes, on reference to them by the Secretary of State, it may now be considered at an end. It is only necessary for me to say that I concur in their conclusion, and I only refer to it now as giving a suitable occasion for pointing out what may be done for improving the accommodation of the harbour with the entrance in its present position.

61. The main points to be kept in view are—

I.—The safety of ships.

II.—The facility for loading and discharging cargo boats alongside the ships.

III.—The facility for loading and discharging cargo boats at the shore.

IV.—The safety of cargo boats and other local craft in bad weather.

62. With regard to the safety of ships, I think it is now generally understood, though it may be somewhat inconsistent with the popular ideas upon the subject, that a harbour may be very useful, even though it may not be a place of absolute safety in the heaviest storms. If Madras were a terminal port, such as London or Liverpool, or even Calcutta or Bombay, the want of absolute safety would be a serious drawback, but Madras is essentially a port of call, where ships only remain for a day or two, and are never dismantled. A steamer's fires are never let out during her stay in the port, and no sailing ship would ever be admitted, unless in very settled weather, without every facility being provided for her leaving at an hour's notice, and in any wind. To be caught in a cyclone at Madras, therefore, is no more than to be caught in a cyclone in mid ocean, provided always that the ship can get to sea. This then is the provision that is wanted, and not a safe mooring in the height of the storm.

Now, it must be remembered that the dangerous storms in the Bay of Bengal never come without notice, but occasionally, indeed frequently, the notice comes without the storm following. This is a source of inconvenience, because precautions have to be taken upon the *notice*, before the actual advent of the storm, when they would be too late. Hence it happens more often than not that when ships are sent to sea they return without having met with the expected storm.

63. But this is an inconvenience which may fairly be expected to be lessened as the indications of storms are better recorded, and the actual courses of existing storms are more perfectly traced. Even as it is, however, the inconvenience is not an intolerable one, and may be taken as an infinitesimally small deduction from the real value of the harbour. During the last two years there have not been more than four or five occasions on which ships have been warned to sea, and not one on which they would have been in actual danger if they had remained at their moorings in the harbour, mutilated though it be. Yet, during all this time, every single steamer has come into the harbour to load and discharge, and paid dues for doing so.

64. It must be admitted that, in one respect, a ship is worse off in the harbour than anchored in the roads outside. She must put to sea at an earlier stage of the warning for bad weather, as the confined space increases the difficulty of manœuvring the ship with a rising wind and sea, setting probably from different quarters. But this is an evil which will certainly diminish with more complete mooring and warping appliances, and more local experience on the part of the marine officers, and it does not touch the question of the ultimate safety of the ship. It has sometimes been asserted that the harbour is a trap from which escape would be impossible. It might perhaps be so once in 10 years if the commander of the ship, and the whole staff of the Marine Department and the Meteorological Observatory, were simultaneously to neglect the most ordinary and well known precautions, but, under existing conditions, such an idea is inconceivable.

65. I submit, then, that the demand for absolutely safe berthage for ships in the height of a cyclone is based rather on sentimental than on practical grounds. The harbour introduces no new element of danger. All that can be said is that, while it gives many new advantages and remedies many evils, it leaves one evil of very rare occurrence untouched. It is right to add that I do not think even this one evil is irremediable at some future time, but at present the circumstances of the port would not warrant the necessary outlay.

66. With regard to the second point, the facility for loading and discharging cargo boats alongside the ship, the advantages of the present over the old system are obvious. Under the old system the ship was anchored at a mile or upwards from the shore to a single anchor, so that she swung with her head to the wind or the current whichever might be the stronger, and rolled to the swell which generally comes from a third quarter. A more "uneasy" position for a ship, even in ordinary weather, it is difficult to imagine, and all around her, while subject to these conflicting disturbances, the cargo boats had to crowd. These boats again were subjected to yet another disturbance, the wind waves, which would scarcely affect the ship except indirectly by constantly driving the boats against her sides. Under these circumstances cargo had to be transferred to and from the boats. Then the boats had to be rowed out and back by manual labor (11 men to a boat carrying two tons) over this mile, and through the surf. The whole operation was one of little danger but of great cost, both in the labor employed, the damage done to goods, and the detention of the ships.

67. Now compare this with the present system. The ship is now brought to within a quarter of a mile of the shore; she is completely out of the current, and, being moored head and stern, is not affected by the wind; her head faces the swell. The wind waves which tossed the boats outside the harbour are much reduced, so that the latter are far more manageable. I mention these details to show that the advantages afforded by the harbour are by no means confined to a reduction of the on-shore swell. Even if this were disregarded altogether (and even those who are loudest in their disparagement admit *some* reduction), the advantages which remain are sufficient to explain the reason of the notorious fact that ships are eager to enter the harbour. Of course it is fully admitted that the more the swell can be reduced the better, but to make this one object paramount is altogether to misrepresent the case.

68. With regard to the loading and discharging cargo boats at the shore, the advantage gained so far is simply that due to the reduction of the waves, whatever that may be. In itself it is not much, but the stiller water enables improvements to be made which would have more effect. The existing screw-pile pier was made for open sea work, and it has inconveniences which are inseparable from such work. The principal one of these is its great height (about 18 feet) above water. With constant smooth water a height of 6 feet would be sufficient, and obviously much more convenient.

69. A few months before the storm of November 1881 two new low level jetties were actually commenced, with the intention that they should for a time supersede the screw-pile pier, which was itself to be altered and adapted to the new circumstances, and again brought into action when required as an auxiliary to the new jetties. The storm put an entire stop to this scheme, at any rate till the harbour is restored, and if it is then revived it must be with considerable modifications. But this scheme was after all only the best under circumstances then existing. New circumstances have since arisen, and another scheme must be adapted to them.

70. Such a scheme may be found in the modification in the system of working the existing pier. The complaint first made was of the great height cargoes had to be lifted, but, in reply to the obvious suggestion that the employment of steam cranes would remedy this evil, the further complaint was started that, even if the goods were lifted more quickly, they could not be removed from the pier on the existing line of railway. Now the pier is 40 feet wide. It contains four lines of railway of 5 feet 6 inches gauge. Upon the same width six lines of metre gauge could be placed. These two additional lines of railway would relieve any conceivable amount of block. All that is wanted, therefore, to *treble* (I think I may safely say) the present accommodation of the pier is to expend fifty thousand rupees on three or four steam cranes with a quick motion, a sufficient stock of narrow gauge trucks, and materials for two extra lines of railway. It is no part of the present duty of the harbour works staff to work out the details of such a scheme, but I have no hesitation in saying that some such would be a perfect solution of any existing or probable difficulty in the landing and shipping of goods at the shore.

71. The last point which I named in paragraph 61, the safety of cargo boats and other local craft in bad weather, is, in my opinion, the most important of all. As I have already shown ships have a refuge at sea, but this is not available for local craft. If they cannot safely ride at anchor they must be hauled up on the beach. This necessity obviously limits the size of the craft to be employed. Masula boats carrying two tons can be beached even when loaded. The cargo boats carrying 12 tons, which were introduced after the screw-pile pier was built, can be beached empty, and were formerly so placed in safety during the two bad weather seasons of the year; but for lighters of 60 to 100 tons, which are essential to an economical system of landing and shipping cargo, for a steam tug, for a floating derrick for lifting heavy articles, and for other craft for which a demand is sure to arise, beaching for purposes of safety is not practicable; safe floating berths must be provided.

72. I had certainly formerly anticipated that craft of this description might have safely lain at anchor within the harbour even in the worst weather, but I am not prepared to resist the impression to the contrary which was produced by the effects of the late storm. It may be that that impression will be removed or modified by further experience of future storms, when the breakwaters are more efficient and the opening for the entrance of the waves reduced; but for the present I will assume that, on the threatening of a cyclone, the present area of the harbour must be cleared by the sea-going ships going to sea, and the local craft in another direction. What is this direction to be?

73. The 70 acres of land gained to the south of the harbour and described in paragraph 44 of this report seem to suggest an answer to the question. It will be seen from the plan that, in March of this year, the high-water line outside the harbour was nearly continuous with the two-fathom contour inside. Two years hence it may be safely predicted that it will be something like 100 feet further out. Now, a dock or basin 1,000 feet long, 300 feet wide, and 10 feet deep at low water, with an opening through the pier into the harbour 60 feet wide, covered by a jetty of concrete blocks running northwards from the pier for 300 feet, would provide accommodation for the whole of the local craft, and would cost, including a stream dredger for the excavation, about 1½ lakh of rupees, and for an additional half lakh the area of the basin could be doubled.

74. I do not suggest this for immediate execution. Craft too large for hauling up on the beach should not be introduced till the harbour is somewhat more complete, but I point it out in general terms as the direction in which the harbour may be extended, and developed to a great extent. The basin would be, in the first instance, a mere place of shelter, but a boat wharf would soon be established on its landward side, and the frontage would become valuable. As the high-water mark advances seaward the basin would be widened, and in course of years its seaward margin would be so near the deep water in the harbour as to suggest the possibility of a ship entrance. With such capabilities in the site which has been added to the harbour property I submit that I am justified in anticipating advantages which will go far to compensate for some disappointment in the degree of stillness obtainable in the area of the harbour itself, and an equivalent for the five lakhs expended in protecting and purchasing land to the north.

75. It is right to state that the idea of the necessity of boat shelter is by no means new. It was urged years ago, and among others by the present Master Attendant, Captain Taylor, as the real want of Madras, and, in the visits I have paid to several other ports of India, I have found that the cost of landing and shipping cargoes is less dependent on the condition of the ship's anchorage, as to exposure or distance from shore, than upon the power of employing larger or smaller cargo boats, and this in its turn depends on the facilities for giving them shelter. But it must be remembered that at Madras a boat harbour would have been impracticable on account of the movement of sand along the shore until works had been carried out far enough into deep water to stop the sand and at the same time to form a ship harbour.

76. I may further suggest that this boat harbour would form the most convenient access to a line of water communication with the Buckingham Canal, and the extensive system of inland navigation in connection with it. The distance is about a mile, and the intermediate ground is almost entirely unoccupied.

77. As the foregoing report has dealt with a variety of subjects, it may be convenient if I conclude by a concise *resumé* of its contents.

Paragraphs 1 to 26 are devoted to a description of the proposed works of restoration.

Paragraphs 27 to 42 contain an analysis of the expenditure especially since the storm of November 1881, and paragraph 37 contains my recommendation as to the apportionment of the items of expenditure to five several heads.

Paragraphs 43 to 59 deal with the question of gain and loss of land by the accumulation and erosion of the sand on the coast.

Paragraphs 60 to 75 deal with the utilization of the harbour, 62 to 65 having reference to the means for ensuring the safety of ships, 66 and 67 to the transfer of cargo between the ships and the boats, 68 to 70 to the loading and discharging of boats at the shore, with a suggestion in paragraph 70 for an immediate improvement of the system of working on the screw-pile pier, 71 to 75 to the safety of cargo boats and other local craft in bad weather, with a suggestion in

73 and 74 for the future utilization of the land gained to the south of the harbour by the formation of a boat harbour.

Paragraph 76 suggests that a communication may ultimately be established between this harbour and the inland canals.

78. In the appendices will be found the following :—

A. Mr. Thorowgood's re-arrangement of the accounts of expenditure from October 1881 to April 1884.

B. Abstract of expenditure from commencement of works to 30th April 1884.

C. Estimate of restoration works as recommended, with statement of expenditure in respect thereof to 30th April 1884.

I have, &c.,

(Signed) W. PARKES.

APPENDIX A.

Madras Harbour.

Analysis of Expenditure between 31st October 1881 and 30th April 1884 by Mr. Thorowgood.

		Rs.
Total expenditure shown in accounts, 30th April 1884		67,69,036
Add recovery on sale of plant and materials		12,835
Total ...		67,81,871
Total expenditure, as shown 31st October 1881 ...	58,72,083	
Add for work done in November 1881, south pier rubble	1,200	
	58,73,283	
Add further for recoveries on "concrete blocks" in north and south piers (of which Rs. 296 is accounted for)	300	
	58,73,583	
Total difference to be accounted for ...		9,08,288

Expenditure.

1. Additions to existing pier works :—			
Concrete topping, clamping, and railways—			
North pier	44,088		
South pier	27,080		
Rubble foreshore and repairs to surf banks—			
North pier	3,861		
South pier			
		75,029	
2. Recovery and destruction of hopper barges		16,485	
3. Recovery and painting mooring gear, exclusive of cost of four pontoon boats (Rs. 8,465)		18,003	
4. Rubble stone revetment, north beach		1,13,618	
5. Repairs to buildings, damages by sea		5,221	
6. New concrete blocks		87,230	
7. Repairs and renewals to machinery and plant, transferred from other heads as below :—			
Concrete blocks	19,082		
Setting blocks	8,819		
Revetment, north beach	1,859		
Moorings	2,000		
North pier, repairs	2,459		
South pier, do.	1,933		
North pier, foreshore	1,766		
South pier, do.	4,552		
Pontoons (item 3)	8,465		
		50,935	

			Rs.
7a. Actual charges under "General Tools" between November 1881 and 30th April 1884, as shown in accounts			7,144
Total to this point ...			3,73,665
8. Establishment taken at 7½ per cent. on the above total ...			28,010
9. Contingencies (including intercepting drain)			27,250
9a. Police, conservancy, and lighting			3,307
10. Compensation paid for land washed away			52,181
11. Purchase of land north of harbour			2,05,894
12. Establishment on items 10 and 11, estimate at Rs. 350 a month for 19 months (nearly 2¾ per cent.)			6,650
13. Taking total establishment charges, as shown in accounts, and adding charge for establishment during suspense, transferred as below, deduct from this total, items 8 and 12 and there remains establishment during suspense			1,68,074
Total charge to 30th April 1884		5,10,809	
31st October 1881		3,51,004	
		1,59,805	
Add from—			
North pier rubble	1,766		
Setting blocks	8,819		
North pier, sea damage	4,918		
South pier, rubble	4,552		
South pier, sea damage	1,932		
Concrete blocks	19,082		
Revetment	1,860		
		42,929	
		2,02,734	
Total ...			8,64,831
Add to this—			
Stone lying at quarry	4,659		
Stores on hand	23,108		
Payments for moorings in accounts of November and December	15,328		
Item No. 34 in account sheet	162		
		43,257	
		9,08,288	

Note.—The above is the basis of the statement forming appendix B, but the items have been further re-arranged to some extent, which accounts for some differences in the figures, though the total amounts will be found to agree.

W. PARKES.

APPENDIX B.

Madras Harbour Works.

Abstract of Expenditure from Commencement of Work to 30th April 1884.

Estimates.	Description of Work.		Expenditure.
			Rs.
	(I) *Original Design.*		
	Expenditure to 31st October 1881	57,18,137	
	Do. in November „	1,500	
	Supplementary protection works	75,029	
	Contingencies	27,412	
	Recovery of wrecks and repairs of storm damage	21,706	
	Establishment, 10 per cent. on Rs. 1,24,147 ...	12,415	

Abstract of Expenditure from Commencement of Work to 30th April 1884—*cont.*

Estimates.	Description of Work.			Expenditure.
				Rs.
	Deduct (transferred to IV and V)—			
	To IV, Revetment	91,009		
	„ IV, Purchase of land	1,400		
	„ V, Concrete blocks	40,281		
	„ V, Stores	65,669		
			1,98,359	
Sanctioned, Rs. 56,50,000	Net expenditure on original design			56,57,840
	(II) *Moorings.*			
	Expenditure to 31st October 1881		1,53,945	
	Do. in November 1881		15,328	
	Subsequent expenditure		18,003	
	Establishment, 10 per cent. on Rs. 33,133 ...		3,313	
Sanctioned, Rs. 2,00,000	Expenditure to 30th April 1884			1,90,589
Submitted for sanction, Rs. 1,54,994	(III) *Cost of Establishment.*			
	During suspension of works			1,54,994
	(IV) *Gain and Loss of Land.*			
	Gained, 88 acres; lost, 41 acres.			
Submitted for immediate sanction, Rs. 5,00,000 to be subject to recovery by rents and value of land utilized.	Protection: Revetment previous to October 1881		91,009	
	Do. do. subsequent to do.		1,13,618	
	Establishment, 10 per cent. on Rs. 1,13,618 ...		11,362	
	Purchase of land and compensation		2,58,075	
	Do., transferred from I		1,400	
	Establishment expenses		6,650	
	Total to be carried to debit of account			4,82,114
	(V) *Expenditure to be charged against Restoration Works.*			
	Concrete blocks, transferred from I		40,281	
	New do. made since October 1881 ...		87,230	
	Repairs and renewals of plant and machinery.		58,079	
	Consumable stores on hand October 1881, transferred from I		65,669	
	Do., balance of additions and issues since October 1881		27,767	
	Establishment, 10 per cent. on Rs. 1,73,076 ...		17,308	
	Total to be carried to debit of account			2,96,334
	Total expenditure to 30th April 1884, as per official return.			67,81,871

21st August 1884.

W. PARKES.

APPENDIX C.

Madras Harbour.

Estimate of Restoration Works.

—	Amount.	Amount.	Expenditure to 30th April 1884.
Preliminaries.	Rs.	Rs.	Rs.
New machinery from England	1,74,050		
Repairs and renewals of old machinery	72,479	...	58,079
Alteration and extension of block grounds	10,000		
Railway materials	71,000		
Total preliminaries ...	...	3,27,529	
North Pier.			
Rubble stone in foreshores and base—			
Ordinary deposited from breakwater, 5,532 tons at Rs. 1-8-0	8,297		
Do. from boats, 182,260 tons at Rs. 2	3,64,520		
Large do. under wave-breaker from breakwater, 14,757 tons at Rs. 1-12-0	25,812		
Concrete blocks for building— (Rs. A. P.)			
Making 58,116 cubic yards at 9 0 0	5,23,044		
Setting 2,062 „ „ 2 0 0	4,124		
Do. 35,245 „ „ 2 8 0	88,112		
Do. 20,809 „ „ 3 0 0	62,427		
Concrete in mass for filling 500 cubic yards at 10 0 0	5,000		
Wave-breaker—			
Built blocks, 288 cubic yards at... ... 10 0 0	2,880		
Ordinary do. 70,849 cubic yards at ... 9 0 0	6,37,641	...	63,756
Depositing do. 70,849 cubic yards at ... 1 0 0	70,849		
Apron blocks, 1,667 do. ... 9 0 0	15,003		
Setting do 1,667 cubic yards at 4 0 0	6,668		
Concrete in bags, 742 cubic yards at ... 12 0 0	8,904		
Cramps, 330 each 10 0 0	3,300		
Concrete capping, 22,400 cubic yards at ... 10 0 0	2,24,000		
Total for north pier ...	...	20,50,581	
South Pier.			
Rubble stone in foreshores and base—			
Ordinary deposited from breakwater, 675 tons at Rs. 1-8-0	1,013		
Do. deposited from boats, 169,517 tons at Rs. 2 ...	3,39,034		
Large do. deposited from breakwater, 15,038 tons at Rs. 1-12-0	26,317		
Concrete blocks for building— (Rs. A. P.)			
Making 52,113 cubic yards at 9 0 0	4,69,377		
Setting 2,062 „ 2 0 0	4,124		
Do. 29,282 „ 2 8 0	73,205		
Do. 20,809 „ 3 0 0	62,427		
Concrete in mass for filling, 500 cubic yards at Rs. 10	5,000		
Wave-breaker—			
Blocks, making 57,066 cubic yards at ... 9 0 0	5,13,594	...	63,755
Depositing do. 57,066 do. at ... 1 0 0	57,066		
Apron blocks, 1,667 do. at ... 9 0 0	15,003		
Setting do. 1,667 do. at ... 4 0 0	6,668		
Concrete in bags, 742 cubic yards at ... 12 0 0	8,904		
Cramps, 275 each 10 0 0	2,750		
Concrete capping, 19,200 cubic yards at ... 10 0 0	1,92,000		
Total for south pier ...	...	17,76,482	

Estimate of Restoration Works—*cont.*

	Amount.	Amount.	Expenditure to 30th April 1884.
	RS.	RS.	RS.
Materials in store to be debited to works during progress.	...	...	93,436
Establishment, 7½ per cent.	...	3,11,594	17,308
Contingencies, 2½ „	...	1,03,865	...
Lighting entrance	...	20,000	...
Total ...	...	45,90,051	2,96,334

21st August 1884.

W. PARKES.

From the Officiating Under Secretary to the Government of India, dated Simla, 28th October 1884, No. 415 M.

Forwarded to the Government of Madras in the Public Works Department for report on the proposals and estimates.

(By Order.)

(Signed) R. B. BUCKLEY,
Offg. Under Secy. to the Govt. of India.

From JULAND DANVERS, Esq., Secretary, Public Works Department, to the Secretary to the Government of Madras, Public Works Department, dated India Office, S.W., 25th September 1884, No. 1433 P.W..

I am directed to transmit herewith, for the information of the Government of Madras, copies of a despatch, No. 56 (together with its enclosures), which the Secretary of State for India has this day addressed to the Government of India relative to the Madras Harbour Works.

From JULAND DANVERS, Esq., Secretary, Public Works Department, to the Secretary to the Government of Madras, Public Works Department, dated India Office, S.W., 10th October 1884, No. 1433/2 P.W.

With reference to my letter of 25th ultimo, No. 1433/1 P.W., I forward herewith the plans (2) referred to by Mr. Parkes in his report on the restoration of the Madras Harbour Works, dated 21st August last.

Office Note from the Examiner of Public Works Accounts, to the Secretary to Government, Public Works Department, dated Madras, 13th November 1884, No. 589.

Your office note No. 1999 D, dated 10th November 1884.

I do not see any objection to the proposed recasting of the heads of account under which the expenditure on the Madras Harbour Works has been recorded. If the re-arrangement be ordered the details can be settled by Mr. Thorowgood in communication with this office.

From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Administrative Department, Madras, to the Chief Secretary to Government, dated Madras, 17th November 1884, No. 10562.

With reference to your endorsement, No. 2532, dated 13th November 1884, I have the honor to state that, under the provisions of the Indian Ports Act XII of

1875, the beach is vested in the Marine Department and not the Harbour Works, and accordingly rent is being levied for the same, at the rate of Rs. 6 per ground per month for the storage of timber, the amount being credited to the harbour dues account in order to assist in meeting the interest on the construction of the harbour. The Railway Company alone pay Rs. 3 per ground per month for the ground held by them, as it is at a long distance from the landing place. Mr. Parkes is in error with regard to the value of the sand reclaimed. The principal portion of it is now a lake, and no building could be erected on it, even if other objections did not exist from a military point of view. The horse stockade has no sure existence. It is liable to be washed away in any storm, and the mule stables, which occupy a slightly higher ground, are erected by Government, and the Marine Department has not taken any rent or claimed any jurisdiction over it.

From A. T. ARUNDEL, Esq., President of the Municipal Commission Madras, to the Chief Secretary to Government, dated Madras, 27th November 1884, No. 1595.

In reply to endorsement, No. 2593, Financial, dated 20th November 1884, I have the honor to report that the municipality does not occupy any part of the new foreshore gained by the harbour, nor does it collect rents from any of the timber merchants or other occupants. The collection of such ground rents by the municipality ceased in 1881 and was left to the proper officers of Government (G.O., No. 234 W., dated 28th January 1881).

No. 2704, Financial.

Transferred to the Public Works Department.

(By Order.)

FORT ST. GEORGE,
5th December 1884.

(Signed) J. D. REES,
Ag. Under Secy. to Govt.

No. 2612, Marine.

Transferred to the Public Works Department.

(Signed) E. F. WEBSTER,
Chief Secretary.

22nd November 1884.

From R. B. BUCKLEY, Esq., Officiating Under Secretary to the Government of India, Public Works Department (Civil Works—Miscellaneous), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 28th November 1884, No. 450 M.

In compliance with the request contained in your letter, No. 2815 W., dated 10th November 1884, I am directed to forward the accompanying copy of a despatch to the Secretary of State, No. 32 P.W., dated 4th July 1884, regarding the restoration of the Madras Harbour.

ENCLOSURE.

Despatch from the Government of India, Public Works Department (Civil Works—Miscellaneous), to the Right Honorable Her Majesty's Secretary of State for India, dated Simla, 4th July 1884, No. 32 Public Works.

In continuation of our despatch, No. 59 P.W., dated 13th November 1883, and with reference to your Lordship's despatches, Nos. 23 and 28 P.W., dated 24th April and 15th May 1884, respectively, in connection with the Madras Harbour Works, we have the honor to forward,

for the information of Her Majesty's Government, copy of a further communication from the Government of Madras, and to state that we concur generally in the opinions therein expressed concerning the restoration of the harbour.

G.O., dated 6th December 1884, No. 6093, Military.

From the Controller of Military Accounts, to the Secretary to Government, Military Department, dated Fort St. George, 1st December 1884, A.

In forwarding the accompanying letter * from the Commissary-General, I have the honor to express my concurrence with the views held by him, and to attach a letter † from the Examiner of Public Works Accounts, to whose department the charge appertains.

* No. 2124 T.B., of 22nd November 1884, stating that the Harbour authorities have no claim to rent for mule lines if it is not within their limits.
† No. 57 C.M.A., of 28th November 1884.

ENCLOSURES.

From the Commissary-General, to the Secretary to Government, Military Department, dated Madras, 22nd November 1884, No. 2124 T.B.

I have the honor to acknowledge the receipt of Proceedings of Government in the Public Works Department, No. 2817 W., of the 10th instant, forwarded for report under your docket, No. 5627, of the 13th idem, and herewith returned as requested.

2. Mr. Parkes, Chief Engineer of the Madras Harbour Works, in paragraph 57 of his report claims rent for the site on which the commissariat mule stables now stand on the plea that five years ago this site was in the surf and that the beach on which the stables stand has been reclaimed in consequence of the construction of the harbour works.

3. It seems open to question whether the reclaiming of this beach was a portion of the original harbour scheme, or whether this steady encroachment of the sand is not a danger which gives the authorities considerable anxiety for the future of the harbour.

4. If this reclamation was not a portion of the original scheme, it appears doubtful whether the harbour authorities can claim rent for a site which they had no direct intention of forming.

5. A question of fact also arises, viz., whether the site of the commissariat mule lines was five years ago in the surf as stated by Mr. Parkes. That officer may not be aware that to prevent the encroachment of the sea a number of stone groynes were many years ago thrown out by the Engineer Department of Government, the first being constructed opposite the office of Messrs. Parry and Company as far back as 1853.

6. These groynes reclaimed a considerable beach, and in default of accurate measurements of the foreshore for many years past I think some further proof is needed of Mr. Parkes' statement that the site on which the mule stables stand has been reclaimed since the harbour works commenced.

7. Moreover if, as I suppose, the commissariat mule sheds are beyond harbour limits the harbour authorities can, I imagine, have no claim to rent.

From the Examiner, Public Works Accounts, to the Controller of Military Accounts, Fort St. George, dated Madras, 28th November 1884, No. 57 C.M.A.

In returning the papers received with your memorandum, No. 2644, dated 25th November 1884, I have the honor to state that this office has no remarks to offer on the question raised.

Order—dated 6th December 1884, No. 6093, Military.

The replies of the Commissary-General and Controller of Military Accounts communicated to the Public Works Department.

(True Extract.)

(Signed) A. KENNEY-HERBERT, Lt.-Col.,
Offg. Secy. to Govt., Mily. Dept.

From F. N. THOROWGOOD, Esq., M. INST. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 6th December 1884, No. 27 W.

I have the honor to acknowledge the receipt of your memorandum, No. 1996 C., of the 4th, asking my opinion as to the sufficiency of the estimates made by Mr. Parkes for the restoration of the Madras Harbour and forwarded with the Secretary of State's despatch, No. 56, of September 25, 1884.

2. I have carefully examined all the details of the estimates, and indeed was in consultation with Mr. Parkes at Westminster when they were made, and I believe that they are perfectly sufficient for the work to be done.

3. I beg to be permitted to add that I hope the arrangement suggested in paragraph 37 of Mr. Parkes' report may be carried out, substituting for the date April 30, 1884, the date at which the *bonâ fide* work of restoration on the new design shall commence, and correcting the figures accordingly. An infinite deal of trouble and numerous petty disputes will be avoided if we can start fair on a new estimate, the detailed arrangements of which can be made between the Examiner of Public Works Accounts and myself.

1 Despatch.
2 Plans.

4. I return the papers marginally noted, as I imagine you intend that I should do.

ORDER—dated 19th December 1884, No. 3127 W., Public Works.

In his despatch of the 25th September 1884, No. 56 P.W., the Secretary of State communicates to the Government of India the conclusions at which he has arrived in respect to the restoration of the Madras Harbour Works. It is intimated that the plan of future operations proposed by Mr. Parkes should be followed generally; the eastern entrance being maintained, in the absence of any additional facts or arguments of sufficient weight to justify a further reference to engineering authority in England. The revised estimates framed by Mr. Parkes should, it is stated, be examined and reported on.

2. His Excellency the Governor in Council observes that a decision having been come to in favor of the eastern entrance, there seems nothing to prevent the immediate prosecution of the work of restoration on the estimates framed by Mr. Parkes, the sufficiency of which for the object in view there seems no reason to doubt.

3. The Examiner, Public Works Accounts, reports that he sees no objection to the proposed recasting of the heads of account under which the expenditure on the works has been recorded. The details of the re-arrangement can now be undertaken on the lines suggested by the Superintendent in his letter, No. 27 W., dated 6th December 1884.

4. It is observed that the accretion to the south of the harbour is vested in the Marine Department under the provisions of the Indian Ports Act XII of 1875, and that the rents collected for occupation of the land are carried to the credit of the harbour dues account, to assist in meeting the interest on the capital cost of the harbour works.

5. A copy of these Proceedings will be forwarded to the Government of India in reply to their endorsement, No. 415 M., dated 28th October 1884.

(Here enter No. 3128 W., dated 19th December 1884.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

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

ENDORSEMENT—dated 19th December 1884, No. 3128 W., Public Works.

Copy of the above forwarded to the Government of India.

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

Exd. C. Howarth.
Spare Copies

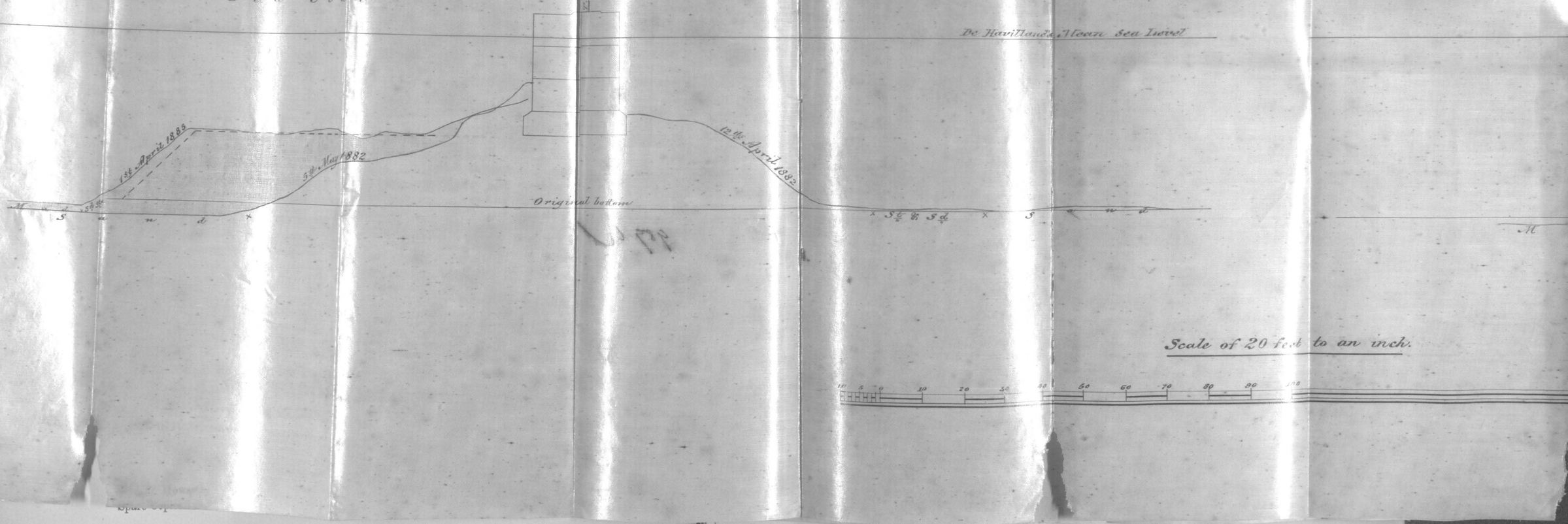
M.H.W

CROSS SECTIONS OF NORTH & SOUTH PIE

Shewing New Foreshore deposited coloured red

North Pier

2150



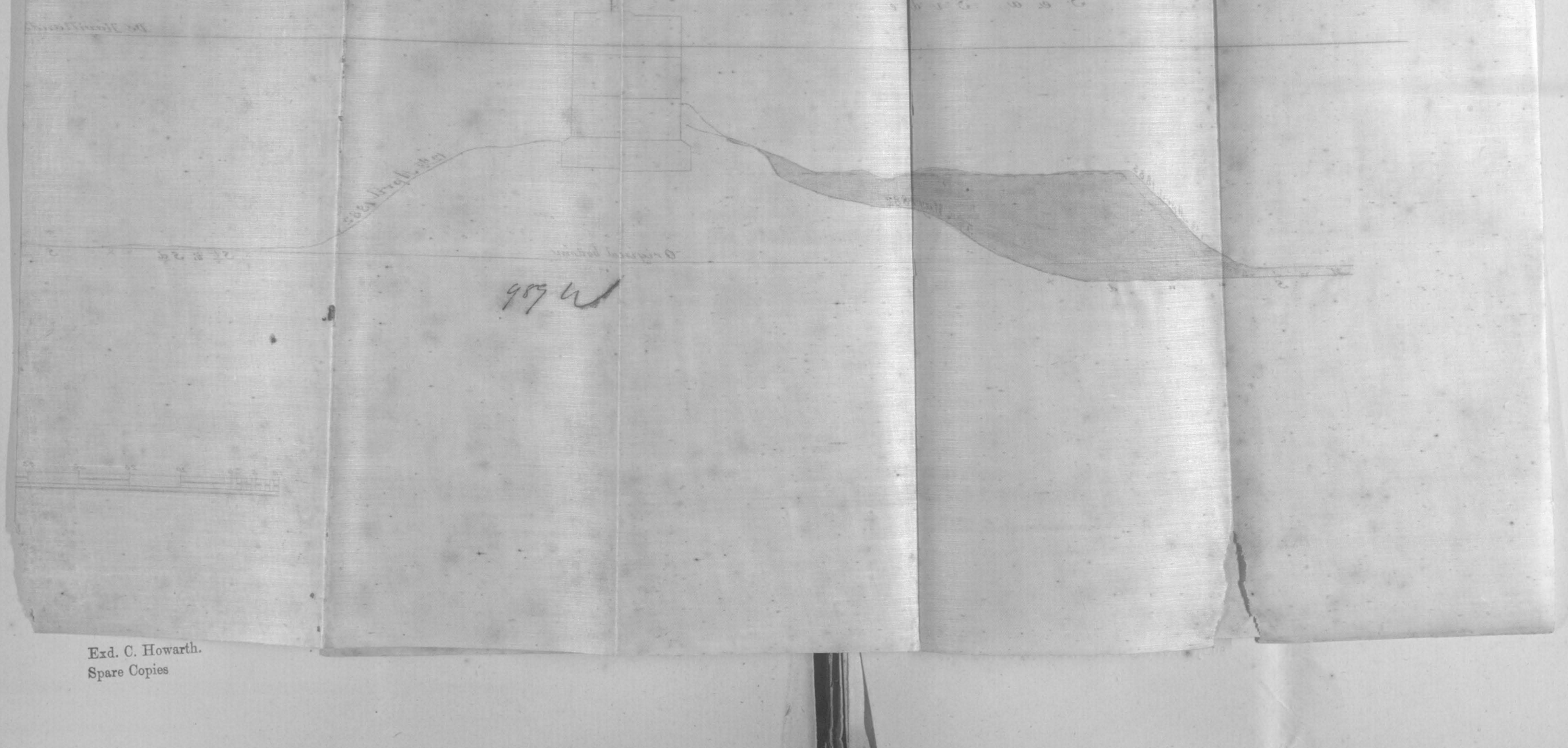
RS.

South Pier

2400



W. Hammond. M. Inst: C.E.
Superintendent.
Madras Harbour Works. 1/4/85.



Exd. C. Howarth.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated December, 19th.

Recd. *Encl.*

G.O., 19th Dec. 1884, No. 3128 W.

DECEMBER.

Madras Harbour Works

Forwarding copy of Proceedings on the subject of the reconstruction of the —.

1887.

P. W. DEPARTMENT.

Current No. 4857

From

The Financial Dept

ENCLOS.— 1.

Cur No. 879.

Dated 22 June 87

Received 23 —.—.—

SUBJECT.

Madras Harbour Works—

Transferring letter from the Acct: Genl submitting explanation regarding the estimate to meet Imperial advances on account of the —.

DISPOSAL.

No. 259 D. Dated 24 June 1887.

Referred with advertence to G.O. No. 595 W of 28 February 1887, to the Chairman Madras Harbour Trust Board, for favour of early report whether a sum of 8 lakhs will be sufficient to meet

expenditure on the Harbour
works during 1887-88. If so,
revised budget estimate
working up to that figure,
should be submitted with
the least possible delay.

(Sd) J. Anstal CSRR
Secy to Govt PWD

To The Chairman dispd. 24/6/87
H.Y. Brand.

Bill 60/6

Bill 1252 W of 11.5.87.
" 995 W " 1.4.87.
56..595-6 W of 28.2.87.
B - 2750 W of 18.10.86
1539 W of 2.7.85
50. 959-90 W of 27.4.85.
- 308 W of 9.2.85.
- 292 W of 7.2.85
Bill 2871 W of 17.11.84.
- 1710 W of 10.7.84
- 1667 W of 3.7.84
- 674 W of 1.3.83
" 3343. of 9.12-76.
2975 W of 12.10.83
3106 W of 14.12.81.
3574 W of 14.12.83.
3128 W of 15.12.84.
1412 D of 21.5.87.

Bills 4342

(5)

P. W. D. Form.
No. M 112.

CENTRAL OFFICE OF ACCOUNTS.

Circle Madras Harbour Works.

Fund Transfers Civil Department

Rs 876/87 Duplicate

Provincial Statement of Objectionable Items in the Accounts of Executive Engineers for the month of March 1887.

No. ———

Madras,

Dated 7th June 1887.

Forwarded for orders to the Secretary to Government, Public Works Department, Madras.

No 1629 W a/16th June/87

~~Examiner of P. W. Accounts,~~
~~Madras.~~

Reference to Madras P. W. D. Code.

Paras.

B. Pro 1295 & 12.5.87

P.W.S. 83.VI
11.13.87

Provincial Statement of Objectionable Items in the Accounts of **Executive Engineers for the month of** March **1887**
requiring the orders of Government.

Item No.	Particulars of each Item.	Month in the Accounts of which Objectionable Expenditure first appeared.	Comparison with Estimate.			Comparison with Appropriation of the Year.			Expenditure during the Month.	Opinion of the Superintending Engineer, with final Remarks by Examiner.	Orders by Government.
			Amount of Estimate.	Expenditure up to Date.	Excess over Estimate.	Amount of Appropriation.	Expenditure of the year.	Excess over Appropriation.			
	Transfers Civil Department Excess over Estimate										No 1629 w dt 16th June 87
	Tools and Plant	Septr 1886	31529	33600	18071				1991	The Superintendent states in the Divisional Objectionable Items Statement for March 1887, that the excess will be absorbed by sales of Tools and Plant at the close of the Harbour Works.	Noted Noted The Engr: is requested to report whether this item may be closed for the present Report whether this item may be closed for the present so far as the books of the PW Dept are concerned the audit of the Harbour construction accounts having been transferred to other agency.

Examiner of P. W. Accounts,
Madras.

Major R. E.

REFERENCE TO MADRAS P. W. D. CODE.

PARAS.

B. No 1166 W/87 28. 4. 87
" 728 W " 9. 3. 87
" 356 W " 8. 2. 87
" 1644 W " 18—1. 87
" 3210 W " 4. 12. 86
G.O. 595 & 596 W 28. 2. 87

P.W.C. No 3372

P. W. D. FORM.
No. M 112.

(2)

CENTRAL OFFICE OF ACCOUNTS.

orig

CIRCLE Madras Harbour Works

FUND Transfers Civil Department

R 4. 5. 87 in duplicate

Provincial Statement of Objectionable Items in the Accounts of Executive Engineers for the month of February 1887.

No. ———

MADRAS,
Dated 3d May 1887.

FORWARDED for orders to the Secretary to Government, Public Works Department, Madras.

B. No 1295 W/87 12th May 1887

Major R.E.
Examiner of P. W. Accounts,
Madras.

15 R/1015
728

Provincial Statement of Objectionable Items in the Accounts of Executive Engineers for the month of February 1887 requiring the orders of Government.

Item No.	Particulars of each Item.	Month in the Accounts of which Objectionable Expenditure first appeared.	Comparison with Estimate.			Comparison with Appropriation of the Year.			Expenditure during the Month.	Opinion of the Superintending Engineer, with final Remarks by Examiner.	Orders by Government.
			Amount of Estimate.	Expenditure up to Date.	Excess over Estimate.	Amount of Appropriation.	Expenditure of the year.	Excess over Appropriation.			
	Transfers Civil Department										
	Excess over Estimate										
1	Tools and Plant	Sept 1886	319529	335609	16080	"	"	"	—	The Superintendent states that the excess over estimate will be absorbed by sales of Tools and Plant at the close of the Harbour Works.	Noted Noted

B. No 1295 Wdy 12th May 1887

Examined
Major R.E.
Examiner of P. W. Accounts,
Madras.

Lee 9/3/87

Wdy 7.5.87

W/8/15

D 12/5

To the Supdt Wks. Ist Circle thro' the Engr. Wks. A

Forwarded the Engr. Wks. A

MADRAS HARBOUR WORKS.

Subordinate Staff.

—	Present Scale.	Scale as now sanctioned. Grade.	Minimum.	Increment.	Maximum.	Mean Pay.	Remarks.
	Rs.		Rs.	Rs.	Rs.	Rs. A. P.	
1. Sub-Engineer	* 400	....	..	..	..	*250 0 0	
Sub-Engineer's Establishment.							
2. First Clerk and Timekeeper	40	4th Class, 1st Grade.	40	2	50	45 0 0	
3. Second Clerk	25	4th do. 2nd do.	30	2	40	35 0 0	
4. Stone Quarry Clerk ..	18	4th do. 3rd do.	20	2	30	25 0 0	
5. Draftsman	20	3rd do.	20	2	30	25 0 0	
6 & 7. Two peons ..	14	....	..	..	..	14 0 0	No grading.
Special Establishment.							
8. Head Foreman of Works.	440	....	..	..	..	440 0 0	No grading.
9. Foreman Engineer ..	300	....	..	..	..	350 0 0	Secretary of State's sanction to be applied for.
10. Do. Diver ..	300	....	..	..	..	350 0 0	Sanctioned by Secretary of State.
Superintendent's Establishment.							
11. Managing Clerk ..	80	2nd Class, 3rd Grade.	100	4	120	110 0 0	
12. First Clerk	35	4th do. 1st do.	40	2	50	45 0 0	
13. Second do.	30	4th do. 2nd do.	30	2	40	35 0 0	
14. Third do.	25	4th do. 2nd do.	30	2	40	35 0 0	
15. Draftsman	45	1st do.	50	4	70	60 0 0	
16. Second Draftsman ..	25	2nd do.	35	3	50	42 8 0	
17, 18 & 19. Three peons ..	21	....	..	..	..	21 0 0	No grading.
Assistant Superintendent's Establishment.							
20. Clerk	35	4th Class, 1st Grade.	40	2	50	45 0 0	
21. Surveyor	50	As Draftsman, 1st Class.	50	4	70	60 0 0	
22. Draftsman	20	3rd Class ..	20	2	30	25 0 0	
23, 24 & 25. Three peons ..	21	....	..	..	..	21 0 0	No grading.
Accounts Establishment.							
26. Accountant	..	According to rank ..	..	..	..	..	
27. Cashier	40	4th Class, 1st Grade.	40	2	50	45 0 0	
28. Clerk	25	4th do. 2nd do.	30	2	40	35 0 0	
Store Department.							
29. Chief Storekeeper ..	220	....	..	..	..	220 0 0	No grading.
30. Assistant do. ..	30	4th Class, 2nd Grade.	30	2	40	35 0 0	
31. Godownkeeper ..	25	4th do. 3rd do.	20	2	30	25 0 0	
32 & 33. Two lascars ..	14	....	..	..	..	14 0 0	
	2,298		..	..	..	2,407 8 0	
						2,298 0 0	
Increase per mensem ..	..		..	..	..	109 8 0	
Increase per annum ..	..		..	..	..	1,314 0 0	

* Exclusive of Presidency house-rent and allowance.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following papers :—

From F. N. THOROWGOOD, Esq., M. Inst. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 18th October 1883, No. 31 W.

Before active operations are resumed on these important works, I feel it my duty to place on record some of the difficulties connected with their control and management which it would, in my opinion, be very desirable to remove, and I therefore have the honor to address Government at some length showing, first, the difficulties ; and, secondly, what I respectfully would suggest as means towards removing them. I do this, however, on the supposition that the work of restoration will be carried on, if not by the same staff, by a similar one to the present, and not by the *bonâ fide* Public Works Department.

2. As compared with other large works in India carried on by Government funds, the Madras Harbour Works are in a peculiar position. The whole control is practically under the officer who holds the post of Superintendent, who has no immediate superior to appeal to, and neither he nor his staff (with the exception of the Sub-Engineer and the Accountant) belong to the Public Works or any other Government department. Questions of engineering have to be referred to the Engineer-in-Chief in England, without whose approval on any important points the Superintendent is not supposed to act. Questions of account and expenditure have to be referred by the Superintendent direct to the local Government without the intervention of any other officer. It is not necessary for me to touch on the magnitude of the works as a whole, but they rank with the largest marine engineering undertaking ever attempted out of the United Kingdom. But having respect to their magnitude and to the peculiar position (as compared with Executive or Superintending Engineers of the Public Works Department) in which the Superintendent stands as regards the control and management of the works, it is desirable that his personal authority should be very strong, as that is practically the ruling power of the works.

3. The position of the staff and establishment is likewise peculiar. For seven years and-a-half employment upon these large works has been classed as "Temporary" by the Accounts Department, although in the Civil Pension Code the definition of the term "temporary employment" is (page 99) that "the employment shall not last more than one year." It now seems not improbable that the temporary employment may extend over a period of twelve years.

4. It has been ruled that employés coming on to this staff are to pass the Government test examination ; and without their having done this, however skilful they may be in any particular line for which the Superintendent selected them, their pay is disallowed. Employés were also ordered to purchase and maintain "Service Registers," such as are used by Government servants. From these facts it was believed by those who originally came on the establishment of these works that although they were not entering upon pensionable Government service, yet that in fact they were

Government servants, and that by keeping up their service registers satisfactorily they would at any rate be able to be transferred from this office to some other under Government.

5. This, however, turned out not to be the case, and although they are bound by the usual restrictions for Government service here as elsewhere, their service registers are but laughed at, and their applications held inadmissible if they seek Government service after having reached the age of 25 years. They are, in fact, not held to be Government servants at all, and but for the fact of their not seeing anything better in prospect, they might be the employés of any private firm or of a contractor.

6. With regard to those, and they are only a few, who have come to this office from other and regular Government employ, and who have claimed, or are thinking of claiming, their pensions, owing to the peculiar position of these works, there seems to be great difficulty in deciding their rights and claims. One excellent native surveyor and draftsman applied for his pension in April 1881 (leaving work on account of ill-health), and again in February 1882 he renewed his application, begging that if the amount of his pension could not be settled, he might have a gratuity "on account," as he was in great want. His pension was settled in July 1882, and his hard service on these works *was not counted towards pension.* He had died, however, a few weeks before his case was settled. Another question of pension is that of Mr. J. Hart, Storekeeper, which has lately been decided in a similar manner, *i.e.*, Harbour Works service is not to count as service at all. In 1876 it was not understood that this would be the case, but now it is placed in a perfectly clear light.

7. Now there can be no doubt that in India the fact of being in "Government service" has not only a great hold on the minds of all employés, but it has more than that, insomuch as it gives the superior officer of those employés a greater hold upon them, and moreover it lowers the rates of salaries by holding a certain prize in view in the future. This hold and this prize are both wanting on the Madras Harbour Works, and I very respectfully submit that the state of things that I have shown now to exist is not conducive to keeping an efficient and willing staff in hand for the next four or five years of hard work. It therefore appears most desirable to me (whoever may have charge of the work) that, before active operations are resumed, all subordinate members of the staff should see that they have something to look forward to in the event of good and diligent behaviour, and something to miss in the reverse case. They now see (which I submit was not made known at the commencement of the works in 1875-76) that as they pass the age of 25 years, they become ineligible for Government service; that even supposing they work here under Government rules and draw their pay from Government for 12 years, their service is only counted as "temporary" and not as "service" at all, and they understand that all they have to look forward to is just employment for the duration of the works without prospect of increase of salary. This is a state of affairs of which I shall venture to suggest an amendment (*vide* "A" further on).

8. In 1879 a change was made by order of Government in the establishment of these works, and many men whose salaries had for $3\frac{1}{2}$ years been charged to "Works" (in accordance with Mr. Parkes's estimates) were suddenly brought upon the "Establishment." Amongst them were some very excellent workers (time-keepers, &c.) who had not passed the requisite Government test examination (referred to in paragraph 4), and who were nevertheless drawing Rs. 20 a-month. This is, strictly speaking, contrary to the rules of the uncovenanted service as notified in the *Fort St. George Gazette* of 26th April 1861, which compels all those who are borne on an "Establishment" to pass the test before they can draw such a salary. The individuals in question were perfectly well instructed in their work, which an outsider would have taken some time to acquire, and no objection was raised at the time of their transfer from "Works" to "Establishment," although, as I have pointed out, they were not after such transfer strictly by the rules entitled to draw the salaries passed to them. On this I have a suggestion to make further on (*vide* "B" hereafter).

G.O., No. 2254 W., dated 3rd September 1879.

9. When work was going on in all its branches at nearly full speed in 1877-78 there were several English Foremen and mechanics serving under the Superintendent

under agreement, and many more of a similar class without an agreement, all of them high-class workmen in their special lines. These men are in the habit of regarding the Superintendent (or Resident Engineer as it would be in England) as their chief superior on the works, and look to him alone for payment of wages punctually when due.

10. This class of men knows nothing of the high authority of the Examiner of Public Works Accounts, and when their salaries are three days overdue and they apply to the Superintendent for payment, it is not always clear to them that they cannot be paid because "the Examiner has not audited the pay sheets," nor does it tend to promote that respect for the Superintendent which the peculiar position of these works calls for. Such a state of things as the above was avoided for some years while the audit of the Examiner followed the payment of wages, but in 1880 it was ordered that the audit should precede payment, and the result has often been three days' delay. It is only on two occasions that any trouble has arisen, and that was of course easily stopped, but I think that the apparent powerlessness of the Superintendent to pay wages that are due without a sufficient reason is not desirable, and this is the third point (*vide* "C" hereafter) on which I shall venture to suggest an amendment.

11. Before, however, recording what I believe would be simple means for removing these obstacles or difficulties now pointed out, I have to ask for sanction to some additions to the staff as it should be when work is resumed.

12. The members of the store and accounts departments have now at last succeeded in keeping up all the various forms required by the Examiner of Public Works Accounts, and, I trust, with fair satisfaction to that officer. But the amount of repetition and copying into different forms the same items is very great, and, in my own opinion, vexatious without being of much use. It is necessary to take stock of tools and plant every six months (to my mind a superfluous labor which an annual return should satisfy here as in England), and this involves writing out two copies of a list showing every single article of plant on the works and quarries. Indeed, of most "returns" of any sort duplicate copies have to be prepared, one being for the Examiner of Accounts. The amount of actual physical writing that has to be done in order, to keep all these many forms up to date, is immense. At present the staff can just manage to do it without letting work get into arrears, but when the receipt and issues of stores and tools is more than quadrupled, and when there are constant arrivals of all manner of articles from England requiring immediate attention on being landed, it will be perfectly impossible to prevent the copying work from getting into arrears. On this account I shall ask for two additional writers, one for copying work relating to receipt and issue of stores, and one for similar work in connection with the accountant. Their salaries and positions will be mentioned in another place.

13. Again, since the partial destruction of these piers in November 1881, an entirely new element has arisen which is at present giving a great deal of very unsatisfactory trouble. I refer to the acquisition of land to the north of the harbour. There are now upwards of one thousand different items of property handed over to the Superintendent of the Harbour Works by the Collector, and on all of these the Superintendent has to do his best to collect the rents. The tenants refuse to pay, and on being pressed leave their huts and go elsewhere. I have brought legal pressure to bear on one of the better class of tenants, but at present he has been indifferent to that. To collect these rents and to keep a proper list of them for submission to the Examiner is really a very considerable work, and one that requires many miles of travelling for those engaged in the collection. At present it is being done by Mr. Beardmore, with one clerk, assisted by a conicopillay and two or three of survey-boat lascars. This, however, could not be arranged if we were at work again, and I shall therefore ask sanction for a special staff of one clerk, one conicopillay and three peons for this work. It will be well to note that the Collector was awarded two extra clerks at Rs. 20 a-month simply for office work in connection with these transactions. On this subject, however, which is very pressing, I have asked for special orders to suit present urgent circumstances.

G.Os., Nos. 2618 W. and 1009 W., dated 9th Oct. 1882 and 2nd April 1883, respectively.

14. Before entering on the subject of my proposals for the future of the staff there is one more point that I wish to call attention, and that is the subject of "travelling allowances." I believe it was quite clearly understood by the Superintendent and Assistant Superintendent of these works in 1875 that no allowances would be granted for ordinary travelling to and from their work, nor for any reasonable amount of travelling about the work itself. At the same time it was not then foreseen that so much travelling would have to be undergone, as is now the case with the inspection of sea encroachments and property endangered thereby. It is impossible to pass over the fact that hardly any choice of places of residence is left to an Englishman in Madras. The district of Ráyapuram, in which the Harbour Works office is situated, contains many houses, but they are always occupied by those whose duty lies entirely on the spot, as for instance, missionaries, officers of the regiment stationed near, and medical officers of the district. Mr. Beardmore for convenience lived at Ráyapuram formerly, but the encroachment of the sea has done away with the house he occupied, and three similar houses are threatened. I submit, then, that it is of necessity that a residence be chosen between $3\frac{1}{2}$ to 5 miles from the Harbour Works office. In full work two visits a day are generally needed, and always so when a survey is being made. In addition to this, the property to the north has to be carefully and persistently inspected for a distance of 3 miles beyond the Harbour office. It thus becomes an easy and common matter to travel 20 miles a day in an ordinary day's work, exclusive of the regular work of inspecting the yards and breakwaters. There is no manner of doubt that this necessitates the keeping of more horses than would be necessary for simply inspecting the Harbour Works and attending to office duty. By the wording of the travelling allowance bills it is perfectly clear that any great amount of travelling from one's "ordinary residence" on service entitles any one in Government employ to some allowance, presumably to compensate for the extra conveyance necessary. In visiting the land to the north of the Harbour (a distance of 8 miles from my residence) I have often sent in to the Examiner an inspection report of these journeys and received a travelling allowance for the day. However, since the passing of G.O., No. 417 W., dated 8th February 1883, I am uncertain whether mileage is to be counted from "one's ordinary residence," as written in the Public Works forms, or from the office, as named in the Government Order. The order at present is a special one for Mr. Beardmore, but probably should apply also to the Superintendent, in which case it will be possible for the Superintendent having arrived at the Harbour Works office to travel $4\frac{1}{2}$ miles up to the coast and $4\frac{1}{2}$ miles back for any number of times, and yet such journeys are to be treated as in the ordinary day's work, in addition to a certain drive of 9 or 10 miles to the office and back. It is hardly necessary to say that these inspections of the coast north and south of the actual site of the works tell rather hardly upon horse and carriage accommodation, and it appears very desirable to know for certain, before work is resumed with full energy, whether any travelling allowance may be claimed from the officer's "ordinary residence," as given in the Public Works forms, or whether the G.O., No. 417 W., dated 8th February 1883, which was passed in Mr. Beardmore's case, is to apply to the present Superintendent, or to any future Superintendent and Assistant Superintendent. The matter is not very important, but it would be better to have it made quite clear.

15. I will now state what I would suggest as remedies for the difficulties mentioned in paragraphs 1 to 12, taking up first the subject "A," paragraph 6.

16. In order that the staff may have something to encourage them to do their best, I propose that an increased rate of pay shall be sanctioned for all appointments over Rs. 18 per mensem, and in the list which accompanies this letter will be found the limit of salary for which I ask sanction. It must be clearly understood that although I apply now for sanction to the highest limit, it does not follow that the limit will ever be reached, and there must be no increase of salary made by larger sums than Rs. 10 at a time, and that three months is to be the very shortest interval between the increments. I ask further that the Superintendent shall have power to make increases of salary up to Rs. 30 on his own responsibility. I must in connection with this request refer to G.O., No. 2016 W., of 31st July 1879, in which the then

Harbour Committee (which I think does not now exist) are empowered to sanction salaries to Rs. 60 per mensem, and the Superintendent himself to make appointments up to Rs. 20. I now ask that the limit may be extended from Rs. 20 to Rs. 30.

17. The effect of obtaining present sanction for prospective increases of salary to those indicated on the list herewith will be to show all the staff that there is some prize to be gained by diligence, some reward to be missed by neglect. It will also serve the purpose for which G.O., No. 2016 W., of 31st July 1879, was passed, namely, to save frequent reference to Government. I should remark that every increase of salary should be formally reported to Government, although it be within the limits of the sanction now asked for.

18. In the list now submitted there are three persons of whom I must speak separately. First, the Honorary Assistant Engineer (formerly Sub-Engineer) Mr. Bhemaya Saenna (No. 1 on list) He proposes shortly to take his pension and retire, and in that case I shall ask for a Sub-Engineer to take his place on a much smaller salary. Mr. Bhemaya Saenna, having come from Kurrachee Harbour Works, has been of the greatest service here, but his services and his salary were special (see G.O., No. 2642, dated 13th September 1875).

19. The second case is that of Mr. Gunther (No. 9 on list), who was appointed by me, with Government sanction, in place of Mr. John Chicken. Mr. Chicken came out on agreement with the Secretary of State in 1876 to serve five years, with free passage out and home. He died in 1878, and Mr. Gunther took his place, under no agreement, in December of that year. The pay of the post in 1876 was Rs. 320 a-month, with Rs. 20 a-month for house-rent, and I propose that Mr. Gunther, who has worked admirably for five years, be paid Rs. 350 a-month, as already suggested by Mr. Beardmore (see G.O., No. 2301 W., of 7th September 1882).

20. The third case is that of Mr. E. deCastre, already referred to in G.O., No. 470 W., of 21st February 1882. I now place the final limit of salary for this post at a higher figure than in February 1882, in order that there may be always a better prospect in advance. I may note that, compared with managing clerks in Government offices, the pay of this post is very small indeed, while the work is fully as hard; indeed, I am not sure that the weekly despatch of letters, plans and reports to London does not make the work more troublesome than in many other offices, as this is an extra piece of work which, owing to the Chief Engineer being in England, cannot be avoided.

21. I believe if sanction is awarded to the schedule herewith submitted, a fresh stimulus will be given to the staff, and there will be something to look forward to as the work progresses. The actual charge to Government for salaries will be less * than when work was going briskly on in 1880, owing to the decrease in the salary of the Sub-Engineer and the abolition of the posts of Inspector of Quarries, two Commanders of steamers, and English Foreman Carpenter.

	Rs.
* Saving by Sub-Engineer	150
Superintendent, Quarries	250
Two Commanders of steamers ...	500
Foreman Carpenter	250
Saving ...	1,150

22. I next come to item "B," paragraph 8. This refers to the Government test examination. I submit that, as practically this office does not reckon as a Government office, the test examination is unnecessary, and of no use; for, since it has been ordered that time-keepers be put on the establishment who were experts at their work and had passed no examination, it becomes inconsistent to insist on others, whom the Superintendent may select for special ability, being made to pass that which perfectly efficient employés have by a lucky accident avoided.

23. Moreover, bearing in mind that practically the staff on the "Establishment" of these works is in no one feature more in actual Government service than are the men employed on the works, it is most inconsistent that the Superintendent has power (as it is absolutely essential he should have) to appoint locomotive engine-drivers and

skilled divers whose pay, with overtime, often amounts to Rs. 180 a-month, and yet he is debarred from appointing a clerk in his office on a salary of Rs. 20 a-month, because the clerk has not passed an examination which qualifies him for service on which he is not about to enter, namely, recognized Government service. On these grounds I ask that the test examination may be abolished.

24. The third point ("C," paragraph 9) is simply asking that the salary bills may be audited after payment, provided always that there is no deviation from the bill as passed for the previous month. This custom was in force for several years and was only changed in 1880. Punctual payment of wages is one of the grand secrets of managing men, and although doubtless the Examiner's office do their best to audit accounts rapidly, it frequently happens that wages are not paid till three days after they are due. This, as I have said before, does not tend to increase the respect for the Superintendent of the Works.

25. The points that I place before Government for consideration are these :—

1*st.*—A scale of salaries as per schedule.
2*nd.*—Abolition of test examination on first appointment.
3*rd.*—Sanction for a special staff for looking after the property to the north.
4*th.*—Audit of accounts to follow payment, except in cases of deviation from previous month's salary bill.
5*th.*—Distinct ruling as to travelling allowances.

26. I ask for these advantages solely with a view to their helping greatly in the management of these works if they are resumed. It is of the utmost importance that some better prospect be in sight for the next period of hard and active work, for there is no doubt that gradually a feeling of disappointment has crept over those who were placed on the "Establishment," as they have discovered that, in spite of having to provide themselves with "Service Books," in spite of having to pass a test examination, and notwithstanding that they were previously employed on pensionable service, their time in this office has reckoned as nothing, *not even as service under Government*, when applying for another post, and they have been worse off than if they had been free from any rules and borne on the charges of the "Works" under the same Superintendent.

27. It is unnecessary for me to add that my proposals are based entirely on the supposition that work will be recommenced, and they are not supposed to have effect until such is the case.

Office note from the Examiner of Public Works Accounts, dated Madras, 2nd November 1883, No. 806.

Your office note, No. 2440 D., dated 22nd October 1883.

I submit the following remarks on the representations of the Superintendent, Madras Harbour Works.

Paragraph 3.—Civil Pension Code, Section 59, is, I take it, the temporary service to which the Harbour Works establishments belong, all except the Accountant and Sub-Engineer. The reference to "page 99" is of course inapplicable in this instance. In referring to the Government of India the question whether the leave rules were applicable to the Harbour Works establishment specially brought out or engaged only for these works, Government of India decided (their No. 91 E.M. and C., dated 1st March 1879) that Section 136, Rule 2, of the Civil Leave Code, was applicable. With this must be read Section 126, Rule 7. So that there is, I think, little doubt that the temporary employment is that referred to in Section 59, Civil Pension Code.

Paragraph 5.—See paragraph 4 of G.O., No. 1829 W., dated 2nd August 1880, and paragraph 2 of G.O., No. 2166 W., of 15th September 1880.

Paragraph 6.—The orders of Government in the Pension Department, Nos. 610 and 701, dated 11th July 1880 and 7th August 1883, respectively, give particulars regarding these cases, and G.O., No. 1829 W., above quoted, gives further particulars regarding Mr. Hart. The matter is now, I think, clear as to claims likely to come up.

Paragragh 7.—See paragraph 4 of G.O., No. 1829 W., above quoted.

Paragraphs 9 *and* 10.—"Punctual payment of wages is one of the grand secrets of managing men," see paragraph 24. I think I may say that, as a rule, no salary bill from the Superintendent has been more than two *working* days in my office. But even if it had been, and it were usual for it to be three or even four days, punctuality could still be observed by considering the 4th or any subsequent date as "pay day." So long as the men are "punctually" paid, it can make but little difference to them whether "pay day" be the 1st or the 7th. The Harbour Works staff is in the same position in this respect as every Public Works office at headquarters whose pay bill must be audited before salaries are paid.

Paragraph 12.—I have already informed the Superintendent that, in my opinion, he should not require more establishment for his stores work than he had when works were previously in full progress. I do not consider the work in the Harbour office so heavy as that in some of our northern divisions.

Paragraph 13.—This has already and lately been dealt with by Government.

Paragraph 14.—This matter has been twice decided by Government in respect to Mr. Beardmore during his tenure of the office of Officiating Superintendent, and orders passed of course apply equally to the substantive Superintendent. Analogous cases in regard to Mr. Jopp, Colonel Burton, Lieutenant Hamilton, and officers at Sangam have been referred to Government and decided unfavorably for the present argument. However see Civil Travelling Allowance Code, Section 27, and Section 3 (*a*) ; also Civil Leave Code, Section 157, Rules 6 and 7.

Paragraph 16.—The estimate for the works used to include a provision of 7 per cent. for establishment, without details; against this provision this Government were able to delegate to the Superintendent or to the Committee power to sanction establishment, appointments on salary higher than Rs. 250 of course excepted. As to increases, the spirit of the rules in Public Works Code, paragraphs 452 and 533, might be applied. A maximum salary being fixed, the Superintendent can give as much less (see paragraph 52 of Code) as he pleases, the rate of increment and its period being decided according to the first above-quoted paragraphs.

Paragraph 19.— On the precedent of the increase granted to Mr. Underdown, the sanction of the Secretary of State will be necessary.

Paragraph 22.—It rests with Government to grant the exemption asked for, either for good and all, or for the period during which the persons concerned may be employed in the Harbour Works establishment.

2. A statement in prescribed form is submitted for information.

Order—dated 14th December 1883, No. 3574 W., Public Works.

In view of active operations being resumed on the Madras Harbour Works, the Superintendent, in his letter above recorded, brings to notice some of the difficulties connected with their control and management, and proposes certain remedial measures, which may be summarised as follows :—

I. A modification of the scale of salaries now drawn by the subordinate staff.
II. Exemption from the Uncovenanted Civil Service Examination rules of men on the staff classed under clerical establishment.
III. Sanction to a special staff for looking after the property acquired by Government to the north of the Harbour.

IV. Audit to follow payment of salary bills, except in cases of deviation from previous month's salary bill.

V. A distinct ruling to be given as to travelling allowances, *i.e.*, whether in the case of the Superintendent, distance travelled is to be reckoned from his residence or office.

2. Under No. I, the Superintendent proposes a prospective increase to the salaries of nearly all the members of the subordinate staff, with the exception of the Sub-Engineer, the pay of which appointment he proposes, on the retirement of the present incumbent, to fix at Rs. 250 per mensem instead of Rs. 400. The net result of the Superintendent's proposals under this head amounts, as shown in the statement submitted by the Examiner, Public Works Accounts, to a possible maximum increase of Rs. 328 per mensem, or Rs. 3,936 per annum.

A modification of the scale of salaries now drawn by the subordinate staff.

3. The Government admit that there are good grounds for the Superintendent's proposals for augmenting the pay of his staff, but they see no reason why the salaries and increments of the clerical establishment should not be regulated by the rules laid down in paragraphs 452, 521, 522, and 533 of the Public Works Code. Sanction is accorded, therefore, to the scale of establishment in the statement appended to this order, but it must be understood that no increased pay can be drawn until sanction has been received to commence the work of reconstruction.

4. The proposed increase to the salary of Mr. Gunther, Foreman Engineer, will be submitted for the sanction of the Secretary of State.

5. The two additional clerks applied for by the Superintendent, for store and account work, have not been included in the scale now sanctioned. Before deciding whether the increase is absolutely necessary, the Government desire that the Superintendent will, with reference to the remarks on the subject by the Examiner, Public Works Accounts, place himself in communication with that officer, and see whether means cannot be devised to simplify and lighten the work referred to. A further report on this subject may be submitted by the Superintendent hereafter.

6. The second of the Superintendent's proposals, dealt with in paragraphs 8, 22, and 23 of his letter, will be remitted for favorable consideration in the Educational Department. The Government in the Public Works Department consider that there is reason in Mr. Thorowgood's arguments in favor of exempting his clerical establishment from the examination rules.

Exemption from the Uncovenanted Civil Service Examination rules of men on the staff classed under clerical establishment.

7. With reference to the third proposal, the Superintendent is requested to report whether there is any reason why the charge of the property acquired by Government to the north of the Harbour should not be handed over to the Revenue authorities. When active operations are resumed, the energies of the whole of the Harbour staff should be devoted to their legitimate and heavy work, and it seems no part of the duty of such staff to be concerned in the charge of land and the collection of rents. The protective works on the foreshore will of course remain in the hands of the Superintendent. On receipt of Mr. Thorowgood's views on this question (which should be submitted in a separate letter), the matter will be further considered in communication, if necessary, with the Revenue Department.

Sanction to a special staff for looking after the property acquired by Government to the north of the Harbour.

8. With regard to the fourth point, the rule in paragraph 498 of the Public Works Code will be relaxed, as a special case, in favor of the Harbour Works staff, but salaries will be disbursed strictly under the conditions prescribed in paragraph 499.

Audit to follow payment of salary bills except in cases of deviation from previous month's salary bill.

9. On the fifth point, the Government have already given a decision in their Order, No. 417 W., dated 8th February 1883, paragraph 2 of which is of course applicable to the permanent Superintendent. The Government regret that it is not possible to meet Mr. Thorowgood's views on the subject.

A distinct ruling to be given as to travelling allowances, *i.e.*, whether in the case of the Superintendent distance travelled is to be reckoned from his residence or his office.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Examiner, Public Works Accounts.
" Educational Department.
" Revenue do.

Exd. A. F. Goodall.
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BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated December, 14th.

Recd. *Encl.*

G.O., 14th Dec. 1883, No. 3574 W.

DECEMBER.

Madras Harbour Works

Passing orders on letter from the Superintendent proposing certain changes in the establishment, &c., of the — on the commencement of its reconstruction.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

14th December 1881, No. 3106 W.

Buildings and Roads.
Civil Works.

Read the following paper:—

No. 59. From F. N. THOROWGOOD, Esq., M. INST. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 5th December 1881, No. 71 W.

I HAVE the honor to submit a report of what has been done during the past month of November on these works, although the storm of the 12th has resulted in such damage as to place a progress report out of the question.

2. WEATHER.—The sea since the 20th has been so rough that all surveying operations have been stopped, thereby delaying the submission of a final report, with plans, of the damaged piers.

3. NORTH PIER.—Previous to the storm of November 12th there had been 255 tons of granite stone tipped at the end of the rubble base to fill up hollow and low places. And since 12th there have been 655 tons of stone deposited at the commencement of the blockwork to repair the breach caused by the sea of 12th. A few repairs have been carried out on the railway lines, enough to allow engines and trucks working on the beach improvement work.

4. SOUTH PIER.—There were five blocks set at the end of the south pier on the 1st November, after which the Titan was withdrawn and the end blocks were secured together by iron tie-rods. There were also 591 tons of granite stone tipped from boats for levelling up the base. The railway lines damaged by the sea have been in some degree repaired.

5. PROTECTIVE WORKS TO THE NORTH.—The sea encroached very badly to the north of the Harbour on the 12th and 13th, and has made such wholesale ruin and devastation that it will be a very heavy undertaking to restore the line of coast. Since the 14th the sand has in a great measure accumulated again, but the damage done to buildings is still very serious. I send herewith a large scale plan (100 feet to one inch) of the whole coast line, showing the high water mark at the end of October, on the 14th November, and at the end of November. The encroachment on the 12th to 14th was so very serious that it seems to me that if Mr. Coleman's house, and the Cotton Press compound adjoining, are to be preserved, we must throw down another and more massive revetment than before, and to do this will certainly require as much stone again as has been already used.

6. BEACH IMPROVEMENT WORK.—I have gone on with the levelling up of the foreshore on the beach, and with the laterite covering to the same, for which purpose 2,743 tons of laterite were used in November. The rubble-stone commencement of the two jetties was scattered about and dispersed very badly on the night of the 12th, to such an extent indeed that I think it will not be advisable to repeat this feature of the design until the beach is more protected from surf.

7. GENERAL.—It is hardly necessary to state that the storm of November 12th has entirely changed the aspect of affairs as regards the completion of the Harbour and moorings, as it has not only destroyed much of the piers but has deprived me of most necessary appliances. I am reducing the number of hands as much as possible, but retaining the divers at present to recover gear from the *Hobart* and *Salisbury* and to resume investigations of the bottom when the weather will permit. With the assistance of the raft and gear belonging to the Marine Department we have already recovered much of the screwing machinery from the sunken vessels.

8. On the 7th November His Excellency the Governor visited the works, accompanied by the Chief Engineer, Public Works Department, and again on the 15th His Excellency proceeded along the damaged piers as far as was possible.

No. 60. ORDER THEREON, 14th December 1881, No. 3106 W.

RECORDED with the observation that the Superintendent of the Harbour Works should lose no time in submitting an estimate (including all past outlay) for a longitudinal revetment extending along the foreshore, north of the Harbour, to such distance as the erosions made by the storm of the 12th November prove to be necessary; the estimate to be accompained by a statement of the means at disposal, and the time likely to be occupied in the execution of the work.

(True Extract.)

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

To the Superintendent of the Madras Harbour Works.
„ Engineer-in-Chief, Madras Harbour Works.
„ Marine Department.

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

Gubt. of {1881} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT OF THE
MADRAS HARBOUR WORKS,

&c., &c., &c.

Dated December, 14th.

Issued

Recd. *Encl.*

G.O., 14th December 1881, No. 3106 W.

DECEMBER.
Nos. 59-60.

Madras Harbour Works.—Monthly Report on the state of the — for November 1881, recorded with certain observations.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following letter from F. N. THOROWGOOD, Esq., M.INST. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 3rd October 1883, No. 25 W.:—

Although very little constructive work has been carried on since January 1st' 1883, it seems advisable that I should briefly inform Government of the state of the harbour works at the close of the south-west monsoon. I therefore have the honor to submit the following report.

2. *General Aspect of the Harbour Works.*—No change has occurred in the arrangement or extent of the ruined blocks since this year commenced. The sea has been very quiet and consequently no blocks have been shifted from their position. In fact the damaged portions of the piers are practically in exactly the same state as they were on November 13th, 1881.

3. Along the shore line between the piers the action of the reflected waves of the south-west monsoon coming off the north pier has caused an erosion of sand and a deepening of water near the commencement of the north pier. Indeed, the rubble of the surf bank has been attacked and undermined to a certain extent. Further or serious damage will be prevented by rolling in heavy gneiss boulders of which a supply is near at hand. This protective work is now being carried on.

4. *North Pier.*—During the year 1882-83 the north pier was strengthened by fixing clamps between the inner and outer rows of top blocks, fastening the two rows securely together. Granite or gneiss foreshore was also thrown over to protect the foot of the seawall from undermining. The top of the pier has been recently made up and levelled with strong cement concrete, and five stone mooring posts or "bollards" have been fixed for the convenience of small craft in the harbour.

5. In spite of the slight protective works just mentioned, it is evident that some movement still takes place in the north pier. The centre joint has opened nearly two inches in some places where there are no clamps, and even the clamped work shows evident signs of vibration, as manifested by the breaking up of the concrete near the centre joint.

6. *Protective Works and Compensation Claims to the North.*—The sea has encroached considerably to the north of harbour. Where the shore is protected by a stone revetment no damage is done, but immediately beyond this the encroachment is very severe, threatening to destroy the really good houses which are now Government property. The amount of money expended on the protective revetment (now discontinued) is Rs. 2,12,397, the amount expended upon compensation to owners of property for damage done is Rs. 52,182, and the amount paid for land is Rs. 1,51,068, giving a total of no less than Rs. 4,15,647 for this contingent expense of the harbour works. And while touching upon this subject I must remark that the inhabitants of the villages where the sea encroached are proving themselves to be entitled to very little consideration. Their one object is to obtain money from Government on account of some real or imaginary damage to their houses. Having obtained some compensation

on the ground of being "houseless," they quietly settle down in some hut on the newly acquired Government land, and to extract one anna of rent from them is, frequently, well nigh impossible. If they get a notion that a house or hut is about to be taken up for the harbour works they will proceed to clear out all the fixtures and make away with them. It must not be thought that these measures go on without most vigorous attempts to stop them, but it is in spite of all the efforts of this staff that they occur, and in spite also of the more powerful hand of the law.

7. With regard to the steady encroachment of the sea itself, I think it is time that a line should be drawn as a limit of the responsibility of the harbour works. Property is now being acquired by the Collector three miles away from these works, and if the harbour is to be held responsible for slow and steady encroachment so far north as that, it is hard to see by what logical inference we can avoid responsibility for another three miles.

8. From old histories of this coast it appears absolutely and perfectly certain that the sea has always been liable to encroach at some points, and in the seventeenth century Fort St. George was in imminent danger. My own belief is that the sea would encroach to the north if there were no harbour at all, although it is impossible to doubt that the sudden and severe encroachments within a mile of the north pier (which occurred during its construction) are attributable to the sudden projecting into the open sea of a solid obstruction.

9. *South Pier.*—The south pier has been levelled up smooth and clamped together with 213 iron clamps, and is altogether in a satisfactory state. No protective foreshore of rubble stone was deemed necessary to this work. The shore to the south of the harbour continues to advance slowly seaward.

10. *Quarries.*—From Pallávaram quarries 4,961 tons of gneiss stone have been received since January 1st, but since March the quarries have been practically closed, a payment having been made to the contractor for stone quarried and stacked but not loaded into wagons. (Sanctioned by G.O., No. 1633 W., dated 11th June 1883.) The Ambatúr quarry for laterite is also closed and dismantled, the railway plant and materials being sold to the Madras Railway Company.

11. *Repairs to Plant, &c.*—The small working staff that I have retained on the works have been occupied in overhauling and repairing plant and machinery. The three locomotive engines are being put into thoroughly good order, and the four boilers of the stationary engines have been completely overhauled and all faults made good. The machinery employed for screwing the moorings in 1881 has been dismantled, painted and laid aside. The pontoon of boats used as a substitute for the two ill-fated steamers, *Hobart* and *Salisbury*, has also been dismantled and hauled up. The mooring screws and mooring chains and shackles have all been carefully sorted, stacked away, and thoroughly well served over with boiling tar. At the beginning of the year the clearing away of the wrecks of the two steam hopper barges was completed, and the broken materials were returned to the yard to be sold by auction.

12. *Sale of Materials.*—A considerable sum has been realized by the sale of various articles from the works, details of which I subjoin :—

	Rs.
Madras cement sold to officers of the Public Works Department ...	8,104
Timber sold to private persons	312
Plates of hopper barges and old railway material	8,819
Material of hopper barges	3,692
Total ...	20,927

Another sale of old materials will shortly take place.

13. *Cement.*—The Madras Cement Works continued to supply excellent cement up to the end of May, when their contract expired. It is greatly to be regretted that the price of Rs. 40 per ton is not reduced, as I am able to prove that the English Portland cement delivered on these works costs less. The price of Portland cement in England, as last supplied through the India Office to these works, was 39*s.* 3*d.* per ton, or Rs. 23-8-10 at the fixed rate of exchange for the year. Freight and landing

charges amount to Rs. 14-10-1 per ton, giving a gross cost of Rs. 38-2-11 per ton of first-rate English Portland cement in the sheds of the Madras Harbour Works. Supposing that for the work of restoration 20,000 tons of cement will be required, there would be a saving of Rs. 36,250 in obtaining it at Rs. 38-2-11 per ton instead of at Rs. 40. But it may be presumed that the local manufacturers would reduce their price in the face of these figures.

14. In conclusion I may remark that incomplete and broken as the harbour piers now are, there is no manner of doubt that the advantage they afford to vessels coming within their shelter is immense on all days of ordinary weather, and this strengthens the belief that if the works be efficiently restored, it is hard to put a limit on the benefits that may be hoped for in really smooth and quiet water.

Order—dated 12th October 1883, No. 2875 W., Public Works.

Recorded.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Master Attendant.
" Marine Department.

Exd. E. Fernandez.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1883} Madras.

PUBLIC WORKS.

Dated October, 12th.

Recd. *Encl.*

G.O., 12th Oct. 1883, No. 2875 W.

OCTOBER.

Madras Harbour Works

Report by the Superintendent on the present condition of the —, recorded.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following papers :—

From F. N. THOROWGOOD, Esq., M. Inst., C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 20th December 1884, No. 29 W.

I have the honor to submit final proposals regarding the staff of the Madras Harbour Works arising out of the proceedings of Government recorded in G.O., No. 3574 W., of 14th December 1883)which refers to the general establishment), and in G.O., No. 2891 W., of 19th November 1884, paragraph 3, referring to two extra clerks whose entertainment needs special sanction.

2. First, referring back to G.O., No. 3574 W., of 14th December 1883, and to the subordinate staff therein sanctioned, it will be observed that the first subordinate mentioned is the Sub-Engineer. Since these works first commenced, this post has been most ably filled by Mr. Bhemaya Saenna of the Bombay Public Works Department (see G.O., No. 2642, of 13th September 1875), but for the last three years his health has been very bad, and, much against his will, he proposes to retire. No one could have done his duty more efficiently, or been of greater service to Government on these works than Mr. Bhemaya Saenna. In the view of full work being resumed in January or February next, it will be necessary for me to have some one in Mr. Bhemaya Saenna's place, and therefore ask that an efficient Sub-Engineer of a lower grade be provided for these works, his pay and allowances being on the sanctioned scale. I beg that one who has already been on active work may be allowed, and it will be desirable that for a month he should be here with Mr. Saenna, as the work is complicated.

3. Secondly, I have the honor to ask that, on the sanctioned scale coming into play, I may be permitted *at once* to give the increase of Rs. 2 per mensem to several of those subordinates for whom this increment is permitted as a yearly reward. I ask for this very particularly, as otherwise the scale works rather unfairly by giving several employés a rise of Rs. 5 at once, and no rise to others until a year has passed. I propose that I may be allowed discretion as to who shall receive the Rs. 2 addition to their salary, and who shall wait a year.

4. The third and last point, I have the honor to submit, is that mentioned in paragraph 3 of G.O., No. 2891 W., of 19th November 1884, namely, the employment of two additional writers on an average salary of Rs. 17-8-0 a month.

5. As directed in paragraph 5 of the G.O., No. 3574 W., of 14th December 1883, I have conferred with the Examiner of Public Works Accounts on this subject, and have pointed out the necessity of extra writers. The Examiner has now so arranged that I shall only require one extra writer, and if, after the most serious work of landing stores and machinery is concluded, I find I can do without this extra hand, I will of course dismiss him ; but I beg that power may be given me to entertain one more writer when necessary on from Rs. 15 to a possible Rs. 20 per mensem.

Office note from the Examiner, Public Works Accounts, dated 10th January 1885, No. 731.

From F. N. THOROWGOOD, Esq., M. Inst., C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 29th January 1885, No. 33 W.

In reply to your memorandum of the 28th January, No. 163 C., I have the honor to submit, herewith, a fresh proposition statement as requested, and beg that it may be sanctioned.

2. The individuals for whom I should like to provide an advance of pay of Rs. 2 monthly at once on recommencement of full work are three in number, namely, —

Draftsman, No. 5 on list herewith.
Cashier, ,, 27 on do.
Assistant Store-keeper, No. 30 on list herewith.

I can testify that these three men, who have been working well for years without an increase or prospect of an increase of pay, are most deserving of an immediate advance.

3. I have inserted at No. 28 A the extra writer I require for the mechanical work of copying and checking additions under the accountant, and, as already mentioned in my letter No. 29 W., of 20th December 1884, paragraph 5, the Examiner has been good enough to so arrange the work that one extra writer will be sufficient.

4. It will be observed that the proposition statement herewith submitted is precisely similar to the one sanctioned in G.O., of 14th December 1883, No. 3574 W., with the three exceptions referred to in this letter.

Enclosure.

MADRAS HARBOUR WORKS.

Subordinate Staff.

—	Present scale.	Scale as now proposed. Grade.	Minimum.	Increment.	Maximum.	Mean pay.	Remarks.
	Rs.		Rs.	Rs.	Rs.	Rs. A. P.	
1 Sub-Engineer ..	400	....	..	..	..	250 0 0	Exclusive of presidency house rent and allowance.
Sub-Engineer's Establishment.							
2. First clerk and timekeeper.	40	4th class, 1st grade.	40	2	50	45 0 0	
3. Second clerk ..	25	4th do. 2nd do.	30	2	40	35 0 0	
4. Stone quarry clerk.	18	4th do. 3rd do.	20	2	30	25 0 0	
5. Draftsman ..	20	3rd do.	20	2	30	25 0 0	Submitted for increase of Rs. 2 at once.
6 & 7. Two peons ..	14	....	..	..	..	14 0 0	No grading.
Special Establishment.							
8. Head Foreman of works.	440	....	..	..	..	440 0 0	Do.
9. Foreman Engineer.	300	....	..	..	..	350 0 0	Secretary of State's sanction to be applied for.
10. Do. Diver ..	300	....	..	..	..	350 0 0	Sanctioned by Secretary of State.
Superintendent's Establishment.							
11. Managing clerk ..	80	2nd class, 3rd grade.	100	4	120	110 0 0	
12. First clerk ..	35	4th do. 1st do.	40	2	50	45 0 0	
13. Second clerk ..	30	4th do. 2nd do.	30	2	40	35 0 0	
14. Third do. ..	25	4th do. 2nd do.	30	2	40	35 0 0	
15. Draftsman ..	45	1st do.	50	4	70	60 0 0	
16. Second draftsman ..	25	2nd do.	35	3	50	42 8 0	
17, 18 and 19. Three peons.	21	....	..	..	..	21 0 0	No grading.

Subordinate Staff—*cont.*

—	Present scale.	Scale as now proposed. Grade.	Minimum.	Increment.	Maximum.	Mean pay.	Remarks.
Assistant Superintendent's Establishment.	Rs.		Rs.	Rs.	Rs.	Rs. A. P.	
20. Clerk	35	4th class, 1st grade.	40	2	50	45 0 0	
21. Surveyor	50	As draftsman, 1st class.	50	4	70	60 0 0	
22. Draftsman ..	20	3rd class	20	2	30	25 0 0	
23, 24 and 25. Three peons.	21	....	..	..	..	21 0 0	No grading.
Accounts Establishment.							
26. Accountant	..	According to rank ..	..	..	..	..	
27. Cashier	40	4th class, 1st grade.	40	2	50	45 0 0	Submitted for increase of Rs. 2 at once.
28. Clerk	25	4th do. 2nd do.	30	2	40	35 0 0	
28-A. Writer ..	15	....	15	1	20	17 8 0	Extra writer for whom sanction is now asked.
Store Department.							
29. Chief Store-keeper.	220	....	..	..	..	220 0 0	No grading.
30. Assistant do. ..	30	4th class, 2nd grade.	30	2	40	35 0 0	Submitted for increase of Rs. 2 at once.
31. Godown-keeper ..	25	4th do. 3rd do.	20	2	30	25 0 0	
32 and 33. Two lascars.	14	....	..	..	..	14 0 0	
	2,313	....	..	..	..	2,425 0 0	
	..	....	..	..	..	2,313 0 0	
Increase per mensem ..	..	....	..	..	..	112 0 0	
Increase per annum ..	..	....	..	..	..	1,344 0 0	

Order—dated 7th February 1885, No. 292 W., Public Works.

In view of the circumstance that the three men named by Mr. Thorowgood have received no increase of pay for many years, and that they will derive no immediate benefit from the scale sanctioned in G.O., No. 3574 W., dated 14th December 1883, the Government, as a very special case, are pleased to authorise the grant to them of a first increment of Rs. 2 per mensem immediately on the resumption of active operations on the Madras Harbour Works.

2. The employment of an additional clerk on Rs. 15—20 per mensem is also sanctioned.

3. The appointment of a Sub-Engineer *vice* Mr. Bhemaya Saenna is being separately considered.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
,, Examiner, Public Works Accounts.

Exd. E. Fernandez.
Spare Copies

GENERAL.
ESTABLISHMENT.

Govt. of {1885} Madras.

PUBLIC WORKS.

Dated February, 7th.

Recd. *Encl.*

G.O., 7th Feb. 1885, No. 292 W.

FEBRUARY.

Madras Harbour Works

Orders on application from the Superintendent forwarding revised statement of establishment for the —, and requesting the appointment of a Sub-Engineer *vice* Mr. Bhemaya Saenna.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following letter from Lieutenant-Colonel A. FILGATE, R.E., Deputy Secretary to the Government of India, Public Works Department (Account—Civil Works), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 4th February 1885, No. 16 A.C.W. :—

In continuation of Public Works Department letter No. 310 A.G., of the 31st December last, and with reference to your endorsement No. 3153 W., dated 23rd December 1884, I am directed to state that the Government of India has been pleased to sanction a further advance of Rs. 50,000 from Imperial funds in order to provide for outlay during the current year on the Madras harbour works.

2. The outlay incurred by the Public Works Department will be adjusted by debit to the Civil Department in the manner laid down in Public Works Department resolution, No. 104 A.G., of the 14th March 1884.

Order—dated 9th February 1885, No. 308 W., Public Works.

Communicated to the officers concerned, with reference to the undermentioned proceedings :—

G.O., No. 852 W., dated 28th March 1884
„ „ 2891 W., „ 19th Nov. „
„ „ 2893 W., „ 19th „ „
„ „ 3152 W., „ 23rd Dec. „
„ „ 77 W., „ 10th January 1885

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
„ Examiner, Public Works Accounts.
„ Marine Department.
„ Financial „

Exd. E. Fernandez.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of [1885] Madras.

PUBLIC WORKS.

Dated February, 9th.

Recd. *Encl.*

G.O., 9th Feb. 1885, No. 308 W.

FEBRUARY.

Madras Harbour Works

Letter from the Government of India sanctioning a further sum of Rs. 50,000 for expenditure during the current year on the —, communicated to the officers concerned.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

READ—the following paper :—

From J. H. TAYLOR, Esq., Lieut., R.N.R., Port Officer, Madras, to the Chief Secretary to Government, dated Madras, 7th September 1886, No. 8628.

I have the honor to acknowledge the receipt of the order of Government, dated 23rd August 1886, No. 467, Marine, which in paragraph 3 requires me to state what amount may safely be contributed from Port Funds to Harbour Trust.

2. In G.O., Marine, dated 6th June 1885, No. 233, the sum of Rs. 25,000 was ordered by Government to be transferred from Port Funds to the credit of Harbour Funds, and it was mentioned that a similar sum of Rs. 25,000 might probably be advanced from the same source on 1st April 1886. I beg respectfully to suggest that this conditional promise may be prudently carried out, but that in future all contributions from Port Fund should be considered with reference to the wants of the trust on the one side, and political or local exigencies on the other.

3. The trust has no present want of, or opportunity of, using money. It finds itself unexpectedly in possession of a very large sum, with large annual increases.

4. Owing to the condition of the harbour, it will be impossible to entertain schemes for improvement such as low level jetties, or quays, or any of the conveniences to trade that may be hoped for, if the work is anything like a success for the next two years, or perhaps three years, during which a few petty improvements and repairs will alone demand pecuniary attention, so that no useful object can be served by simply swelling idle hoards.

5. At the last meeting of the Port Trust on Thursday, 2nd September 1886, it was decided to invest five lakhs of rupees, which would still leave enough in hand for all current expenses. The trust seem to consider that all the expense connected with Mr. Thorowgood's large establishment is to be deemed a portion of the construction, and be defrayed from money borrowed from the Secretary of State.

6. On the other hand there are many reasons why Government should have at hand a considerable amount of money to meet contingencies. It is rumoured that one of the ships building now for the Government of India is intended for Madras to meet a much desired need common to all the Madras ports. No doubt the Supreme Government will expect a liberal subscription towards this vessel, which will be an expensive one in cost, upkeep and equipment. It has been urged that the Madras Government should have complete control over this vessel, and this independence will have to be paid for.

7. Then, in the second place, there cannot but arise in the minds of all those who peer into the future serious misgivings about the continuance of peace, and reflections as to the best method of providing coast defence. Such a vessel as Madras has indented for, if thoroughly armed with powerful machine-guns, and fitted with torpedos, cradles, &c., would be a cruiser sufficient to protect the coast ports from privateering, which is the most probable form of attack that an enemy would attempt. Large ships and ironclads, whether French or Russian, could not keep so far from their coal base, or waste their strength on our small ports. The ports will necessarily

be expected to meet the principal charges connected with their defence, and Government should, I respectfully recommend, retain the fund in its own hands available for any emergency. There are other items, new lighthouse, boats, and small charges, which will absorb a considerable sum.

ORDER—dated 2nd October 1886, No. 548, Marine.

The Port Officer's recommendation is accepted. The Chairman, Harbour Trust Board, will accordingly take credit for a contribution of Rs. 25,000 from Port Funds.

(True Extract.)

Chief Secretary.

To the Port Officer, Madras.
" Chairman, Harbour Trust Board.
" Accountant-General.
" Public Works Department.

Exd. T. O'Connor.

39 wr 2.7.85
989.90 wr 27.4.85
2871 wr 17.11.84
308 wr 9.2.85
292 wr 7.2.85
3343.9.12.76.
2875 wr 12.10.83
3186 wr 14.12.81.
3574 wr 14.12.83.
3128 wr 19.12.84
2593 wr 19.11.84

P.W.C. No 8053

Govt. of {1886} Madras.

MARINE.

13.8.C

B
No 2750 Way 18th Oct 86

Recorded.
Recorded

16/10/86

Issued

Recd. 15.10.86 Encl.

G.O., 2nd October 1886, No. 548.

No 2750 Way 18th Oct 1886

OCTOBER.

Port Funds.

Accepting the Port Officer's recommendation in connection with grants from —, and instructing the Harbour Trust Board to take credit for a contribution of Rs. 25,000 from that source.

Exr. P. W. Accts. with 2
Exr. Pl. Spared
2 Copies to Body
Exr 20/10 Despes
Communication re

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

READ—the following papers :—

From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated Madras, 8th April 1885, No. 2996.

Administrative department.

I have the honor to report, for the information of Government, that the harbour dues collections amounted to Rs. (40,684-6-5) forty thousand six hundred and eighty-four, Annas six and Pies five, during the month of March last.

From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated Madras, 13th April 1885, No. 3078.

Administrative department.

The close of the official year seems to me a fitting opportunity of reporting fully to Government upon the present state of the harbour fund, and offering such remarks as the occasion seems to call for.

2. Particulars separately attached.

* * * * *

6. I cannot follow Mr. Parkes into his detailed figures of estimates, but looking to the returns of the past year, I would respectfully suggest that the present dues are capable of reduction, still keeping in mind the chance of accident, the necessary increase of establishment when the Port trust is formed, and the certainty that money will be required for internal conveniences, supposing the work to achieve any measure of success. It must not be forgotten that we have not experienced a severe storm since the first commencement of the works :—

		RS.	RS.
The receipts from Port dues on ships, 1884-85	..	1,53,674	
Charges	..	97,279	
Balance	..		56,395
Harbour dues	..	3,70,623	
Charges	..	83,239	
			2,87,384
Previous credit balance	..	98,107	98,107
Present balance ..	..	..	4,41,886

7. I would respectfully recommend that the rate of dues on the beach be reduced to (1) one rupee, and on pier to present beach rate (1-5-6) one rupee five annas and six pies, for this current year, after which a reconsideration may be made.

* * * * *

ENCLOSURES.

Receipts and Charges of the Madras Port fund for 1884-85.

Receipts.	Amount.	Total.	Charges.	Amount.	Total.
	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.
April 1884.			*April* 1884.		
Port dues ..	12,544 5 4		Establishment, Administrative department, 40 per cent.	1,252 6 5	
Miscellaneous receipts.	2,187 6 2		Deputy Master Attendant or Port establishment.	2,317 15 0	
			Miscellaneous charges	2,042 2 10	
			Light establishment	191 0 0	
			Do. contingencies	155 5 0	
			Establishment and contingencies of the Steam Tug *Madras*.	653 4 7	
		14,731 11 6			6,612 1 10
May 1884.			*May* 1884.		
Port dues ..	15,790 14 7		Establishment, Administrative department, 40 per cent.	1,252 6 5	
Miscellaneous receipts.	2,374 9 0		Deputy Master Attendant or Port establishment.	2,288 1 7	
			Miscellaneous charges	2,689 6 5	
			Light establishment	191 0 0	
			Do. contingencies	..	
			Establishment and contingencies of the Steam Tug *Madras*.	2,471 4 10	
		18,165 7 7			8,892 3 3
June 1884.			*June* 1884.		
Port dues ..	7,655 1 4		Establishment, Administrative department, 40 per cent.	1,339 11 9	
Miscellaneous receipts.	6,711 5 1		Deputy Master Attendant or Port establishment.	2,165 14 11	
			Miscellaneous charges	3,868 11 5	
			Light establishment	191 0 0	
			Do. contingencies	351 0 6	
			Establishment and contingencies of the Steam Tug *Madras*.	1,468 9 9	
		14,366 6 5			9,385 0 4
July 1884.			*July* 1884.		
Port dues ..	8,740 15 11		Establishment, Administrative department, 40 per cent.	1,329 5 4	
Miscellaneous receipts.	2,183 8 5		Deputy Master Attendant or Port establishment.	2,310 11 2	
			Miscellaneous charges	445 3 0	
			Light establishment	191 0 0	
			Do. contingencies	161 12 7	
			Establishment and contingencies of the Steam Tug *Madras*.	3,839 14 5	
		10,924 8 4			8,277 14 6
August 1884.			*August* 1884.		
Port dues ..	10,858 5 0		Establishment, Administrative department, 40 per cent.	1,432 6 5	
Miscellaneous receipts.	2,206 7 9		Deputy Master Attendant or Port establishment.	2,396 1 10	
			Miscellaneous charges	557 6 0	
			Light establishment	191 0 0	
			Do. contingencies	319 14 0	
			Establishment and contingencies of the Steam Tug *Madras*.	1,111 11 3	
		13,064 12 9			6,008 7 6
September 1884.			*September* 1884.		
Port dues ..	9,647 7 11		Establishment, Administrative department.	1,277 9 0	
Miscellaneous receipts.	1,605 10 0		Deputy Master Attendant or Port establishment.	2,502 5 8	
			Miscellaneous charges	814 0 0	
			Light establishment	191 0 0	
			Do. contingencies	161 7 6	
			Establishment and contingencies of the Steam Tug *Madras*.	1,303 14 10	
		11,253 1 11			6,250 5 0

Receipts and Charges of the Madras Port fund for 1884-85—*continued*.

Receipts.	Amount.	Total.	Charges.	Amount.	Total.
	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.
October 1884.			*October* 1884.		
Port dues ..	12,040 5 0		Establishment, Administrative department.	1,154 6 5	
Miscellaneous receipts.	2,867 15 0		Deputy Master Attendant or Port establishment.	2,262 8 6	
			Miscellaneous charges	13,659 4 1	
			Light establishment	191 0 0	
			Do. contingencies	160 13 0	
			Establishment and contingencies of the Steam Tug *Madras*.	992 2 10	
		14,908 4 0			18,420 2 10
November 1884.			*November* 1884.		
Port dues ..	7,712 11 6		Establishment, Administrative department.	1,252 6 5	
Miscellaneous receipts.	1,471 12 3		Deputy Master Attendant or Port establishment.	2,289 0 3	
			Miscellaneous charges	3,238 8 8	
			Light establishment	191 0 0	
			Do. contingencies	156 14 6	
			Establishment and contingencies of the Steam Tug *Madras*.	616 0 9	
		9,184 7 9			7,743 14 7
December 1884.			*December* 1884.		
Port dues ..	8,179 9 6		Establishment, Administrative department, 40 per cent.	1,252 6 5	
Miscellaneous receipts.	1,448 3 9		Deputy Master Attendant or Port establishment.	2,243 12 0	
			Miscellaneous charges	795 2 8	
			Light establishment	191 0 0	
			Do. contingencies	160 4 6	
			Establishment and contingencies of the Steam Tug *Madras*.	1,698 4 8	
		9,627 13 3			6,340 14 3
January 1885.			*January* 1885.		
Port dues ..	13,046 13 8		Establishment, Administrative department.	1,252 1 8	
Miscellaneous receipts.	2,471 1 11		Deputy Master Attendant or Port establishment.	2,327 8 8	
			Miscellaneous charges	1,421 3 6	
			Light establishment	191 0 0	
			Do. contingencies	171 3 6	
			Establishment and contingencies of the Steam Tug *Madras*.	1,761 4 3	
		15,517 15 7			7,124 5 7
February 1885.			*February* 1885.		
Port dues ..	8,145 6 9		Establishment, Administrative department.	1,249 6 2	
Miscellaneous receipts.	1,669 12 2		Deputy Master Attendant or Port establishment.	2,269 0 0	
			Miscellaneous charges	484 12 9	
			Light establishment	191 0 0	
			Do. contingencies	165 2 0	
			Establishment and contingencies of the Steam Tug *Madras*.	1,588 1 0	
		9,815 2 11			5,947 5 11
March 1885.			*March* 1885.		
Port dues ..	10,395 3 0		Establishment, Administrative department.	1,252 6 5	
Miscellaneous receipts.	1,719 9 1		Deputy Master Attendant or Port establishment.	2,280 9 2	
			Miscellaneous charges	1,034 2 8	
			Light establishment	191 0 0	
			Do. contingencies	155 0 8	
			Establishment and contingencies of the Steam Tug *Madras*.	1,362 15 8	
		12,114 12 1			6,276 2 7
Total ..	..	1,53,674 8 1	Total ..	..	97,278 14 2

Statement showing the Receipts and Charges connected with the dues levied under Act VI of 1882 from April 1884 to March 1885.

RECEIPTS.	RS. A. P.	RS. A. P.	CHARGES.	RS. A. P.	RS. A. P.
For April 1884 ..	28,105 12 3		*For April* 1884.		
,, May ,, ...	32,019 15 2		Establishment	1,209 8 0	
,, June ,, ...	33,988 15 9		Pier coolies	1,704 9 0	
,, July ,, ...	36,091 1 5		Repairs	424 7 9	
,, Aug. ,, ...	31,381 0 8		Stores	700 0 0	
,, Sept. ,, ...	32,841 12 3		Miscellaneous charges ..	376 5 0	
,, Oct. ,, ...	27,989 7 11		*For May* 1884.		4,414 13 9
,, Nov. ,, ...	19,664 6 0		Establishment	2,718 5 4	
,, Dec. ,, ...	25,731 7 11		Stores	1,129 13 6	
,, Jan. 1885	33,077 13 2		Miscellaneous charges ..	267 11 6	
,, Feb. ,, ...	29,047 2 11		*For June* 1884.		4,115 14 4
,, Mar. ,, ...	40,684 6 5		Establishment	2,792 12 7	
			Pier coolies	1,292 2 2	
			Repairs	858 5 0	
			Miscellaneous charges ..	1,184 2 8	
			Pier crane	11,488 0 0	
			For July 1884.		17,615 6 5
			Establishment	2,871 15 6	
			Pier coolies	1,411 4 3	
			Repairs	409 0 9	
			Stores	425 15 6	
			Miscellaneous charges ..	348 4 10	
			For August 1884.		5,466 8 10
			Establishment	2,880 6 11	
			Pier coolies	7,868 7 8	
			Repairs	744 8 6	
			Harbour Committee's fees ..	100 0 0	
			Miscellaneous charges ..	568 7 11	
			For September 1884.		12,161 15 0
			Establishment	2,889 14 4	
			Pier coolies	1,508 15 2	
			Repairs	322 12 3	
			Miscellaneous charges ..	9 14 3	
			Harbour office extension ..	1,000 0 0	
			For October 1884.		5,731 8 0
			Establishment	2,889 13 4	
			Pier coolies	1,581 14 6	
			Repairs	382 12 3	
			Miscellaneous charges ..	217 3 9	
			Stores	42 3 0	
			For November 1884.		5,113 14 10
			Establishment	2,881 4 0	
			Pier coolies	1,213 9 8	
			Repairs	395 10 6	
			Stores	701 3 0	
			Miscellaneous charges ..	2 4 9	
			Harbour office extension ..	700 0 0	
			For December 1884.		5,893 15 11
			Establishment	2,986 3 9	
			Pier coolies	1,144 10 8	
			Repairs	391 9 8	
			Miscellaneous charges ..	286 11 9	
			For January 1885.		4,809 3 10
			Establishment	2,911 9 0	
			Pier coolies	1,247 7 3	
			Repairs	330 9 3	
			Stores	346 5 0	
			Miscellaneous charges ..	234 11 9	
			Overtime fees	626 10 8	
			For February 1885.		5,697 4 11
			Establishment	2,927 7 9	
			Pier coolies	1,555 6 4	
			Repairs	349 8 6	
			Miscellaneous charges ..	164 0 3	
			Harbour office extension ..	388 0 0	
			Overtime fees	1,122 5 7	
			For March 1885.		6,506 12 5
			Establishment	2,884 11 5	
			Pier coolies	1,321 1 4	
			Miscellaneous charges ..	357 6 5	
			Stores	100 4 0	
			Overtime fees	330 11 9	
			Repairs	717 10 1	
					5,711 13 0
Total Receipts ..	..	3,70,623 5 10	Total Charges ..	..	83,239 3 3

From the Hon. J. A. BOYSON, Chairman, Chamber of Commerce, Madras, to the Chief Secretary to Government, dated Madras, 5th May 1885.

In the order, dated the 10th November 1884, No. 495, Marine, the Government informed the Chamber that in view of the impending transfer of the Harbour to the port trust it would be inexpedient to sanction any measure affecting the increase at present derived from harbour dues, and in the order, dated 2nd September 1884, No. 389, Marine, it was admitted that the net revenue, being more than sufficient to meet the interest charge on the probable capital during the next two or three years, the Government would, if the present arrangements were to continue, not hesitate to meet the views of the trade with regard to the reduction of the dues. The Government also acknowledged that it was never intended that the maximum rates should continue to be levied if experience showed that the income was likely to be in excess of requirements.

2. I am now desired to ask the Government to give appropriate consideration to the fact that the revenue, which has been already raised, is far in excess of those requirements. The Secretary of State has approved of the port being made free of all charge for interest on expenditure on account of the harbour up to the 31st March 1883. The Chamber is not aware of the sum that has been expended in the upkeep of the harbour establishment, the collection of stone, and the manufacture of blocks since that date, but it can safely affirm that it has not been on anything like a scale to render it necessary to raise the present revenue to meet the interest chargeable thereon. It appears from the published returns that notwithstanding the prevalent dullness of trade the collections on account of harbour dues in the twelve months, ended the 31st ultimo, were Rs. 3,74,587, equivalent to a year's interest at 4 per cent. on a sum of Rs. 93,64,675. In his despatch of the 18th October 1883 to the Government of India, the Secretary of State stated that the trust when formed "would have merely to pay the interest on the monies needed for the completion of the harbour works which would be freely presented to it in their existing unfinished condition."

3. The Chamber respectfully urges that the delay in the formation of the trust does not relieve the Government, which is temporarily acting in the room of the trust, from the obligation of conceding to the commerce of this port the full benefit of the generous arrangement that was sanctioned by the Secretary of State. It is therefore earnestly hoped by the Chamber that, looking to the large collections that were enforced in the official year just ended, the Government will now be pleased to sanction the suspension of the levying of harbour dues until the active reconstruction of the harbour has commenced.

From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated Madras, 5th May 1885, No. 3662.

Administrative department.

I have the honor to report, for the information of Government, that the harbour dues collections for April amounted to Rs. (44,180-0-2) forty-four thousand one hundred and eighty and Pies two.

From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated Madras, 7th May 1885, No. 3708.

Administrative department.

With reference to your official memorandum, Marine department, No. 862, dated 28th ultimo, I have the honor to submit the following memorandum showing the estimated income of harbour dues at the new rates as called for :—

	Tonnage of goods for 1884-85.	New rates. RS. A. P.	Estimated yearly income. RS. A. P.
Pier	121,203	1 5 6	1,62,866 8 6
Beach	131,771	1 0 0	1,31,771 0 0
		Total ..	2,94,637 8 6

2. In addition to the harbour dues, there is godown and ground rent realized which amounted to Rs. (10,691-12-6) ten thousand six hundred and ninety-one, Annas twelve and Pies six, during the last official year.

ORDER—dated 6th June 1885, No. 233, Marine.

The following telegram was despatched to the Master Attendant on the 27th May :—

"Madras Harbour dues reduced to one rupee for goods landed at pier, and twelve annas on beach from 1st April last. Refund excess collections to consignees."

2. The financial position (present and estimated) of the harbour may be stated as follows :—

Liabilities.

Year.	Item.	Amount. RS.
1882-83 ..	Interest for one year on Rs. 1,85,351 spent up to 1st April 1882, at 4 per cent.	7,414
1883-84 ..	Interest on Rs. 6,83,432 spent up to 1st April 1883	27,337
1884-85 ..	Interest on Rs. 9,08,288 spent up to 1st April 1884	36,331
	Establishment and other charges in collecting harbour dues during year	83,239
1885-86 ..	Interest on Rs. 11,12,532 * spent up to 1st April 1885	44,561
	Establishment, &c.	†85,000
	Total ..	2,83,822
	Add interest on Rs. 23,99,882 spent up to 1st April 1886, payable after expiration of the year.	95,993
		3,79,815

Assets.

1884-85 ..	Harbour dues	3,70,623
1885-86 ..	Do. (at Re. 1 for pier and As. 12 for beach)	2,20,031
	Total ..	5,90,654

* Taking the outlay last year at Rs. 2,04,244 as given by Mr. Thorowgood (page 3 of G.O., No. 989 W., 27th April 1885).

† Follows actuals, 1884-85.

Assuming that the expenditure of the current year will tally with the estimate, there would be a balance of Rs. 2,10,839 in hand after payment of the interest on the outlay up to the end of March 1886.

3. The Governor in Council resolves to contribute to the harbour assets a sum of Rs. 25,000 from the surplus revenue at credit of the Madras Port fund, and will be prepared to sanction a grant of the same amount on the 1st April 1886, provided that there is again a considerable balance to credit of the fund, after all charges for the year have been met.

(True Extract.)

Chief Secretary.

To the Master Attendant, Madras.
" Accountant-General.
" Public Works department.

Exd. T. O'Connor.

(3) Dick 5495

Govt. of (1885) Madras.

MARINE.

Issued

Recd. 22/6/85. *Encl.*

G.O., 6th June 1885, No. 233.

Vide G.O. No. 5494

No. 1539 Way 2-7-85

JUNE.

Madras Harbour.

Passing certain orders in connection with the financial position of the —.

(1)

REMINDER.

Early attention is invited to this Office No. 116 Dy., dated 9th May 1887.

Subject Enquiring why the Budget Estimate of the Madras Harbour Works for 1887-87 has been prepared for a sum so much in excess of the provision made by the Civil Department.

Robertson.

For Offg: Under Secy. to the Govt. of India, Public Works Dept.

~~Accountant General, Public Works Dept.~~

No. 116 Dy.

Dated 2 14th July 1887.

To

The Secretary to the Govt. of Madras, P.W.D.

M.

G. I. C. P. O.—No. 188 A.-G. P. W. D.—25-3-86.—500.

No. 1539 Way 2nd July 85

Recorded in continuation of G O No. 2871 W dt 17th Nov 1884

CM. 25.6.85

M. 26.6.85

Supt. M.H.W. Examd & V Dated 2/7/85

AS 102/6 Kesh 25/6/85

23.6.85 29.6.

G.6. 1774/1775 W 4.7.87.
595 = 6 W 28.2.87.
No 1982 W a/25th July/87

PWC No 5600

(4)

Recorded with reference to S.O. No. 1775 W dated 4th July 1887.

21.7.87

22/7/87

R 20.7.87

B No 1902 W 1775 July/87

25/7

2nd

G. 21.7.87. 2.25.7.87.

From Second Asst P.W. Sect.

To Second Asst. Chief Secretary

Please state number & date of letter in Marine Dept on P.W. No 2830 of 1 July/87 relative to the audit of accounts of the Madras Harbour Works. Please also state when it will be communicated to this Dept.

FB 1918

Desp Dept. 12.45. 19.8.87.

(Over)

Please refer remark within

A.S. 30/8 5.1.88

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following papers :—

From Colonel R. C. B. PEMBERTON, R.E., Secretary to the Government of India, Public Works Department (Account—General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 9th May 1887, No. 116 A.G. :—

In reply to your letter, No. 596 W., dated 28th February 1887, I am directed to point out that the amount provided in the estimates of the Civil Department for the current year to meet Imperial advances on account of the Madras harbour works is only 8 lakhs, whereas the budget estimate submitted amounts to Rs. 11,61,100, and to inquire why the estimate has been prepared for a sum so much in excess of the provision.

2. With regard to the inquiry as to whether the budget estimate should continue to be submitted to the Government of India, I am to state that, so long as the Madras Harbour Board merely get advances from Government for construction of the harbour works, they must submit their budget estimates to the Government of India for sanction.

3. These estimates should be considered and reviewed by the Public Works Department of the local Government and sent forward to the Government of India, in the Public Works Department, with such remarks as may seem desirable.

No. 141 D.

Paragraph 1 of the foregoing letter from the Government of India will be referred to the Financial Department for favor of remarks, with reference to the endorsement, in that department, printed with proceedings of Government, dated 28th February 1887, No. 595 W.

OOTACAMUND,
21st May 1887.

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

Referred to the Accountant-General for remarks.

OOTACAMUND,
31st May 1887.

(Signed) H. E. STOKES,
Acting Chief Secretary.

From H. F. CLOGSTOUN, Esq., Accountant-General to the Government of Madras, to the Chief Secretary to Government, dated Fort St. George, 10th June 1887, No. 1521.

With reference to your endorsement of the 31st May last, referring, for my remarks, paragraph 1 of the proceedings of the Government of India, in the Public Works Department, No. 116 A.G., dated the 9th idem, I have the honor to state that

the sum of 8 lakhs referred to is apparently the provision made in my cash requirement estimate for 1887-88 under the head of "Loans to Municipalities, Native States, &c." This estimate, framed in February, was based upon actual payments of 1886-87, as far as then known, and upon those of previous years, which were as follows :—

	Rs.
1884-85	2,09,087
1885-86	8,70,406
1886-87, 9 months	5,59,951

2. The expenditure during the first three months * on the harbour has amounted to Rs. 85,000 only, and the latest figure reported by the Examiner of Public Works Accounts as the actuals of 1886-87 is Rs. 7,81,956. These facts, coupled with the fact that the progress of work at the harbour is likely to be much restricted, pending the report of the commission now sitting in London, render it probable that the provision of 8 lakhs made in the cash requirement estimate will be sufficient for the year.

	Rs.
* April	30,000
May	30,000
June	25,000

Transferred to the Public Works Department, and the original reference returned.

OOTACAMUND,
22nd June 1887.

(Signed) H. E. STOKES,
Acting Chief Secretary.

No. 259 D.

Referred, with advertence to G.O., No. 595 W., dated 28th February 1887, to the Chairman, Madras Harbour Trust Board, for favor of early report whether a sum of 8 lakhs will be sufficient to meet expenditure on the harbour works during 1887-88. If so, a revised budget estimate, working up to that figure, should be submitted with the least possible delay.

OOTACAMUND,
24th June 1887.

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

From the Honorable R. W. BARLOW, C.S., Chairman, Harbour Trust Board, to the Secretary to Government, Public Works Department, dated Madras, 28th June 1887, No. 1406.

I have the honor to acknowledge the receipt of your endorsement, No. 259 D., dated Ootacamund, 24th June 1887, together with enclosures (in original, herewith returned), inquiring whether the sum of 8 lakhs of rupees will be sufficient to meet the expenditure on the harbour works during 1887-88.

2. The question was immediately referred to the Superintendent, Madras Harbour Works, and I enclose, for the information of Government, copy of his reply, from which it appears that, unless new machinery has to be ordered from home, 8 lakhs will be sufficient, but that this entirely depends upon the decision of the Secretary of State regarding the proposed north-east entrance.

ENCLOSURE.

From F. N. THOROWGOOD, Esq., M. INST., C.E., Superintendent, Madras Harbour Works, to the Secretary, Harbour Trust Board, dated Madras, 27th June 1887, No. 364.

I have the honor to return the enclosures which accompanied your letter of this date, No. 1362. With regard to the question as to whether 8 lakhs of rupees will suffice for this year's grant, I am hardly able to give an answer, as I have not the least idea what is to be done.

2. If we are to go on for another three months as we have done for the past three, 8 lakhs will be ample ; but if orders should suddenly come to remove part of the north pier for a north-east entrance, then more plant would have to be telegraphed for and the expenditure would probably exceed 8 lakhs.

ORDER—dated 4th July 1887, No. 1774 W., Public Works.

The foregoing letters from the Accountant-General and the Chairman, Madras Harbour Trust Board, will be forwarded to the Government of India in reply to paragraph 1 of their letter, No. 116 A.G., dated 9th May 1887.

2. Paragraphs 2 and 3 of the letter from the Government of India will be recorded for guidance, and communicated to the Chairman, Madras Harbour Trust Board.

3. The Chairman will submit, with the least possible delay, a revised budget estimate working up to a total grant of 8 lakhs.

4. It will be considered in the Financial Department whether the Accountant-General was justified in framing his cash requirement estimate without reference to the Harbour Trust Board.

(Here enter No. 1775 W., dated 4th July 1887.)

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chairman, Madras Harbour Trust Board.
" Marine Department.
" Financial "

Exd. E. Fernandez.
Spare Copies

Order,

Order in the Financial Dept.
of 20 July 1887 No 839.

The Accountant General was justified in framing his cash requirement Estimate without reference to the Harbour Inset, as that Estimate cannot be regarded as a budget Estimate.

(True Extract)

H. Etches
Asst Chief Secretary

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1887} Madras.

PUBLIC WORKS.

Dated July, 4th.

Recd. *Encl.*

G.O., 4th July 1887, No. 1774 W.

JULY.

Madras Harbour Works

Budget estimate for 1887-88.—Correspondence explaining how the — was prepared for an amount much in excess of the provision in the estimate of the Civil Department, ordered to be forwarded to the Government of India; a revised budget estimate, working up to a grant of 8 lakhs, called for.

Jo/

The Public Works Dept
— to — Accountant General.

B.No 1982 W. 25.7.87 G.G. 2875 W. 12.10.83
" 3106 W. 14.12.87
G.G. 1774 W. 4.7.87. " 3574 W. 14.12.83
" 3628 W. 19.12.84
595 596 W. 28.2.87 No 1412. 21.5.87
B.No 2750 W. 18.10.86 " 2592. 24.6.87.
" 1539 W. 2.7.85 G.G. 595 596 W. 28.2.87
G.G. 308 W. 9.2.85 B.No 1282 W. 11.5.87
" 292 W. 7.2.85 " 999 W. 1.6.87
B.No 2911 W. 17.11.84 G.G. 989 W. 2.6.87
" 1716 W. 10.7.84
" 1667 W. 3.7.84 G.G. 3343. 9.12.76
" 674 W. 1.3.83

Recorded with reference to G.O. No. 1774 W dated 4th July 1887.

Mor 12.5.87

Jth " 12/5/87

[6] P.W.C. No. 5787

Govt. of {188} Madras.

To

The Secretary

R 26.7.87

Proceedings, dated 20/7/ 188 7.
No. 835

Subject.

No. 2168 W of 15th August 87

Budget Estimate for 1887/88. Madras Harbour Works

Budget Estimate for 1887/88. Madras Harbour Works

Thos. 8.8.87 R. 13.8.87.

23.6.87

With Order

KEEP-WITH Genl. No.

dated 188 .

† addressed to the Chief Secretary not. cond to P.W.D.

1000—12-5-87.

[C. No. 8.]

GOVT. OF MADRAS. } 1887. { P. W. DEPT.

EXAMINER, P. W. ACCOUNTS.

Madras, 23rd June 1887.

OFFICE NOTE No. 240

Encl: 1

To W.

G. O. No. 1629 W. dated 16th June 1887.

Adverting to the remark in the above quoted G. O. on the Provincial Objectionable Items Statement for March 1887 of the Madras Harbor Works (herewith returned), I beg to state that the item must be closed for the present, so far as this Office is concerned, as the accounts from and after April do not come under my audit. But it appears that under the orders contained in Govt. of India letter† No. 2279, dated 2nd May 1887, this and other similar items will have to be dealt with by the Govt. in some Department, if not in the Public Works Department. I think the matter might lie over pending orders of Govt. on Govt. of India letter referred to above.

C.

89.23/6.

P.W.C. No 479

(1)

Recorded with reference to G.O. No 2169 W.S./15th August 1887.

W.M. 23.8.87

J.M. 26/8/87

G 24.6.87

Encl

No 2335 W.S./30th August/87

G 31/8/87

The Exr. P. W. Accts with encls: returned.

With order

With Order