(1) பக்கங்களின் எண்ணிக்கை 56

(2) புதுக்கித் திருப்பிய நாள் Aug 1991

(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம்

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

PWD துறை

(29)

அரசாணை எண். / மு. கோப்புத் தாள் எண். 1705-06 அச்சகம் / பலவகை

நாள் : 8-6-1892 198 .

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

28 Sheets

ஆவண. கா-1—18,006—15-6-87.

8th June 1892, No. 1705 W., Public Works.

1705-06
1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following paper :—

From W. P. AUSTIN, Esq., C.S., Chairman, Harbour Trust Board, to the Chief Secretary to Government, dated Madras, 21st May 1892, No. 620.

I have the honour to submit, herewith, for the information of Government, a letter from the Board's Engineer, No. 93, dated 25th April, submitting statement of, and reporting upon, progress made upon the Madras Harbour works during the quarter ending 31st March 1892, together with the tracings alluded to and comparison of expenditure to 31st March with sanctioned estimate for the quarter ending on that date.

2. Referring to para. 2 of G.O., No. 430 W., dated 12th February 1892, I have to report that 191 vessels of 311,313 net registered tonnage were accommodated inside the harbour during the quarter.

3. The annual administration report of the Trustees is now in course of active preparation and I hope to be able to submit it to Government shortly, and, as this will give full details upon the points referred to in paras. 4 and 5 of the Right Honorable the Secretary of State's despatch printed in the above-quoted Government order, I will not now report further upon the isolated period comprised in the last three months of the official year 1891–92, but will, commencing with the first quarter of 1892–93, submit a quarterly report upon the lines indicated in Sir Alexander Rendel's memorandum, dated 4th December 1891.

Enclosures.

Extract of Proceedings of the Trustees of the Harbour of Madras at a meeting held at the Offices of the Board on Friday, the 6th day of May 1892.

* * * *

10. Read letter from the Board's Engineer No. 93, dated 25th April, submitting statement of, and reporting upon, progress made during the quarter ending 31st March 1892 upon the Harbour works.

Recorded.

* * * *

(True Extract).

(Signed) C. PINSENT,
Secretary, Harbour Trust Board.

From F. J. WILSON, Esq., Acting Engineer, Harbour Trust Board, to the Secretary, Harbour Trust Board, dated Madras, 25th April 1892, No. 93.

I have the honour to submit, herewith, the quarterly statement of progress up to the 31st March 1892, together with a report, as called for in G.O., No. 430 W., dated 12th February 1892, and the marginally-noted plans.

1 statement.
1 memorandum to accompany statement.
1 report.
1 plan of harbour and foreshore (in triplicate).
2 sheets cross sections.

PROGRESS STATEMENT No. 28.

MADRAS HARBOUR WORKS.

STATEMENT showing progress during quarter ending 31st March 1892 as shown on accompanying tracing plan No. 27.

NOTE.—The figures in *block type* denote for comparison progress and quantity of work done in quarter ending 31st March 1891.

No. of item.	Particulars and quantity of work, &c.	Sub-heads of work	North Pier.					South Pier.					Railway Lines.				Pallavaram quarries outturn.	Concrete block-making	Protective works.	Total expenditure during the quarter.
			Rubble base.	Pier head.	Wave breaker.	Concrete capping.	Base protection.	Rubble base.	Pier head.	Wave-breaker	Concrete capping.	Base protection.	At works.	At quarries.	Sand line.	Beach improvements.				
		Column	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Rubble stone deposited from boats	Tons.	**1,114¾** 325¼	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	Do. do. from wagons	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	**3,822¼** 8,414¾	..
3	Total quantity rubble stone received on works ..	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	**4,937** 8,740	..	..	..
4	Do. blasted chips do.	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	**893¾** 7,006	..	..	..
5	Concrete blocks, set by divers	No.	..	161	..	..	..	..	72	..	..	..	..	..	..	..	..	..	..	..
6	Do. deposited in wave-breaker	,,	..	..	$248\frac{1}{12}$	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	Do. made for superstructure	,,	..	..	107	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	Do. do. pier head	,,	..	388	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	Wrought iron cramp fixed in position	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	Total outturn of concrete	C. yds.	..	$4,728\frac{11}{17}$	1,926	17	23½	..	..	..	**53** 20½	..	..	..	..	..	..	..	..	..
11	Advance or progress of completed superstructure ..	Ry. feet.	..	**119** 59	..	..	..	..	**25** 18¾	..	..	..	..	..	..	..	..	..	..	..
12	Rubble base protected with concrete	,,	..	..	..	..	**257** 21	..	..	..	..	..	..	..	..	..	..	..	..	..
13	Metre gauge, 40 lb. per yard laid new	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	Do. do. relaid or renewed ..	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	Do. do. taken up	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	Broad gauge, 50 lb. per yard laid	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	Do. do. relaid or renewed ..	,,	..	..	..	..	..	..	..	..	..	..	**682** 979	..	96	..	..	..	..	..
18	Do. do. taken up	,,	..	..	..	..	..	..	..	..	..	..	1,268	..	..	..	..	..	..	..
19	Titan gauge, 75 lb. per yard laid new	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	Do. do. relaid or renewed ..	,,	..	..	..	..	..	..	..	..	..	..	**202** 3,402	..	..	..	..	..	..	..
21	Do. do. taken up	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	....		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	....		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	Approximate expenditure under sub-heads of work ..	Rs.	1,805	10,928	15,612	417	176	1,274	32,761	138	395	..		*			19,164	74,532	* 4,514	1,61,716

	TONS.	CWTS.	QRS.	LB.
1,579 casks of cement received on works during quarter ending 31st March 1892, containing ..	281	19	1	4
6,171¼ do. issued for do. do. do. do. ..	1,102	0	3	6
7,190¾ do. balance in store at end of do. do. do. ..	1,283	5	1	23

	TONS.	CWTS.	QRS.	LB.
Quantity due on indents ..	717	17	0	16

MADRAS,
6th April 1892.

(Signed) F. J. WILSON,
Ag. Engineer, Harbour Trust Board.

1705-06
2

MEMORANDUM to accompany statement of progress for the quarter ending 31st March 1892.

	RS.
1. Estimated sum required to complete the works at the commencement of the quarter except establishment, tools and plant and contingent charges	9,52,284
2. Cost of work done during the quarter	1,61,716
	7,90,568
3. Estimated cost of additional works found necessary during the quarter	...
4. Estimated cost of completing the works from and after the end of quarter	7,90,568

MADRAS,
25th April 1892.

(Signed) F. J. WILSON,
Ag. Engineer, Harbour Trust Board.

REPORT to accompany quarterly statement of progress on the Madras Harbour Works for the quarter ending 31st March 1892.

North pier.—The state of the sea in the early part of January did not permit of work being resumed at the pier head until the 18th, when the titan was run out and turned for work on the 19th. Up to this divers were employed on the concrete protection to the rubble base inside the harbour. During the remainder of the quarter 161 blocks were set, advancing the superstructure by 50 feet and leaving a length of about 95 feet of superstructure to be set before the cylindrical head is commenced. Work on this portion of the pier is comparatively slow, owing to the extra width of foundation to be prepared (38 feet instead of 24), extra depth of foundation involving the removal of stone previously deposited and the removal of blocks fallen from the old pier.

2. An entirely new track composed of 75 lb. steel rails rivetted together in pairs had to be laid along the north pier for the new all-round crane, the gauge of which is 20 feet and the gauge of the titans being 16 feet. This was done and the all-round crane run out on the 6th March. Between this date and end of quarter 248 wave-breaker blocks were deposited in the wave-breaker from the north-east angle to 3,375 feet, completing the wave-breaker up to this point to its full width of 40 feet. The new crane did its work well and is a great improvement on the old wave-breaker crane. A little trouble was experienced owing to the steel rope holding up the jaws slipping through the break, but this has been rectified. The only other point regarding which a possible improvement suggests itself is an arrangement by which the jaws could be opened without lowering the block. The crane has not yet been tried for block-setting, but it is expected it will have many advantages to this work also over the old titans.

3. *South pier.*—The south pier titan was moved out on the 17th January and turned on the 18th. The progress on the pier has not been so good as on the north pier, only 72 blocks having been set and the superstructure advanced by 18¾ feet. This is due to the trouble experienced in removing old rubble and blocks from the old pier from the base necessary for the extra depth of foundations. The material that had to be removed consisted largely of small stone, mixed with mud and sand, and the Priestman's grab used at first frequently came up with little or nothing in it. A grab with closer tynes was borrowed from the Marine Department, which did better, but the work is nevertheless slow. At the end of the quarter the superstructure of the south pier was one course ahead of that of the north pier or leaving about 89 feet of block superstructure to be set before the setting of the cylindrical head course commenced.

4. *Block-making.*—Four hundred and forty-five blocks containing 6,654¼ cubic yards were made during the quarter or nearly all that will be required to complete the work.

5. *Foreshore north of the harbour.*—The quantity of stone deposited in the revetment north of the harbour during the quarter is 8,414¾ tons, making a total of 74,738½ tons deposited against 70,600 tons estimated for. Cross sections of the revetment as it now stands have been taken and are submitted herewith and fresh sections will be taken hereafter in order to note the action of the sea. During the quarter under review the action is to accumulate sand in front of the revetment as will be seen from the sections. Erosion may be expected to take place during next quarter.

6. *Foreshore south of the harbour.*—On the plan accompanying this report are shown two high-water lines, one of date 31st December 1891 and the other of 31st March 1892. From this it will be seen that there has been a slight erosion about 20 feet close to the pier. In the corresponding period of last year, the erosion was about 95 feet. During the next two quarters an advance is to be expected. Comparing the high-water line of 31st March 1892 with that of 31st March 1891, there has been a net advance of about 60 feet. The advance in the previous year was about 80 feet.

7. *Sea bottom within the harbour.*—The last survey of the harbour showing contours at every half fathom was taken in September 1889. In order to ascertain what action has since then taken place, the Assistant Engineer was directed to make a new survey. This has not yet been completed, but the contours, as already taken up to the 4-fathom line, show little or no alteration since 1889.

8. *Miscellaneous.*—During the quarter the gravelled platform or "hard" for coal on the north beach of the harbour was extended as shown on the plan.

9. A design has been sanctioned for a Harbour Master's office and the work put in hand.

10. The Harbour works have been called on by the municipality to remove part of the line running along the beach and which it appears encroaches on municipal land. A new line will have to be laid before this can be done.

11. Estimates have been called for and are under preparation for permanently fencing in the harbour premises and for improving the water-supply along the iron pier.

12. Messrs. Best and Co. have obtained permission to make arrangements for pumping kerosine oil from steamers carrying the oil in bulk to reservoirs on the shore through a pipe, which will be attached to the north arm of the harbour.

13. The gradual increase of permanent buildings and works in connection with the harbour and the approaching completion of the piers render it more and more necessary for a plan to be decided on as to final arrangement to be adopted for the shore side of the harbour. All new buildings now started, all alterations or additions to platforms or sheds for goods or new lines of rails laid stand the risk of becoming either useless altogether or unsuited to the purpose for which they were intended through these sites being unadaptable to the arrangement finally selected.

14. As asked for in the memorandum by Sir Alexander Rendel accompanying G.O., No. 430 W., dated 12th February 1892, a statement is attached giving information regarding establishment cost of completing the works.

15. The approximate expenditure to the end of the quarter, including establishment and contingencies, is Rs 1,16,48,314 out of a total estimated cost of Rs. 1,23,83,386, leaving a balance of Rs. 7,35,072 to be spent for completion.

MADRAS,
25th April 1892.

(Signed) F. J. WILSON,
Ag. Engineer, Harbour Trust Board.

No. 931, Marine.

Transferred to the Public Works Department.

25th May 1892.

(Signed) J. F. PRICE,
Chief Secretary.

ORDER—dated 8th June 1892, No. 1705 W., Public Works.

Ordered to be forwarded for the information of the Secretary of State and the Government of India.

(Here enter No. 1706 W., Public Works, dated 8th June 1892.)

(True Extract.)

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

To the Chairman, Harbour Trust Board.
" Marine Department.

Exd. A. D. Xavier.
Spare Copies

1705–06
.3

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1892} Madras.
PUBLIC WORKS.

Dated June, 8th.

Recd. " *Encl.*

G.O., 8th June 1892, No. 1705 W.

JUNE.

Madras Harbour

The progress report upon the — for the quarter ending 31st March 1892, ordered to be forwarded to the Secretary of State and to the Government of India.

8th June 1892, No. $\frac{9}{1706}$ W., Public Works.

1705-06

K4

PUBLIC WORKS DEPARTMENT.

Letter—to

The Right Honorable the SECRETARY of STATE for INDIA.

My Lord,

No. $\frac{4}{950\ W.}$, dated 22nd March 1892.
" $\frac{7}{1273\ W.}$ " 21st April "

In continuation of our despatches quoted in the margin, we have the honour to forward, herewith, progress report of the Madras Harbour works for the quarter ending 31st March 1892.

2. The Engineer's report has been amplified in accordance with the suggestions of Sir Alexander Rendel as communicated with your Lordship's despatch to the Government of India No. 1, Public Works, dated 7th January 1892, and, in addition to the usual plan, showing the progress of the works during the quarter, cross sections of the foreshore to the north of the harbour are supplied.

3. A further report on the harbour from a commercial point of view is promised by the Chairman of the Harbour Trust Board and this will be forwarded for your Lordship's information as soon as possible after it is received.

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

(Signed) H. E. STOKES.
(") J. H. GARSTIN.

Fort St. George,
8th June 1892.

Exd. A. D. Xavier.

GOVT. OF MADRAS.

PUBLIC WORKS DEPARTMENT.

(Copy.)

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

No. $\frac{9}{1705\text{ W.}}$, dated 8th June 1892.

Forwarding copy of Proceedings embodying the progress report upon the Madras Harbour for the quarter ending 31st March 1892, together with plans showing the progress of the works.

12TH FEBRUARY 1892, No. 430 W., PUBLIC WORKS.

1705-06
17

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following paper :—

Endorsement from the Government of India, Public Works Department (Civil Works—Miscellaneous), dated Calcutta, 5th February 1892, No. 59 M.

The undermentioned papers are forwarded to the Secretary to the Government of Madras, Public Works Department, for information and attention to the wishes expressed in paras. 4 and 5 of the despatch, with reference to the correspondence ending with his letter No. 1967 W., dated 23rd July 1891.

(By Order.)

(Signed) C. VINCENT,
Under-Secy. to the Govt. of India.

ENCLOSURES.

DESPATCH from the Right Honorable Her Majesty's Secretary of State for India, to His Excellency the Most Honorable the Governor-General of India in Council, dated India Office, London, 7th January 1892, No. 1, Public Works.

I have received your Excellency's Public Works letter No. 66, dated the 8th September 1891, submitting, for my sanction, a revised estimate of the cost of the Madras Harbour Works.

2. Omitting the expenditure incurred against the original sanction, amounting to Rupees 65,54,490, the cost of the restoration works is now estimated at Rs. 58,28,896, showing, when compared with the estimate of Rs. 45,90,051 sanctioned in 1886, an increase of Rs. 12,38,845. If, however, the credit taken in the revised estimate of Rs. 2,33,460 for sale-proceeds of plant be omitted, the difference in the two estimates amounts to Rs. 14,72,305.

3. While regretting the necessity for this increased expenditure, I am satisfied that it is required for the completion of the works and I accordingly sanction the revised estimate which you have submitted.

4. I enclose copy of a memorandum * by Sir A. M. Rendel, from which your Excellency will observe that he has suggested that the periodical reports on the harbour, which are forwarded for my information by the Government of Madras, should contain fuller information under both financial and engineering heads than is at present afforded, and, in particular, that they should include a report upon the use made of the harbour during the quarter to which the return relates and upon the commercial works in or connected with it that experience may show to be required.

5. I shall be glad if your Excellency will call the attention of the Government of Madras to this point and will request that Sir A. Rendel's suggestions may, as far as possible, be complied with. It is also desirable, for the successful prosecution of the operations, that, within the limits indicated in the last paragraph of my Public Works despatch to the Government of Madras, No. 4, dated the 7th June 1888, no restriction should be placed upon the correspondence and exchange of opinions between Sir A. Rendel and the Engineer in charge of the work.

---

* Dated 4th December 1891.

MEMORANDUM by Sir A. M. RENDEL, dated 4th December 1891.

The quarterly reports of the Engineer in charge of the Harbour Board are now confined to mere tabulated statements of concrete blocks made and deposited, of stone received on the work, of cement received and issued, and so on, which may be sufficient for the purposes of those on the spot, but, unless supplemented by a report on the condition of the works and harbour generally, supply no material for comment here. It is satisfactory in one sense that this is so, for it implies that the works are progressing quietly and steadily without accident; but it is difficult for a Consulting Engineer to keep in touch with what is going on when none but statistical information in its barest form reaches him.

The two papers which I propose to notice now are (1) the progress return for the quarter ending 30th September last and (2) the papers forwarding the revised estimate for the completion of the works, amounting to Rs. 1,23,83,386, sent home with the Government despatch of the 8th September 1891.

In respect to the progress report, I gather from the return of work done that the wider portions of the two piers which form the approaches to the heads had been reached and are now well commenced; that 25 lineal feet of this portion of the superstructure of the north pier and 12½ feet of that of the south pier were completed and 4,828 cubic yards of concrete blocks made during the quarter; and that the total expenditure during the quarter was Rs. 1,11,207. I presume that this includes establishment.

I would suggest that the quarterly return would be more valuable if it contained a statement of (1) estimated sum required to complete the works at the commencement of the quarter, (2) cost of work done during the quarter, (3) estimated cost of additional works found necessary during the quarter, and (4) estimated cost of completing the works from and after the end of the quarter.

The return should be also, I think, accompanied by a report from the Engineer in charge on the condition and prospects of the works and harbour generally from the engineering point of view and specially in regard to accretion and erosion in front on either side and inside of it, and, if either the Engineer or some other authority would send with the return a report upon the use made of the harbour during the quarter and the needs made evident in respect to commercial works in or in connection with it, we here should, I think, be in a better position than we are to form a judgment upon the questions in regard to the harbour which will undoubtedly arise— indeed have already arisen—in respect to its commercial future.

I come now to the completion estimate sent home by the Government in September last.

By this estimate it appears that the total cost of the harbour is now expected to reach Rs. 1,23,83,386. This sum, we are told, provides for all work now considered necessary for the completion of the harbour with an eastern entrance. It also includes a sum of Rs. 1,55,462 for further protection of the foreshore outside the harbour on its north side; but a credit of Rs. 2,33,460 has been taken in it for the value of plant which will be available for sale on the completion of the works.

The estimate is apparently made up as follows :—

	RS.
Expenditure to 31st December 1884	65,54,490
Revised estimate for completion now proposed	58,28,896
Total ...	1,23,83,386

The estimated cost sanctioned by para. 2 of Public Works Department letter, No. 325 M., dated 10th August 1886, was as follows :—

	RS.
Expenditure to 31st December 1884	65,54,490
Estimate for completion	45,90,051
Total ...	1,11,44,541

The estimate of 1890 is therefore greater than that of 1886 by Rs. 12,38,845. The excess is mainly due to the increased quantity of cement put into the concrete, to a rise in the price of cement, to fall in exchange, to losses by delay, to additional works and plant found necessary since 1886 to the safe construction of the harbour, and to expenditure on protecting the shore north of the harbour.

Upon this estimate the Harbour Board request the Government to make a further advance of 15 lakhs to complete the harbour with an eastern entrance and for the extension of the revetment to protect the foreshore to the north. The reason for asking 15 lakhs instead of the Rs. 12,38,845 shown to be necessary appears to be that the difference between the two sums is the amount for which it is expected the plant employed in the construction of the harbour will sell on its completion; but this sum will, of course, not be available until after the completion, so that the proposal of the trustees comes to this, that the sum of 15 lakhs shall be advanced to them, they expecting that it will leave them shortly after the completion of the works with Rs. 2,33,460 in hand.

I observe that Rs. 2,60,000 of the 15 lakhs is credited to me for works which I am said to have "ordered." Of course I only recommended these works, but they have been, as you are aware, accepted as necessary.

It is evident that, if the harbour is to be completed, this extra grant must be made.

The information at my disposal is not sufficient to enable me to say that 15 lakhs will complete the works as now sanctioned; but, from the character and experience of the Engineer in charge of them, I think the estimate may be considered as fair an approximation to the actual cost as works of this kind admit of being made. It must not, however, in my opinion, be expected that 15 lakhs will bring the expenditure on the harbour to a final close. If the harbour is to be made really commercially useful, a further and much larger sum will have, as I have before reported, to be spent upon it; but, though the total expenditure on the harbour, when completed fit for commercial use, will be large, and, though it is, in my opinion, to be wished that it had been designed on a somewhat larger scale and its works of considerably greater strength, I cannot but think that its value even as it is will be fully commensurate with its cost.

In conclusion, I have to observe that it seems to me that the further protection of the shore on the north side of the harbour estimated to cost Rs. 1,55,462 is unavoidable, except at the expense of much greater loss by land and property destroyed; but it is not at all sure that when that sum has been spent no further works of protection will be necessary. All we shall be able to say, I think, with certainty is that what has been done is all to the good and that the cost of the protection, though large, is compensated, in part at least, by the value of the land formed by the corresponding accretion which has taken place on the south and more valuable side of the harbour, provided (which I do not expect) the accretion does not extend so far seaward as to interfere with the entrance to the harbour.

The expenditure now proposed will extend the present protective bank of stone about 800 yards northwards. The method in which it is now proposed to deposit the stone, namely, in the form of a bank along the line of high-water mark, so that it may settle down into place as the sand below it is eroded, is, I think, preferable to the mode previously adopted of tipping a bank of stone into deep water; but it is mainly preferable to my mind because it is the cheaper method.

Erosion beyond the point to which it is now proposed to carry the bank may probably be disregarded, because, being further from the harbour piers, their influence on wind and sea may be expected to be much slighter than it has been nearer the harbour and because the land which may be washed away will be comparatively of much less value.

1705-06
18

ORDER—dated 12th February 1892, No. 430 W., Public Works.

Communicated to the Chairman, Harbour Trust Board, with reference to the undermentioned orders :—

G.O., No. 2065 W., dated 9th July 1888.
" " 718 W. " 13th March 1891.
" " 720 W. " 13th " "
" " 1422 W. " 25th May "
" " 1966 W. " 23rd July "

2. Particular attention is invited to the wishes expressed in paras. 4 and 5 of the despatch from the Secretary of State, which should be carefully observed.

(True Extract.)

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

To the Chairman, Harbour Trust Board.
" Marine Department.

Exd. A. D. Xavier.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1892} Madras.
PUBLIC WORKS.

Dated February, 12th.

Recd. *Encl.*

G.O., 12th Feb. 1892, No. 430 W.

FEBRUARY.

Harbour Works, Madras

Sanction accorded by the Secretary of State to the revised estimate of Rs. 1,23,83,386 for constructing the — communicated to the Chairman, Harbour Trust Board, with remarks,

---

22nd March 1892, No. 950 W., Public Works.

1705-06
~~17~~ 8

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following papers:—

From W. P. AUSTIN, Esq., C.S., Chairman, Harbour Trust Board, to the Chief Secretary to Government, dated Madras, 25th January 1892, No. 2998.

I have the honour to submit, herewith, for the information of Government, a statement of progress made upon the Madras Harbour Works during the quarter ending 31st December 1891 together with tracing in duplicate.

Enclosures.

Extract of Proceedings of the Trustees of the Harbour of Madras at a meeting held at the Offices of the Board, on Friday, the 22nd day of January 1892.

* * * * *

2. Read statement of progress upon the Madras Harbour Works for the quarter ending 31st December 1891.

Recorded and resolved that this statement be submitted to Government.

* * * * *

(True Extract.)

(Signed) C. PINSENT,
Secretary, Harbour Trust Board.

PROGRESS STATEMENT No. 25.

MADRAS HARBOUR WORKS.

STATEMENT showing progress during quarter ending 31st December 1891 as shown on accompanying tracing No. 24.

NOTE.—The figures in block type denote for comparison progress and quantity of work done in quarter ending December 1890.

No. of item.	Particulars and quantity of work, &c.	Sub-heads of work.	NORTH PIER.					SOUTH PIER.					RAILWAY LINES.				Pallávaram quarries outturn.	Concrete block-making	Protective works.	Total expenditure.
			Rubble base.	Pier head.	Wave-breaker.	Concrete capping.	Base protection.	Rubble base.	Pier head.	Wave-breaker.	Concrete capping.	Base protection.	At works.	At quarries.	Sand line.	Beach improvements.				
		Column	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Rubble stone deposited from boats	Tons.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	**3,947½** 19,616¾	..
2	Do. do. from wagons	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
3	Total quantity rubble stone received on works	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	**9,778¼** 19,616¾	..	..	..
4	Do. blasted chips do.	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	**9,403½** 1,826¼	..	..	..
5	Concrete blocks, set by divers	No.	..	**Nil.** 9	..	..	..	..	**12** 12	..	..	..	..	..	..	..	..	..	..	..
6	Do. deposited in wavebreaker	,,	..	..	**146** 29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	Do. made for superstructure	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	Do. do. pier head	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	Wrought-iron cramp fixed in position	,,	..	**36** 8	..	..	..	..	**11** 6	..	..	..	..	..	..	..	..	..	..	..
10	Total outturn of concrete	C. yds.	..	..	..	..	**386⅔** 238⅜	..	..	..	..	..	..	..	..	..	..	..	..	..
11	Advance or progress of completed superstructure	Ry. feet.	..	..	..	..	..	..	**Nil.** 6¼	..	..	..	..	..	..	..	..	..	..	..
12	Rubble base protected with concrete	,,	..	..	..	..	**348** 215	..	..	..	..	..	..	..	..	..	..	..	..	..
13	Metre gauge, 40 lb. per yard laid new	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	Do. do. relaid or renewed	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	Do. do. taken up	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	Broad gauge, 50 lb. per yard laid	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	Do. do. relaid or renewed	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	Do. do. taken up	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	Titan gauge, 75 lb. per yard laid new	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	Do. do. relaid or renewed	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	Do. do. taken up	,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	....		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	....		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	Approximate expenditure under sub-heads of work	Rs.	1,348	8,044	2,972	..	1,639	506	5,101	897	..	4					24,422	8,045	*9,308	62,296

	TONS.	CWTS.	QRS.	LB.
Nil. casks of cement received on works during quarter ending 31st December 1891, containing ..	*Nil.*			
171⅝ do. issued for do. do. do. do. ..	30	14	0	1
11,783 do. balance in store at end of do. do. do. ..	2,103	6	3	25

MADRAS,
7th January 1892.

(Signed) J. J. CHISHOLM,
Engineer, Harbour Trust Board.

No. 168, Marine.

Transferred to the Public Works Department.

(Signed) J. F. PRICE,
Chief Secretary.

29th January 1892.

1705-06
20

From W. P. AUSTIN, Esq., C.S., Chairman, Harbour Trust Board, to the Chief Secretary to Government, dated Madras, 7th March 1892, No. 3794.

I have the honour to submit, herewith, for the information of Government, comparative statement of expenditure upon the Madras Harbour Works during quarter ending 30th September 1891.

No. 462, Marine.

Transferred to the Public Works Department.

(Signed) J. F. PRICE,
Chief Secretary.

10th March 1892.

ORDER—dated 22nd March 1892, No. 950 W., Public Works.

The report of progress for the quarter ending 31st December 1891 and statement of expenditure for the previous quarter, as compared with the sanctioned estimate, will be forwarded to the Secretary of State for India together with the plan.

2. A copy of the report and statement of expenditure will also be forwarded for the information of the Government of India.

3. The report for the quarter ending 31st March 1892 should be prepared in the amended form required by the Secretary of State (*vide* G.O., No. 430 W., dated 12th February 1892).

(Here enter No. 951 W., Public Works, dated 22nd March 1892.)

(True Extract.)

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

To the Chairman, Harbour Trust Board.
,, Marine Department.

ENDORSEMENT—dated 22nd March 1892, No. 951 W., Public Works.

Copy of the above forwarded to the Government of India.

(By Order.)

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

Exd. A. D. Xavier.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated March, 22nd.

Recd. *Encl.*

**G.O., 22nd Mar. 1892, Nos. 950
951 W.**

MARCH.

Madras Harbour Works

Forwarding copy of the progress report of the — for the quarter ending 31st December 1891 and statement of expenditure for the previous quarter as compared with the sanctioned estimate.

22nd March 1892, No. $\frac{4}{950}$ W., Public Works.

PUBLIC WORKS DEPARTMENT.

1705-06
24 10

Letter—to

The Right Honorable the SECRETARY of STATE for INDIA.

My Lord,

In continuation of our despatch, No. $\frac{15}{2999}$ W., dated 10th November 1891, we have the honour to forward a copy of our Proceedings, No. 950 W., dated 22nd March 1892, embodying a report of progress of the Madras Harbour Works for the quarter ending 31st December 1891 and a statement of expenditure for the previous quarter as compared with the sanctioned estimate.

2. A plan showing the state of the works at the end of the quarter ending 31st December 1891 is also forwarded.

3. The instructions contained in your Lordship's despatch, No. 1 (Public Works), dated 7th January 1892, in regard to an amended form of report have been duly noted for future guidance and the report for the quarter ending 31st March will be prepared accordingly.

We have the honour to be,
My Lord,
Your Lordship's most obedient, humble servants,
(Signed) WENLOCK.
(„) H. E. STOKES.
(„) J. H. GARSTIN.

Fort St. George,
22nd March 1892.

Exd. A. D. Xavier.

GOVT. OF MADRAS.

PUBLIC WORKS DEPARTMENT.

(Copy.)

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

No. $\frac{4}{950 \text{ W.}}$, dated 22nd Mar. 1892.

Forwarding copy of Proceedings embodying the progress report of the Madras Harbour Works for quarter ending 31st December 1891 and statement of expenditure for the previous quarter as compared with the sanctioned estimate.

21st April 1892, No. 1273 W., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

(1205-06
1273 12

Buildings and Roads.
Civil Works.

READ—the following paper :—

From W. P. AUSTIN, Esq., C.S., Chairman, Harbour Trust Board, to the Chief Secretary to Government, Marine Department, dated Madras, 6th April 1892, No. 86.

I have the honour to submit herewith, for the information of Government, comparative statement (in triplicate) of expenditure upon the Madras Harbour Works for the quarter ending 31st December 1891.

ENCLOSURE.

EXTRACT of Proceedings of the Trustees of the Harbour of Madras at a meeting held at the offices of the Board on Friday, the 1st day of April 1892.

* * * * *

3. Examined comparative statement of expenditure upon the Madras Harbour Works during the quarter ending 31st December 1891.

Recorded and resolved,—that this report be submitted to Government.

* * * * *

(True Extract.)

(Signed) C. PINSENT,
Secy., Harbour Trust Board.

No. 673, Marine.

Transferred to the Public Works Department.

9th April 1892.

(Signed) J. F. PRICE,
Chief Secretary.

ORDER—dated 21st April 1892, No. 1273 W., Public Works.

Ordered to be forwarded to the Right Honorable the Secretary of State for India in continuation of the progress report recorded with G.O., No. 950 W., dated 22nd March 1892.

(Here enter No. $\frac{7}{1273 \text{ W.}}$, Public Works, dated 21st April 1892.)

(True Extract.)

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

To the Chairman, Harbour Trust Board.
" Marine Department.

Exd. S. J. Pereira.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated April, 21st.

Recd. *Encl.*

G.O., 21st April 1892, No. 1273 W.

APRIL.

Madras Harbour Works

The statement of expenditure upon the — for the quarter ending 31st December 1891, ordered to be forwarded to the Secretary of State for India.

21st April 1892, No. $\frac{7}{1273}$ W., Public Works.

(1205-06
[illegible] 13

PUBLIC WORKS DEPARTMENT.

Letter—to

The Right Honorable the SECRETARY of STATE for INDIA.

My Lord,

In continuation of our despatch No. $\frac{4}{950}$ W., dated 22nd March 1892, forwarding a report of progress of the Madras Harbour Works for the quarter ending 31st December 1891, we have the honour to forward a statement of expenditure on the works up to the close of this period as compared with the sanctioned estimate.

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

(Signed) H. E. STOKES.
(„) J. H. GARSTIN.

Fort St. George,
21st April 1892.

Exd. S. J. Pereira.

GOVT. OF MADRAS.

PUBLIC WORKS DEPARTMENT.

(Copy.)

557

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

No. $\frac{7}{1273\text{ W.}}$, dated 21st April 1892.

Forwarding a statement of expenditure upon the Madras Harbour Works for the quarter ending 31st December 1891.

PROGRESS STATEMENT No. 28

1705-06
4

MADRAS HA OUR WORKS.

Statement showing Progress during quarter ending 31st March '9 *shown on accompanying* ~~*Lithographed*~~ Tracing *Plan No.* 27

Note.—The Figures in *red* denote for comparison progress and quantity of work done in quarter ending 31st march '91

			North Pier.					South Pier.					Railway Lines.							
		Sub-heads of Work.	Rubble Base.	Pier Head.	Wavebreaker.	Concrete Capping.		Rubble Base.	Pier Head.	Wavebreaker.	Concrete Capping.	Base Protection.	At Works.	At Quarries.	Sand Line.	Beach Improvements.	Pallavaram Quarries Outturn.	Concrete Blockmaking.	Protective Works.	Total Expenditure during the quarter
No. of Item.	Particulars and Quantity of Work, &c.	Column.	A	B	C	D		F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Rubble Stone deposited from boats	Tons	1114¾ 325¼																	
2	Do. do. from wagons	,,																	3822¼ 8414¾	
3	Total quantity Rubble Stone received on Works	,,															4937 8740			
4	Do. Blasted Chips do.	,,															893¾ 7006			
5	Concrete Blocks—Set by Divers	Number		161					72											
6	Do. Deposited in Wavebreaker	,,			248½															
7	Do. made for Superstructure	,,			107															
8	Do. do. Pier Head	,,		338																
9	Wrought Iron Cramp fixed in position																			
10	Total out-turn of Concrete	Cubic yards.		4728 11/27	1926	17	2				53 20½									
11	Advance or progress of completed superstructure	Ry. feet		119 510					25 18¾											
12	Rubble Base protected with Concrete						2 2													
13	Metre Gauge, 40 lbs. per yard laid new	,,																		
14	Do. do. relaid or renewed	,,																		
15	Do. do. taken up	,,																		
16	Broad Gauge, 50 lbs. per yard laid	,,											68½ 979		96					
17	Do. do. relaid or renewed	,,											1268							
18	Do. do. taken up	,,																		
19	Titan Gauge, 75 lbs. per yard laid new	,,																		
20	Do. do. relaid or renewed	,,																		
21	Do. do. taken up	,,																		
22																				
23																				
24	Approximate Expenditure under Sub-heads of Work	Rupees	1805	10928	15612	417	1	1274	3276	138	395		—		× —		19164	74532	4514	161716-2 12/4

	Tons.	Cwts.	Qrs.	lbs.
1579 Casks of Cement received on Works during quarter ending 31st March '91 containing	28	19	1	4
6171¼ Do. do. issued for do.	110	0	3	6
[illegible] Do. do. Balance in Store at end of	128	5	1	23

Quantity due on Indents.	Tons.	Cwts.	Qrs.	lbs.
	717	17	0	16

7	Do. made for Superstructure	,,			248½														
8	Do. do. Pier Head	,,			107														
9	Wrought Iron Cramp fixed in position	,,		338															
10	Total out-turn of Concrete	Cubic yards.		4728 11/27	1926	17	2												
11	Advance or progress of completed superstructure	Ry. feet		110 310							55 20½								
12	Rubble Base protected with Concrete	,,							25 18¾										
13	Metre Gauge, 40 lbs. per yard laid new	,,					21 20												
14	Do. do. relaid or renewed	,,																	
15	Do. do. taken up	,,																	
16	Broad Gauge, 50 lbs. per yard laid	,,										682							
17	Do. do. relaid or renewed	,,										979		96					
18	Do. do. taken up	,,										1268							
19	Titan Gauge, 75 lbs. per yard laid new	,,																	
20	Do. do. relaid or renewed	,,																	
21	Do. do. taken up	,,																	
22																			
23																			
24	Approximate Expenditure under Sub-heads of Work	Rupees	1805	10928	15612	417	1	1274	3276	138	395	—		×	—	19164	74532	4514	161716

12/4

1579 Casks of Cement received on Works during quarter ending 31st March '92 containing 28 Tons 19 Cwts. 1 Qrs. 4 lbs.

6171¼ Do. do. issued for do. 110 - 0 - 3 - 6

7190¾ Do. do. Balance in Store at end of 128 - 5 - 1 - 23

Quantity due on Indents. Tons. Cwts. Qrs. lbs. 717 - 17 - 0 - 16

Column. Item No.
,, ,, ,,
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Vide accompanying report

1 2 3

1892

J J Wilson
Engineer, Harbour Trust Board.

MADRAS HARBOUR WORKS.

Comparison of Expenditure to date with Sanctioned Estimate for the Quarter Ending 31st March 1892.

Sub-head of Work.	As per Estimate sanctioned in Secretary of State Despatch No. 1, dated 7th January 1892. Quantity.	Rate. Rs. A. P.	Per.	Cost. Rs.	Total. Rs.	As Executed. Quantity.	Rate. Rs. A. P.	Expenditure. Total up to end of last Quarter. Rs. A. P.	During the Quarter. Rs. A. P.	Up to date. Rs. A. P.	Arrears not paid. Rs. A. P.	Value of work done up to date, columns 11 & 12. Rs. A. P.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Expenditure up to 31st December 1884.													
Works	......	...	...	55,09,324	...		...	55,09,324 8 10	......	55,09,324 8 10	......	55,09,324 8 10	
Establishment	......	...	...	5,29,904	...		...	5,29,904 0 0	......	5,29,904 0 0	......	5,29,904 0 0	
Tools and Plant	......	...	...	5,15,262	...		...	5,15,262 6 0	......	5,15,262 6 0	......	5,15,262 6 0	
Total...	......	...	...		65,54,490		...	65,54,490 14 10	......	65,54,490 14 10	......	65,54,490 14 10	
Revised Estimate.													
Alteration and extension of block ground ...Prely...	......	...	...	5,892	5,892			5882 3 5	„ „ „	5882 3 5	9 13 6	5892 „ 11	
North Pier.													
Ordinary rubble deposited from breakwater ... Tons	13,930	1 12 0	Ton	24,378		13929¾	1 12 „	24377 9 „		24377 9 „	„ „ „	24377 9 „	
Do. from boats ... „	2,06,896	2 0 5	„	4,19,218		208362½	2 1 1	4,23283 7 7	2466 12 8	4,25,750 4 3	4703 6 11	430453 11 2	
oncrete blocks for building ... C. yds.	51,320	11 8 0	C. yd.	5,90,110		44356 [illegible]	11 10 11	480794 1 5	37431 4 5	5,18,225 5 10	„ „ „	5,18225 6 10	
etting blocks at commencement of new work ... „	2,615	2 1 1	„	5,415		2615 [illegible]	2 1 1	5414 11 2	„ „ „	5,414 11 2	„ „ „	5,414 11 2	
Do. from 2,200 to 3,600 feet ... „	36,520	2 14 3	„	1,05,569		36446 [illegible]	2 15 9	1,08813 14 8	„ „ „	1,08813 14 8	„ „ „	108813 14 8	
Do. at Pierhead ... „	12,185	9 8 11	„	1,16,424		5324 13/26	9 „ 1	35954 8 10	10,544 10 6	46,499 3 4	1435 9 8	47,934 13 „	
oncrete in mass for filling ... „	263	4 8 3	„	1,188		263	4 8 3	1188 „ 7	„ „ „	1188 „ 7	„ „ „	1,188 „ 7	
'ave breaker blocks ... „	288	9 5 7	„	2,692		288	9 5 7	2692 „ „	„ „ „	2692 „ „	„ „ „	2,692 „ „	
Do. concrete blocks ... „	77,355	10 14 11	„	8,45,591		63386 [illegible]	11 4 5	654577 6 8	60,136 12 6	7,14,714 3 2	„ „ „	7,14,714 3 2	
epositing do. ... „	77,932	1 0 0	„	77,928		63981 [illegible]	1 „ 3	48,757 10 2	13,541 4 7	62298 4 9	2538 8 9	64837 7 6	
oncrete in protection to Rubble Base ... „	1,986	10 4 1	„	20,358		1069 [illegible]	7 11 6	7814 11 9	447 7 6	8262 3 3	„ „ „	8262 3 3	
ramps, Iron ... No.	331	9 10 1	Each	3,188		275	8 13 6	2361 5 8	„ „ „	2361 5 8	„ „ „	2361 5 8	
oncrete capping ... C. yds.	16,352	11 3 10	C. yd.	1,83,798		573½	19 13 10	10,969 7 7	4247 „	11,393 14 7	„ „ „	11,393 14 7	
ost of North Pier Caisson and setting in position and filling same as items 26, 27, 33 & 34... „	......	...	„	84,750					„ „ „		„ „ „	„ „ „	
Total for North Pier ...	......	...	...	...	24,80,607			18,06,998 15 1	1,24,992 11 2	19,31,991 10 3	8,677 9 4	19,40,669 3 7	
South Pier.													
dinary rubble deposited from boats... Tons	1,75,078	2 9 0	Ton	4,49,052		170774	2 9 8	438754 8 7	863 15 1	439618 7 8	5361 6 9	444969 14 5	
rge do. deposited from breakwater ... „	8,615	1 12 0	„	15,076		8614¾	1 12 „	15075 13 „	„ „ „	15075 13 0	„ „ „	15,075 13 „	
ncrete blocks for building ... C. yds.	45,066	11 3 1	C. yd.	5,04,510		38620 [illegible]	11 2 6	4,16,525 15 4	15,377 11 6	430,903 10 10	„ „ „	4,30,903 10 10	
tting blocks at commencement ... „	2,556	3 1 6	„	7,912		2556	3 1 6	7,911 13 3	„ „ „	7911 13 3	„ „ „	7,911 13 3	
Do. from 2,550 to 3,700 feet ... „	30,160	3 7 11	„	1,05,461		30160½	3 7 11	1,05,461 9 4	„ „ „	1,05,461 9 4	„ „ „	1,05,461 9 4	
Do. at Pierhead ... „	12,350	11 1 3	„	1,36,845		6903 [illegible]	14 6 3	71,556 13 8	9,261 7 7	80,818 5 3	4,137 6 8	84 965 11 11	
ncrete in Mass for filling ... „	602	7 [illegible] 1	„	4,555		[illegible]	7 9 1	4,554 14 4	„ „ „	4,554 14 4	„ „ „	4,554 14 4	
Do. in Cylindrical Pierhead ... „	2,355	15 0 0	„	35,325		„	„ „ „	„ „ „	„ „ „	„ „ „	„ „ „	„ „ „	
Do. in filling in between Coursed Blockwork and Caisson ... „	184	15 0 0	„	2,760				„ „ „	„ „ „	„ „ „	„ „ „	„ „ „	
vebreaker concrete blocks ... „	47,231	11 1 6	„	5,24,070		38124 [illegible]	11 3 2	4,26,839 9 7	„ „ „	426839 9 7	„ „ „	426839 9 7	
positing do. ... „	47,714	1 5 8	„	64,708		38606 [illegible]	1 6 3	53,274 15 10	344 7 4	53,619 7 2	9 5 8	53 628 12 10	
ncrete in protection to Rubble Base ... „	1,700	9 10 6	„	16,420		1023 [illegible]	9 12 3	9,988 11 „	„ „ „	9,988 11 „	„ „ „	9988 11 0	
mps, Iron ... No.	259	11 7 7	Each	2,972		[illegible]	11 8 5	2,269 „ 1	„ „ „	2,269 „ 1	„ „ „	2259 0 1	
ncrete capping ... C. yds.	16,247	11 5 8	C. yd.	1,84,495		668 [illegible]	21 2 4	13,751 „ 4	395 „ „	14,146 „ 4	„ „ „	14146 „ 4	
n Caisson ... No.	1	...	„	18,000		1	„ „ „	„ „ „	21,406 3 6	21,406 3 6	„ „ „	21 406 3 6	
paring Base for and setting Cylindrical Pierhead „	......	...	„	28,665				„ „ „	„ „ „	„ „ „	„ „ „	„ „ „	
∴ Total for South Pier ...	......	...	...	...	21,00,820			15,64,954 12 4	47,648 13 0	16,12,603 9 4	9,498 3 7	16,22,101 12 5	
Extending the rubble revetment protecting the foreshore North of Harbour.													
ble Stone Revetment ... Tons	70,600	2 1 0	Ton	1,45,613		74738⅓	1 8 9	85,550 3 „	23898 13 8	109449 „ 8	6227 3 10	115676 4 6	
way Lines ...	......	...	...	9,849		„		10,163 6 1	-1417 5 -	8746 1 1	103 3 9	8849 4 10	
					155,462	„	„	95,713 9 1	22,481 8 8	118,195 1 9	6,330 7 7	124,525 9 4	
s and Plant ...	......	...	...	...	11,656			5,34,534 3 3	54,228 15 9	5,88,763 3 „	737 14 1	5,89,501 1 1	
tingencies ...	......	...	...	...	217,415			1,62,456 2 5	8,221 „ 11	1,70,677 3 4	7,038 13 10	1,77,716 1 2	
blishment ...	......	...	...	...	534,369			4,61,789 5 11	15,905 5 7	4,77,694 11 6	99 5 9	477794 1 3	
erials at site (Concrete blocks in yards) ... C. yds.	......	...	...	...	...	13876 5/27	13 5 8	2,69,274 2 1	-29,944 4 8	2,39,329 13 5	12,733 7 5	252063 4 10	
ances to Work-people ...	......	...	...	...	...			4,994 14 5	878 13 4	5,873 11 9	„ „ „	5873 11 9	
Total of Estimate and value of work done...	......	...	...	...	6,06,227			49,06,598 4 „	2,44,412 5 9	51,51,011 3 9	45,125 10 7	51,96,136 14 4	
uct Probable recoveries due to sales of Tools and Plant.	......	...	...	...	77,331			-57213 8 [illegible]	-914 [illegible]	-58128 1 6	„ „ „	-58,128 1 6	
Total ...	......	...	...	...	5,28,896			48,49,384 11 11	2,43,498 6 4	50,92,883 2 3	45125 10 7	51,38,008 12 10	
l of revised Estimate sanctioned in Secretary of State Despatch, plus expenditure before 31st December 1884.	......	...	...	...	1,2[illegible],386			114,03,876 10 7	2,43,498 6 4	116,47,374 1 1	45,125 10 7	116,92,499 11 8	
mated Cost of additional works found necessary up to end of last Quarter ...	......	...	...	...									
mated Cost of additional works found necessary during quarter ending ...	......	...	...	...									
Estimated Cost for Completion of works ...	......	...	...	...	123,83,386								
uct Total Expenditure as per column 11 ...	......	...	...	...	116,47,374								
Estimated Cost of completing work after quarter nding 31st March 1892...	......	...	...	...	7,36,012								

Expenditure up to 31st March 1891 from commencement of works ... Rs. 109,95,268-2-2

Do. during current official year from 1st April 1891 to 31st March 1892 " 6,52,106-14-11 Grant for 1891-92 Rs. 8,00,000

Total outlay ... " 11647374-1-1

EXTENDING THE RUBBLE REVETMENT PROTECTING THE FORESHORE NORTH OF HARBOUR.

													85,550	3	"	23898	13	8	109449								
Rubble Stone Revetment	Tons	70,600	2	1	0	Ton	1,45,613		74738⅓	1	8	9	10,163	6	1	−1417	5	−	8746	1	1	103	3	9	8849	4	10
Railway Lines	...	......	...	...	...	...	9,849	155,462	"	"	"		95,713	9	1	22,481	8	8	1,18,195	1	9	6,330	7	7	124,526	9	4
Tools and Plant	...	......	...	...	...	...	...	4,11,656					5,34,534	3	3	54,228	15	9	5,88,763	3	"	737	14	1	589,501	1	1
Contingencies	...	......	...	...	...	...	...	217,415					1,62,456	2	5	8,221	"	11	1,70,677	3	4	7,038	13	10	177,716	1	2
Establishment	...	......	...	...	...	...	...	534,369					4,61,789	5	11	15,905	5	7	4,77,694	11	6	99	5	9	477794	1	3
Materials at site (Concrete blocks in yards) ...	C. yds.	......	...	...	...	...	...	...	13876 5/27	13	5	8	2,69,274	2	1	−29,944	4	8	2,39,329	13	5	12,733	7	5	252063	4	6
Advances to Work-people	...	......	...	...	...	...	...	...					4,994	14	5	878	13	4	5,873	11	9	"	"	"	5873	11	9
Total of Estimate and value of work done...		......	...	...	...	...	...	6,06,227					4906,598	4	"	244412	15	9	51,51,011	3	9	45,125	10	7	5196,136	14	4
Deduct Probable recoveries due to sales of Tools and Plant.		......	...	...	...	...	...	2,77,331					−57213	8	1	−914	9	5	−58,128	1	6	"	"	"	−58,128	1	6
Total ...		......	...	...	...	...	...	5,28,896					48,49,384	11	11	243,498	6	4	5092,883	2	3	45125	10	7	5138,008	12	10
Total of revised Estimate sanctioned in Secretary of State Despatch, plus expenditure before 31st December 1884.		......	...	...	...	...	...	[illegible]					114,05,876	10	7	2,40,498	6	4	116,47,374	1	1	45125	10	7	116,92,499	11	8
Estimated Cost of additional works found necessary up to end of last Quarter		......	...	...	...	...	...																				
Estimated Cost of additional works found necessary during quarter ending		......	...	...	...	...	...																				
Total Estimated Cost for Completion of works		......	...	...	...	...	...	12583386																			
Deduct Total Expenditure as per column 11		......	...	...	...	...	...	116,47,374																			
Total Estimated Cost of completing work after quarter ending 31st March 1892		......	...	...	...	...	...	7,36,012																			

Expenditure up to 31st March 1891 fro

Do. during current official year

Total outlay

MADRAS,
25 May 1892.

Accountant,
M. H. Works Office.

HARBOUR TRUST BOARD
SECRETARY'S
21 MAY 92
OFFICE
MADRAS.

for Engineer, Harbour Trust Board.
19/5/92

Harbour Trust Board Office,

MADRAS, 21st May 1892

URGENT 48

No 620

From Ware Austin Esquire CS

CHAIRMAN, HARBOUR TRUST BOARD,
MADRAS.

1705-06/4

1705-06/10

To The Honorable J. F. Price CS

CHIEF SECRETARY TO GOVERNMENT,
Marine Department.

Sir

I have the honour to submit herewith for the information of Government a letter from the Board's Engineer, No 93 dated 25th April, submitting statement of, and reporting upon, progress made upon the Madras Harbour Works during the quarter ending 31st March 1892, together with the tracings alluded to, and comparison of expenditure to 31st March with sanctioned estimate for the quarter ending on that date

2 Referring to para 2 of 90

No. 430 W dated 12th February 1892, I have to report that 191 vessels of 311,313 net registered tonnage were accommodated inside the Harbour during the quarter.

3 The annual Administration report of the Trustees is now in course of active preparation and I hope to be able to submit it to Government shortly, and as this will give full details upon the points referred to in paras 4 and 6 of the Right Honourable the Secretary of State's Despatch printed in the above quoted G.O. I will not now report further upon the isolated period comprised in the last three months of the Official year 1891-92, but will, commencing with the first quarter of 1892-93 submit a quarterly report upon the lines indicated in Sir Alexander Rendel's memorandum dated 4th December 1891.

I have the honour to be
Sir
Your obedt. Servant

Chairman

EXTRACT of Proceedings of the TRUSTEES OF THE HARBOUR OF MADRAS, at a Meeting held at the Offices of the Board on Friday the 6th day of May 1892

17-5-06

807

+ \+ \+

10. Read letter from the Board's Engineer No. 93 dated 25th April submitting statement of and reporting upon progress made during the quarter ending 31st March 1892 upon the Harbour Works.

Recorded.

+ \+ \+

True extract

Secretary
Harbour Trust Board

G.O.
P.W. 5596/92

Marine 432/92
71

No. 93

1705-06

~~13~~ 17
4
~~8~~ 18

R. No 1460

From

THE ENGINEER,
HARBOUR TRUST BOARD,
MADRAS.

To

The Secretary
Harbour Trust Board
Madras

Madras 25 April 1892.

Sir,

I have the honor to submit herewith the quarterly statement of progress up to the 31st March 1892 together with a report as called for in G.O. No 430 W. dated 12 February 1892 and the marginally noted plans.

Enclos

1. Statement
1 proforma accounts statement
1 Report
1 Plan of Harbour and foreshore (in triplicate)
2. Sheets Cross sections

I have the honour to be,
Sir
Your most obedient Servant,
J J Wilson
Ag Engineer, Harbour Trust Board.

SDP

P.W. 5.2 / 55-96/52

Marine 482/92 / 8

1705-06

Memo to accompany Statement of progress for the Quarter ending 31st March 1892.

1.	Estimated sum required to complete the works at the commencement of the Quarter Except Establishment, Tools and Plant and Contingent charges	Rs 9,52,284
2.	Cost of work done during the Quarter	1,61,716
		7,90,568
3.	Estimated Cost of additional works found necessary during the quarter	" "
4.	Estimated cost of completing the works from and after the end of quarter	7,90,568

Harbour Works Office
Madras 25th April 1892

J. J. Wilson
a/ Engineer, Harbour Trust Board

E.4
P.W. 5396/92

Marine 482/92
10

Report to accompany quarterly Statement of progress on the Madras Harbour Works for the quarter ending 31st March 1892.

6 1705-06
6 19

North Pier.

The state of the sea in the early part of January did not permit of work being resumed at the pier head until the 18th, when the titan was run out and turned for work on the 19th. Up to this divers were employed on the Concrete protection to the rubble base inside the harbour - During the remainder of the quarter 161 blocks were set advancing the superstructure by 50 feet and leaving a length of about 95 feet of superstructure to be set before the cylindrical head is commenced - Work on this portion of the pier is comparatively slow, owing to the extra width of foundation to be prepared (38 feet instead of 24), extra depth of foundation involving the removal of stone previously deposited and the removal of blocks fallen from the old pier -

2 An entirely new track composed of 75 lb steel rails rivetted together in pairs, had to be laid along the North pier for the new all round crane, the guage of which is 20 feet and the guage of the titans being 16 feet - This was done and the all round crane run out on the 6th March - Between this date and end of quarter 248 wave breaker blocks were deposited in the wave breaker from the North East angle to 3375 feet completing the wave breaker up to this point to its full

width of 40 feet. The new crane did its work well, and is a great improvement on the old wave breaker crane – A little trouble was experienced owing to the steel rope holding up the jaws slipping through the break, but this has been rectified – The only other point regarding which a possible improvement suggests itself, is an arrangement by which the jaws, could be [illegible] without lowering the block – The crane has not yet been tried for blocksetting, but it is expected it will have many advantages to this work, also over the old titans –

South pier.

3 The South pier titan was moved out on the 17th January and turned on the 18th – The progress on the pier has not been so good as on the North pier, only 72 blocks having been set and the superstructure advanced by 18¾ feet – This is due to the trouble experienced in removing old rubble, and blocks from the old pier, from the base, necessary for the extra depth of foundations – The material that had to be removed consisted largely of small stone, mixed with mud and sand, and the Priestman's grab used at first, frequently came up with little or nothing in it – A grab with closer tynes was borrowed from the Marine department, which did better but the work is nevertheless slow – At the end of the quarter the superstructure of the South pier was one course a head of that of the North pier or leaving about 89 feet of block superstructure to be set before the setting of the cylindrical head course commenced.

7/SP

Blockmaking.

4. 445 blocks containing 6654 1/27 cubic yards were made during the quarter or nearly all that will be required to complete the work –

Foreshore North of the harbour

1705.06/7

5. The quantity of stone deposited in the revetment North of the harbour during the quarter is 8,414 3/4 tons making a total of 74,738½ tons deposited against 70600 tons estimated for. Cross Sections of the revetment as it now stands have been taken and are submitted herewith and fresh sections will be taken hereafter in order to note the action of the sea – During the quarter under review, the action is to accumulate sand in front of the revetment, as will be seen from the sections – Erosion may be expected to take place during next quarter –

Foreshore South of the Harbour.

6. On the plan accompanying this report are shown two high water lines one of date 31st December '91 and the other of 31st March '92 – From this it will be seen that there has been a slight erosion about 20 feet close to the pier – In the corresponding period of last year, the erosion was about 95 feet – During the next two quarters an advance is to be expected – Comparing the high water line of 31st March '92 with that of 31st March '91, there has been a nett advance of about 60 feet – The advance in the previous year was about 80 feet.

Sea bottom within the harbour -

7 The last survey of the harbour showing contours at every half fathom was taken in September 1889 - In order to ascertain what action has since then taken place, the Assistant Engineer was directed to make a new survey - This has not yet been completed but the contours as already taken up to the 4 fathom line show little or no alteration since 1889 -

Miscellaneous.

8 During the quarter the gravelled platform or "hard" for coal on the North beach of the harbour was extended as shown on the plan.

9 A design has been sanctioned for a harbour master's office and the work put in hand -

10 The harbour works have been called on by the Municipality to remove part of the line running along the beach and which it appears encroaches on Municipal land - a new line will have to be laid before this can be done.

11 Estimates have been called for and are under preparation for permanently fencing in the harbour premises and for improving the water supply along the iron pier -

12 Messrs Best & Co. have obtained permission to make arrangements for pumping Kerosine oil from steamers carrying the oil in bulk to reservoirs on the shore through a pipe, which will be attached to the North arm of the harbour

The

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13 The gradual increase of permanent buildings and works in connection with the harbour and the approaching completion of the piers render it more and more necessary for a plan to be decided on, as to final arrangement to be adopted for the shore side of the harbour - All new buildings now started, all alterations or additions to platforms or sheds for goods or new lines of rails laid, stand the risk of becoming either useless altogether or unsuited to the purpose for which they were intended through these sites being unadaptable to the arrangement finally selected.

14 As asked for in the memo: by Sir Alexander Rendel accompanying G.O. No. 430 W dated 12th February '92, a statement is attached giving information regarding Establishment cost of completing the works -

15 The approximate expenditure to the end of the quarter including establishment and contingencies is Rs. 116,483,14 out of a
estimated total establishment cost of Rs. 123,833,86 leaving a balance of Rs. 7,350,72 to be spent for completion.

Harbour Works Office }
Madras 25th April '92 }

F. J. Wilson
Ag Engineer, Harbour Trust Board

× F. J. Wilson

Marine 482/92
11

1705-06
9.12

E.3
P.U 5576/92

17 05-08

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1705-01

4-23

~~CURRENT NO.~~ 482

MARINE DEPARTMENT.

P. W. CURRENT No. 5596

FROM

THE CHAIRMAN,
HARBOUR TRUST BOARD,
MADRAS.

To

THE CHIEF SECRETARY TO GOVERNMENT,
Marine Department

Encls 10 (4 plans & 1 encls in duplicate)
Rec: 27-5-92

DATED 21st May 1892
RECEIVED 21
Regd. 23

ENCLOSURES 11 (6 plans)

No. 620

21 MAY 92

SUBJECT.

Submitting progress report upon the Madras Harbour for the quarter ending 31st March 1892

Transferred

LAWRENCE ASYLUM PRESS.

E 25 May 1892 No. 931

Transferred to the Public Works Depart.

Chief Secretary

FDB
23/V

No. 430 W d/ 12-2-92
" 950-1 W - 22-3-92
" $\frac{4}{950}$W - 22-3-92
" 1273 W - 21-4-92
" $\frac{7}{1273}$ W - 21-4-92

No. 1705 W d/ 8th June 1892
PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

1705-06
26

READ the following

Letter from the Chairman H. T. Board, Madras. (H.E. No. 620 d/ 21. v. 92)
Endorsement, Marine Dept. (" " 931 d/ 25. v. 92)

10

Ordered to be forwarded for the information of the Secretary of State and the Government of India

Chairman H. T. Bd.
Marine Dept.

14870
29 May

(H.E. No. 1706 W d/ 8 June 92)

Copy of the above with a plan[x] shewing progress of the works forwarded to the Government of India

(H.E. No. $\frac{9}{1705}$ W d/)

[x] Only one copy of Cross Sections has been submitted, and this is going to the Secretary of State

20

To,
The Right Honble
The Secretary of State
for India, India Office,
London.

My Lord,

In continuation of our despatches× quoted in the margin, we have the honor to forward herewith Progress Report of the Madras Harbour Works for the quarter ending 31st March 1892.

× No. 4/950W d/22d March 92
7/1273W d/21st April '92

2. The Engineer's report has been amplified in accordance with the suggestions of Sir Alexander Rendel as communicated with Your Lordship's Despatch to the Govt. of India No 1 Public Works dated 7th January 1892, and in addition to the usual plan shewing the progress of the works during the quarter, cross sections of the foreshore to the north of the Harbour are supplied.

1705-06
23

1705-06
23

3. A further report on the harbour from a commercial point of view is promised by the Chairman of the Harbour Trust Board, and this will be forwarded for Your Lordship's information as soon as possible after it is received.

D.
~~14~~ 15/6

OWB
28.5.92

28.5

R.B.

1705-06

28

Hen. 28/5.R.20/5

C No. 5596

Govt. of 1892 Madras.
PUBLIC WORKS.

3/5

Dated

Recd. Encl.

G.O., 1892, No. ~~175~~ W
1715 W
9

Madras Harbour 1705-1706

The Progress Report upon the for the quarter ending 31st March 1892, ordered to be forwarded to the Secy. of State & to the Govt. of India

Do

Forwarding copy of Procs. embodying the Progress Report upon the for the quarter ending 31st March 1892, together with plans showing the progress of the works.

Forwarding copy of Procs. embodying the Progress Report upon the Madras Harbour for the quarter ending 31st March 1892 together with plans showing the progress of the works

28

20/4

7/2

3/20/7