(1) பக்கங்களின் எண்ணிக்கை 50
(2) புதுக்கித் திருப்பிய நாள் 22.6.88
(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம்

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

PUBLIC WORKS துறை

அரசாணை எண். / மு. கோப்புத் தாள் எண். 1680 W அச்சகம் / பலவகை

நாள் : 7. 6. 1888 ~~198~~-.

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

ஆவண. கா-1—18,000—15-6-87.

7th June 1888, No. 1680 W., Public Works.

1680/1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following letter from R. W. BABLOW, Esq., C.S., Chairman, Harbour Trust Board, to the Chief Secretary to Government, Marine Department, dated Madras, 14th May 1888, No. 581 :—

I have the honor to forward herewith, for the information of Government, copy of a letter from the Engineer, Harbour Trust Board, No. 181, dated 7th May 1888, reporting upon the progress made on the Madras Harbour Works during the month of April 1888, and shall be glad to receive the information asked for by Mr. Thorowgood at para. 5 regarding the supply of the 3,000 tons of cement indented for on the 28th February 1888, if Government will be good enough to inquire.

Enclosure.

From F. N. THOROWGOOD, Esq., M. Inst. C. E., Superintendent, Madras Harbour Works, to the Chairman, Harbour Trust Board, dated Madras, 7th May 1888, No. 181.

I have the honor to submit, herewith, a very brief report of the work done on the Harbour during April, together with ten unmounted photographs of the present state of the south pier end.

2. *South Pier Works.*—There was a small quantity of rubble (619 tons) deposited to widen out narrow places discovered by taking cross sections over the base, and 80 of the 30-ton wave-breaker blocks were put over by the titan crane wherever a gap presented itself throughout the whole length of new work. The average breadth of the screen of blocks at high water is now 30 feet.

3. There were 51 wrought iron rails cramps cemented into the top of the south pier blocks to fasten them together, and with the withdrawal of the titan crane on the 24th, the work was left at a standstill for the storm month of May.

4. *Quarries.*—Very little was done at the quarries beyond maintaining the lines and slopes. There were 1,097 tons of stone and 302 tons of ballast sent down mostly to the work of the iron pier embankment, but also to the blockmaking machinery.

5. *Blockmaking.*—Although cement arrived during April, it did not come in sufficient quantities to make it worth while to start the machinery until May 1st. The stone-crushing machinery was working on April 30th. No blocks were consequently made in April still on account of want of cement. I would recommend that steps be taken at an early date to find out whether the 3,000 tons indented for on the 28th February 1888 are being supplied, as our last 2,000 tons arrived with godowns very nearly empty, and I ought by rights to have 2,000 tons on hand on the arrival of a fresh consignment.

6. *Stores received.*—The S.S. *Dacca* brought 559 casks of Portland cement; the S.S. *Gairlock*, 2,011 casks; and the S.S. *Almorah*, 4,116 casks. The cement is by Robins and Company and by Francis Barrow and Company, and is of excellent quality. The casks (of which the contents of any six are very frequently being weighed) hold 405 to 411 lb. of pure cement. I cannot yet report on the total cost, as very many charges have to be added to the cost, freight and landing charges.

7. *Iron Pier repairs.*—At the iron pier the embankment progressed fairly well and two railways are now laid on it. A length of 110 feet of the timber work was renewed for the half width. Trucks and cranes were repaired.

8. I am much disappointed in not yet having built up the turn-table at the corner of the export goods shed, but the foundry that undertook to cast it failed so signally on every occasion that I had to take the pattern away at last. I believe it would be cast best at the Perambúr Workshops, and I propose to ask if the Locomotive Superintendent will undertake it.

Transferred to the Public Works Department.

(By Order.)

(Signed) W. S. MEYER,
Asst. Secy. to Govt.

21st May 1888.

Order—dated 7th June 1888, No. 1680 W., Public Works.

Recorded.

2. The attention of the Chairman is invited to para. 2 of G.O. No. 1452 W., dated 17th May 1888, with respect to the supply of the 3,000 tons of cement indented for in February 1888.

(True Extract.)

Captain, R.E.,
Under-Secy. to Govt., P.W.D.

To the Chairman, Madras Harbour Trust Board.
" Marine Department.
" Consulting Engineer for Railways.

Exd. F. R. Bantleman.
Spare Copies

1680
2

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1888) Madras.

PUBLIC WORKS.

Dated June, 7th.

Recd. *Encl.*

G.O., 7th June 1888, No. 1680 W.

JUNE.

Madras Harbour Works

Progress report of the — for April 1888, recorded with remarks.

1680
3E

11th January 1888, No. 104 W., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following letter from R. W. BARLOW, Esq., C.S., Chairman, Harbour Trust Board, to the Chief Secretary to Government, Marine Department, dated Madras, 19th December 1887, No. 5496:—

I have the honor to forward herewith, for the information of Government, copy of a letter from the Superintendent, Madras Harbour Works, No. 1125, dated 10th December 1887, submitting a brief report upon works done in the Engineering Department of the Harbour during the month of November 1887.

Enclosure.

From F. N. THOROWGOOD, Esq., Superintendent, Madras Harbour Works, to the Chairman, Harbour Trust Board, dated Madras, 10th December 1887, No. 1125.

I have the honor to submit a brief account of what has been done in the Engineering Department of the Harbour during November, but on this occasion such a statement can hardly be termed a report of progress.

2. *North Pier, Harbour Works.*—At the north pier I moved out the wave-breaker crane on 19th November and up to the 23rd, deposited forty-five 30-ton blocks in the wave-breaker at spots where the full width of protection was hardly maintained. This was done more with an idea in my own mind of finishing all work at the north pier with this crane, so that in the event of No. III design of entrance being insisted upon, the crane may at once be dismantled for transfer to the south pier.

3. *Concrete Blocks.*—No concrete blocks were made during November for reasons which are explained in other correspondence. The delay in block-making is not, under existing circumstances, of serious importance to the works, but it has one bad result, namely, to increase the actual cost of concrete per cubic yard, as there are many charges that have to be debited to concrete blocks while no concrete blocks are being made. The estimated cost per cubic yard (arrived at by previous experience from 1876 to 1882) is Rs. 9, the actual cost is, however, Rs. 10-4-0.

4. *Quarries.*—No stone has been received from Pallávaram during November, but the quarry lines have been maintained in good order and repair.

5. *Plant and Machinery.*—The stone-crushing machines have been put into good working order, and the boilers and engines of the whole machinery examined. I am sorry to report that two of the stationary boilers will need most heavy repairs before a year is out. They have been working since December 1876, and have once been repaired thoroughly in 1883. It will take nearly four years to make the concrete blocks required for No. III design of entrance.

6. The 40-ton Goliath crane at the south pier block ground is being renewed in all points but ironwork. The work is getting on well, the men working overtime at it. The mooring chains and bridles of mooring gear are all being overhauled and tarred.

7. *General work.*—Of general Engineering work of the Harbour the following is a brief description:—A platform for export goods has been erected at north-west corner of the approach to the iron pier. This platform is of such a height that hand-carts can easily unload their goods on to it, and from it the trucks on the pier railways can be as easily loaded. A line of railway runs along the south and the east of the platform, and these lines are to be joined by a turn-table. A shed to cover the platform is being built.

8. *Iron Pier.*—The cranes on the iron pier are by degrees being put into good order and repair, but with some of the lighter ones much remains to be done. A new jib crane is being constructed out of parts found lying on the beach.

9. The work of repairing the flooring and superstructure of the iron pier is delayed for want of timber, and I believe some difficulty has arisen in getting the man, whose tender for timber was accepted, either to sign an agreement or to deliver timber. The delay is to be lamented.

10. *Cement wanted.*—A supply of cement is needed for the Harbour Works, no news having yet been received of the 2,000 tons asked for in July 1887.

Transferred to the Public Works Department.

(By Order.)

(Signed) W. S. MEYER,
Asst. Secy. to Govt., Marine Dept.

Fort St. George,
5th January 1888.

Order—dated 11th January 1888, No. 104 W., Public Works.

Recorded.

2. With reference to paragraph 10 of the Superintendent's report, the Secretary of State has been requested by wire to expedite the supply of the cement in question.

(True Extract.)

(Signed) W. L. C. BADDELEY, Captain, R.E.,
Under Secretary to Govt., P.W.D.

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

Exd. J. Moses.
Spare Copies

1680/4

BUILDINGS AND ROADS.
CIVIL WORKS.

Gobt. of {1888} Madras.

PUBLIC WORKS.

Dated January, 11th.

Recd. *Encl.*

G.O., 11th Jan. 1888, No. 104 W.

JANUARY.

Madras Harbour Works

Progress report of the — for November 1887, recorded.

1680/5

30th January 1888, No. 348 W., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following letter from R. W. BARLOW, Esq., C.S., Chairman, Harbour Trust Board, Madras, to the Chief Secretary to Government, dated Madras, 18th January 1888, No. 5907 :—

I have the honor to forward herewith, for the information of Government, copy of a letter from the Board's Engineer, No. 1230, dated 10th January 1888, submitting his report of work done on the Madras Harbour Works during the month of December 1887.

Enclosure.

From F. N. THOROWGOOD, Esq., Superintendent, Madras Harbour Works, to the Chairman, Harbour Trust Board, dated Madras, 10th January 1888, No. 1230.

I have the honor to submit the following account of what has been done in connection with these works during the month of December.

2. On the north pier no work whatever was done, as during the greater part of the month the sea was sufficiently high to break over the railway lines and render access to the work dangerous. There still remain a few portions of the screen of wave-breaker blocks which require to be added to, whatever may be the future design of the harbour, and this work I hope to complete in the current month of January.

3. The making of concrete blocks was not resumed until the 4th of this month, but during December extensive repairs were carried out to the frames or moulds in which the blocks are made. All blocks now being made are for the south pier superstructure or for the wave-breakers, and on December 31st there were on stock the following well matured blocks :—

	NO.
Wave-breaker blocks	235
Blocks for north pier	610
Do. for south pier	613
Total ...	1,458

This represents about 40,000 tons of concrete.

4. At the south pier I commenced to build in the railway line for advancing the Titan crane, but the work was retarded a good deal by the persistent swell breaking over the pier, consequently it was not possible to move the Titan out in December.

5. At the Pallávaram quarries all that could be done was to keep the railway lines in good order and repair, and this was properly attended to. The South Indian Railway Engineer's Department has been taking ballast from the quarry, and the Agent has agreed to pay a charge of one anna per wagon for each ballast wagon run upon the quarry lines, which are rather costly of maintenance, owing to sharp curves and heavy gradients. Up to December 31st the number of wagons run in this way was 673.

6. The repairs to the Goliath crane at the south block ground (referred to in paragraph 6 of my last report) were nearly completed, and the crane will shortly be at work again loading up blocks.

7. On the 13th December I arranged for an auction on the Harbour Works of such stores and materials as were useless so far as the works are concerned. The articles sold chiefly consisted of old iron from the two Titan cranes which were destroyed in November 1881, old pot-sleepers, stone-crusher jaws, worn out rails, grease and paint drums, damaged cement, &c., and the sum realised will amount to Rs. 3,602-5-4.

8. On the beach one level-crossing was put into thoroughly good order, and the road approach to the north goods shed was re-formed. The piece of ground known as the "Coal Hard" was advanced but not completed. The contractor is not working so briskly at this as he ought to do.

9. I have arranged for the season now commenced to confine all work to the south pier, which will cause a considerable saving in monthly expenditure, but it shall be my duty to take care that no delay shall result in the event of orders being issued as to what is to be done with the north pier.

10. I must again draw attention to the fact that Portland cement is badly needed.

ORDER—dated 30th January 1888, No. 348 W., Public Works.

Recorded.

2. The Secretary of State has already, as noticed on the previous report, been requested by wire to send out the Portland cement indented for.

(True Extract.)

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

To the Chairman, Harbour Trust Board.
" Marine Department.
" Consulting Engineer for Railways.

Exd. J. Moses.
Spare Copies

1680
6

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1888) Madras.

PUBLIC WORKS.

Dated January, 30th.

Recd. *Encl.*

G.O., 30th Jan. 1888, No. 348 W.

JANUARY.

Madras Harbour Works

Progress report of the — for December 1887, recorded with remark.

29th February 1888, No. 700 W., Public Works.

168c
7

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following letter from R. W. BARLOW, Esq., C.S., Chairman, Harbour Trust Board, to the Chief Secretary to Government, dated Madras, 13th February 1888, No. 6564 :—

I have the honor to submit herewith, for the information of Government, copy of a letter No. 1364, dated 8th instant, from the Superintendent, Madras Harbour Works, reporting upon progress made during the month of January 1888, with a plan (in original, to be returned).

2. Referring to the Board's Resolution on paragraph 3 thereof, copy of which is also enclosed, and to G.O., No. 476 W., dated 10th February 1888, I have to inform you that I have addressed the Chairman of the Calcutta Port Commissioners and the Chairman of the Bombay Port Trust, in the hope that I may be able to procure a supply of cement from them to prevent stoppage of block-making, pending the arrival of that indented for from Home.

Enclosures.

From F. N. THOROWGOOD, Esq., Superintendent, Madras Harbour Works, to the Chairman, Harbour Trust Board, dated Madras, 8th February 1888, No. 1364.

I have the honor to submit herewith a plan showing the state of the Madras Harbour at the end of January last, with a report of the progress during the month.

2. *North Pier works.*—At the north pier of the Harbour the only work that has been done is to make up several low places in the screen of wave-breaker blocks, and for this purpose 27 blocks of 30 tons each were deposited at different places along the wall. More blocks will yet be required for this work, but at present none can be spared as all will be required for protecting the new work built at the south pier. The wave-breaker crane was withdrawn on 21st January. No work whatever has been done at the superstructure of the north pier.

3. *Concrete block-making.*—On the 5th January block-making was resumed under a new contractor. For the short time that I could keep him at work he did his work more satisfactorily, having a very strong staff of able-bodied coolies and maistries. On the 13th and 14th the Pongal festival stopped nearly all work, and on the 28th I had to order a cessation of block-making on account of want of cement, notwithstanding the purchase of 354 barrels locally. Consequently the contractor was only able to work for 19 days in January, during which time he turned out 200 blocks representing 3,405 cubic yards of concrete. The greatest amount turned out in a whole month of 26 working days by the former contractor was 3,930 cubic yards.

4. From 28th January the work of block-making has been stopped for want of cement, and unless a large quantity, say 1,200 tons, is received this month, we shall soon be feeling the disastrous effects of this stoppage, as I have every hope that I can dispose of 360 blocks during the current month, and possibly a still greater number during March, which demand on the stock of blocks will make it necessary either to stop work altogether or to use the blocks already made in 1886-87 for the north pier, all of which will need altering in shape before they can be used at the south pier.

5. *Pallavaram quarries.*—From the quarries there were received in January 3,857 tons of granite chips for block-making, but no stone for rubble base was required.

6. The lines are maintained in good order and repair, and were twice inspected by me during January.

I have reported separately on a serious derailment of three wagons during the month, and of an evident attempt at a repetition of the accident. Since my report of these mishaps the contractor has increased his staff of watchmen, and up to this date nothing of the kind has occurred again.

7. *South Pier works.*—At the south pier of the Harbour the building in of the crane roads was completed by 4th January, and on the 5th the titan crane deposited 54 wave-breaker blocks over the south side of the pier, joining the new work with the old ruined foundations. The crane was then turned round through 90 degrees, and on the 17th January commenced work at

the superstructure. From the 17th to the 31st January 108 blocks were satisfactorily set advancing the wall by a length of 67 feet in 13 working days. This rate of advance is still maintained, and the curved work will probably be completed before the end of the current month.

8. The rubble foundation of the south pier is well made up for some distance a-head, but occasionally hollow places are found and these have to be filled up with stone thrown in to the divers who prepare the beds for bottom courses.

For this purpose about 80 tons of stone were used in January taken from a reserve stock kept for the purpose.

9. *General work connected with Harbour.*—The water-supply pipe which runs along beneath the planking of the iron pier has been taken to pieces and is now fitted up again. It was completely choked up throughout its whole length with foul black slime and mud. The water has not been turned on again as yet because the main stop cock has to be renewed.

10. Two new 8-ton trucks have been built for the iron pier and two more thoroughly repaired. A turn-table is in course of construction which, when fitted up, will bring another line into use in connection with the new export goods platform. The roof of this platform is in hand and will shortly be erected. A small building in the Custom-house yard has had its roof (which was reported as insecure) renewed. At one of the level-crossings over the Beach railway, I have put down a casuarina wood-paving set in cement as an experiment.

11. I regret to report that Mr. W. S. Boteler, General Foreman, was laid up by medical orders from 23rd January to 6th February, suffering from congestion of the lungs. He is now recovered and is quite fit for work.

Extract of Proceedings of the Trustees of the Harbour of Madras, at a Meeting held at the offices of the Board on Friday the 10th day of February 1888.

* * * * * *

3. Read letter from the Superintendent, Madras Harbour Works, No. 1364, dated 8th February 1888, submitting his report of progress made during the month of January 1888, and examined plan attached.

Read minute by Captain H. A. Street, I.M.

Resolved that the Chairman be invited to deal with the question of cement.

* * * * * *

(True Extract.)

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

Transferred to the Public Works Department.

(By Order.)

(Signed) W. S. MEYER,
Asst. Secretary to Government.

21st February 1888.

Order—dated 29th February 1888, No. 700 W., Public Works.

Recorded.

(True Extract.)

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

To the Chairman, Harbour Trust Board, with plan.
" Marine Department.
" Consulting Engineer for Railways.

Exd J. Henricus.
Spare Copies

1680/8

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of 1888 Madras.

PUBLIC WORKS.

Dated February 29th.

Recd. *Encl.*

G.O., 29th Feb. 1888, No. 700 W.

FEBRUARY.

Madras Harbour Works

Progress report of the — for January 1888, recorded.

1680
9

14th March 1888, Nos. 835, 836, 837 W., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General
Account.

Read—the following letter from R. W. BARLOW, Esq., C.S., Chairman, Harbour Trust Board, to the Chief Secretary to Government, dated Madras, 2nd March 1888, No. 6951 :—

I have the honor to forward herewith, in triplicate, indent for stores required for harbour construction, and to request that the same may be transmitted to the India Office at an early date.

2. None of the articles named are procurable from the local Public Works Department Stores.

Transferred to the Public Works Department.

(By Order.)

Fort St. George,
8th March 1888.

(Signed) W. S. MEYER,
Asst. Secy. to Govt., Marine Dept.

Order—dated 14th March 1888, No. 835 W., Public Works.

Ordered to be forwarded to the Home Government for compliance.

(Here enter No. 836 W., dated 14th March 1888.)

(True Extract.)

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

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

Letter—to the Director-General of Stores, India Office, London, dated Fort St. George, 14th March 1888, No. 836 W.

I am directed to forward, for compliance, an indent for stores required for the Madras Harbour Works in 1888-89.

2. The usual certificate by the Examiner, Public Works Accounts, is not attached, as the expenditure on the works is not now audited by that officer, but I am to state that provision to meet the cost of the stores will be made in the estimates of the Harbour Works for 1888-89.

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

Endorsement—dated 14th March 1888, No. 837 W., Public Works.

Copy of the above, with copy of the indent, forwarded to the Government of India, Public Works Department.

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

Exd. J. Moses.
Spare Copies

GENERAL.
ACCOUNT.

Govt. of (1888) Madras.

PUBLIC WORKS.

Dated March, 14th.

Recd. *Encl.*

G.O., 14th March 1888, Nos. 835, 836, 837 W.

MARCH.

Stores required for the Madras Harbour Works

Forwarding, for compliance, an indent for —.

1680/10

15th May 1888, No. 1416 W., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following papers:—

From R. W. BARLOW, Esq., C.S., Chairman, Harbour Trust Board, to the Under-Secretary to Government, Public Works Department, dated Madras, 5th May 1888, No. 428.

I have the honor to acknowledge the receipt of your letter No. 1770 C., dated the 2nd instant, and to forward, herewith, copy of the Progress Report of the Madras Harbour Works for the month of February 1888, and of my covering letter No. 7314, dated 20th March 1888, alluded to therein.

From C. PINSENT, Esq., Secretary, Harbour Trust Board, to the Chief Secretary to Government, dated Madras, 20th March 1888, No. 7314.

I have the honor, in the absence of the Chairman, on leave, to forward, herewith, for the information of Government, copy of a letter from the Engineer, Harbour Trust Board, No. 1510, dated 6th March 1888, reporting upon the progress made on the Madras Harbour Works during the month of February 1888, with two plans in original (to be returned).

Enclosure.

From F. N. THOROWGOOD, Esq., M. Inst. C. E., Superintendent, Madras Harbour Works, to the Chairman, Harbour Trust Board, dated Madras, 6th March 1888, No. 1510.

I have the honor to submit, herewith, a plan showing the progress made on these works during the past month of February, together with another plan giving some extra soundings taken during the month over the area where abnormal shoaling was apprehended in 1887. The soundings in red are those of February, and the black figures denote the depths in August and September 1887. Depths are below de Havilland's mean sea level, to reduce them to the low water of the tide tables $2' 7\frac{9}{16}''$ has to be deducted from each sounding. It will be observed that practically there is no alteration in the depths of the different dates.

2. *North Pier Works.*—Nothing has been done at the north pier during February beyond the depositing of two 30-ton blocks in the wave-breaker at a spot where more blocks are required. The crane which does this work was withdrawn on the 6th to its standing ground on shore.

3. *Concrete block-making.*—Want of cement has prevented the making of any concrete blocks during February, which is very much against the future progress of the works. The block moulds have been repaired to a great extent, but new ones will have to be made for the wave-breaker blocks so soon as timber is received for the purpose. A slight alteration has been carried out in the block-yard, which will give increased accommodation for blocks.

4. I am sorry to report that the roads on which the Goliath cranes travel (put down in 1876) have shown sudden signs of decay to so serious an extent that I fear I shall have to put in fresh teak-wood bearers for the whole length. This will take 46 tons of timber for the whole yard, but I hope a small amount can be done at a time. On this subject I will address you separately.

5. *Pallávaram quarries.*—A small amount of stone was required at the south pier to fill up slight hollows in the base, and for this purpose 1,522 tons of rubble were used. Quarrying still goes on at Pallávaram, but at no very great rate, as the requirements at present are very small, and for the future are uncertain.

6. *South Pier Works.*—At the south pier the advance has been more rapid than either Mr. Parkes or I had ever hoped for with this new section of pier. In the 25 working days of

February there were 380 blocks set in the work, making an advance in the month of 234' 9". If the month had been one of 26 working days, (*i.e.*, counting in March 1st as a day in the month) the advance may be taken as 241 lineal feet, which is the greatest amount of work ever built in 26 consecutive days in deep sea on any work in the world I believe.

7. The progress might be continued during March for another length of 150 feet, but this would leave us with a piece of new wall of so great an extent that the wave-breaker blocks now on stock will be insufficient to protect it. I have therefore determined to protect the work now built and then advance forward again during April. I need hardly say that if we had been making blocks steadily throughout November, December and January, it would not have been necessary to exercise such care in the distributing of the wave-breaker blocks; but as it is impossible to foretell exactly how many blocks will be required to protect a certain length, it is better to err on the safe side and protect what is already built rather than risk having an unprotected wall exposed to a May cyclone.

8. With regard to the satisfactory progress during February, I must record the name of Mr. Joseph Lowe, Foreman, South Pier, as being chiefly instrumental in getting such a large amount of work done in so short a time.

9. There now remains a length of 480 lineal feet that can be built at the south pier without interfering with either design of entrance, but when this length is finished, it will be imperative to know what plan is to be adopted.

10. *Stores received from England.*—During February the steamers *Clan Buchanan*, *Nepaul* and *Clan Macintosh* arrived in Madras with the following stores for the works :—

Two pairs of locomotive wheels and axles.
Two Giffard's injectors.
Six cases of carpenter's tools.
Twenty-three packages of Manilla rope.
Forty drums of zinc white paint.
Sixteen drums of linseed oil.
Five casks red lead.
Twenty-two sheets of iron.
One hundred and fifty-two bars of assorted iron bars.

11. *General work connected with Harbour.*—The export shed at commencement of iron pier has advanced a stage, the roof principals being in course of erection. The pattern for a new turn-table connected with this shed has been sent to the foundry to be cast, but has not yet been sent back. The cranes and trucks on the iron pier still continue to absorb a large amount of work in repair and maintenance. I regret to be still unable to report to the water-supply along the pier as in working order. The valve beneath the tank has had to be repaired by the municipality. By filling the tank at night a greater head of water is obtained than by day, but this greater head of water has disclosed a very slight leak in the top of the tank-side, which must be repaired before handing the whole over to the Pier Authorities.

12. The repairs to the pier-planking and beams is now in hand but progressing slowly.

13. *Visit of Admiral Richards.*—On the 4th February the works were visited by Rear Admiral Sir Frederick Richards, K.C.B., and many officers of H.M.S. *Bacchante*, as guests of the Chairman and Members of the Harbour Trust Board. The ends of both breakwaters were inspected and the system of building with blocks were shown at the south pier, while at the north the method of dropping blocks into the wave-breaker was exhibited.

Order—dated 15th May 1888, No. 1416 W., Public Works.

Recorded.

(True Extract.)

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

To the Chairman, Madras Harbour Trust Board, with two plans.
" Consulting Engineer for Railways.
" Marine Department.

Exd. F. E. Bantleman.
Spare Copies

1680/11

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1888} Madras.

PUBLIC WORKS.

Dated May, 15th.

Recd. *Encl.*

G.O., 15th May 1888, No. 1416 W.

MAY.

Madras Harbour Works

Progress report of the — for February 1888, recorded.

17th May 1888, No. 1452 W., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following papers :—

From R. W. BARLOW, Esq., C.S., Chairman, Harbour Trust Board, to the Chief Secretary to Government, Marine Department, Ootacamund, dated Madras, 24th April 1888, No. 287.

I have the honor to submit herewith, for the information of Government, a letter * from the Engineer of the Board, No. 19, dated 5th April 1888, submitting his progress report for the month of March, together with copy of resolution passed thereon by the Trustees in reference to the remarks made in para. 4.

* With tracing in original, to be returned.

2. In compliance with this resolution, I have to explain that up to the time of the constitution of the Board it appears not to have been the rule to invite tenders, publicly, for the supply of material and stores to the Harbour Works, and the late Board considered this state of things very undesirable and likely to lead to complications, and one not securing to the works the most favorable market-rates. They decided therefore that, in future, tenders called for by advertisement should be the rule, and that contracts properly drawn out should be substituted for verbal agreements and letters in all important matters.

3. In this decision the present Board have unanimously concurred, and although, in a small contract like the one in question for a few tons of teak timber, a few rupees per ton may be added by the cost of advertising, still the Trustees consider it desirable to adhere to the rule laid down by them to invite tenders, such course being, on the whole, very conducive to general economy upon the works, especially in instances when large supplies are involved. I would add that in the present case immediately,—on the 4th April, and prior to the receipt of the Engineer's report of the 5th idem,—on being informed that the tenderer had failed in delivery, I at once authorised the Engineer to purchase locally to the best advantage he could, to prevent any hindrance to work.

Enclosure.

From F. N. THOROWGOOD, Esq., M. Inst. C. E., Superintendent, Madras Harbour Works, to the Chairman, Harbour Trust Board, dated Madras, 5th April 1888, No. 19.

I have the honor to submit, herewith, a plan showing in red color the slight advance made during the month of March, together with a report on the general progress and aspect of the works at the end of the financial year 1887.

2. *North pier works.*—At the north pier nothing whatever has been done beyond picking up a large portion of the titan crane which was submerged on 12th November 1881. This pier has now been at a complete standstill, so far as progress ahead is concerned, since 8th April 1887, and the two cranes erected for its construction at a cost of Rs. 1,12,786 are perfectly idle, and have practically been so since April 1887. This enforced idleness of costly machinery is a serious matter.

3. *Block-making.*—Another month has passed away and want of cement has prevented me from making any blocks. The evil of this absence of cement will be felt throughout the whole of next season I fear, but I will use every endeavour to increase the daily out-put of blocks from the date of starting to make them. I think there can be no doubt that cement will be received within a week, and that being so I have not recommended the purchase of cement from Bombay at almost prohibitive rates, as, in all probability, the cement from Bombay would hardly reach here sooner than that from England.

4. In para. 3 of the progress report for February, I stated that timber was wanted for repairs to block-moulds. I venture to draw the Board's particular attention to the fact that I asked sanction for the purchase of 10 tons of teak for this purpose on 31st January 1888. Up to the date of writing this report (5th April) I have not had a single log of this teak delivered, and repairs to block-moulds as well as to wagons have been brought to a dead lock. Tenders were called for, and a tender was accepted, but beyond that I know nothing of this matter. I fear that the cost of advertising for tenders for this small quantity will add nearly Rs. 4 to each ton of timber, but this is not so serious as the delay to work caused by the want of the timber. I was permitted to purchase 4 tons for immediate use, and this was delivered on the works three days after ordering at a rate of Rs. 2-10-0 per cubic foot. I beg that this matter may be seen to with a view to preventing such delays in future.

5. *Pallavaram quarries.*—A little work has been done at the quarries during March, fourteen trains having been received. The quarry lines are maintained in excellent order, and a large stock of stone is collected on the ground. I endeavour to check this as much as possible, but so long as any work at all is going on it can hardly be expected that the contractor will keep men on only for loading an odd train now and then.

6. *South pier works.*—On 5th March I stopped advancing at the south pier and commenced to turn the titan crane round in order to form the "wave-breaker" as mentioned in para. 7 of the last report. There were 24 blocks set in the superstructure during March, advancing the work by 12 feet and making the total length of the new work 717 feet from point G. There are now 275 blocks put over into the wave-breaker to protect this season's work, and there remains an ample margin of blocks to complete the protection to the whole length.

7. I have pointed out in separate letters that although the work is being carried on precisely as was intended, yet, at some future date, the wave-breaker screen has to be widened to 40 feet instead of 28 or 30 feet as at present. I am anxious to know when this widening should be done, and how it is to be done (*i.e.*, by what arrangement of cranes); and although I firmly believe I might, with *perfect safety*, build another 300 feet of wall into deeper water, protecting it only with the wave-breaker as formed by the titan crane, I think it would be more satisfactory to have the opinion of the designer of the work, as asked for by me on 12th March 1888, letter No. 1547. Whether Sir John Hawkshaw, Sir John Coode or Mr. Parkes be the responsible designer I cannot say, but my instructions were received from the latter. The next thing to be done at the south pier is to build in the wrought iron cramps to the top courses, and this will be undertaken immediately after the titan crane has retired from off the new work.

8. *Stores from England.*—There arrived from England in the S.S. *India* during March a various cargo of grindstones, files, brass-plates and iron, and by the *Goorkha* diver's helmets, leather belting and carpenter's tools.

9. An indent is under preparation for various stores and for spare gear to locomotives which has taken some time in getting ready, as it involves some troublesome drawing of locomotive reversing gear.

10. *Surveys.*—A very satisfactory set of 59 cross sections of the south pier work were taken in March by Mr. Pogson, so that now we are in possession of a precise record of the work as built. These sections extend over a length of about 1,600 feet of the pier.

11. *Harbour and beach improvements.*—The work (sanctioned in your letter of 6th February, No. 6404) of forming an embankment of the shoreward end of the iron pier is being pushed forward as rapidly as I can manage to do it, but it interferes with the traffic very much, as also the traffic interferes with the embankment. The cost of it will be higher than I estimated, because of the difficulty of keeping up a steady supply of labor at work, which is necessarily interrupted. The extra cost, however, will not be at all serious.

12. The renewal of the planking and top beams of the iron pier goes on steadily but slowly. I cannot push it on more rapidly without running up the cost to prohibitive rates.

13. The export goods shed has been completed, and is, I think, a satisfactory piece of work. I can make other sheds at a much less price than this has cost, but the Board must be so good as to allow a slight margin in excess for the first iron roof, as the work is different from what the workmen have been accustomed to.

14. Two latrines have been built on the foreshore to the north and south of the iron pier.

15. *General summary.*—The year 1887-88 has not been altogether a satisfactory one for the Harbour Works, owing to the stoppage of the north pier and the want of cement. These unfortunate circumstances have been caused simply by the doubt as to the final design of the harbour, and can be put down to nobody's fault, but only to a wish to arrive at the best ultimate conclusion. One thing has been proved, however, and that is, that provided cement and stone (and therefore concrete blocks) are supplied in proper quantity, it is possible to build 240 feet of pier wall in one month.

16. The expenditure on the works according to the design now sanctioned up to 31st March 1888, has been Rs. 23,83,982.

Extract of Proceedings of the Trustees of the Harbour of Madras, at a Meeting held at the offices of the Board on Friday the 20th day of April 1888.

* * * * *

5. Read again letter from the Engineer, Harbour Trust Board, No. 19, dated 5th April 1888, submitting his progress report up to 31st March 1888.

Read Minute by the Chairman.

Resolved that, with reference to para. 4, the Chairman be invited to explain to Government the reasons why the Board consider it necessary to invite tenders.

* * * * *

(True Extract.)

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

Transferred to the Public Works Department.

(By Order.)

(Signed) W. S. MEYER,
Assistant Secretary.

11th May 1888.

Order—dated 17th May 1888, No. 1452 W., Public Works.

Recorded.

2. It is hoped that the further progress of the works will not be retarded by delay in the supply of cement, the Secretary of State having been informed by wire on the 27th April that the 3,000 tons indented for on the 14th March last will be required notwithstanding the proposed change of design.

3. The subject of removal of the wave-breaker crane to the southern arm of the Harbour, so as to admit of the protective works there being carried out to the full sanctioned width, is being disposed of in separate Proceedings.

(True Extract.)

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

To the Chairman, Harbour Trust Board, with plan.
" Marine Department.
" Consulting Engineer for Railways.

Exd. F. R. Bauflsman.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1888} Madras.
PUBLIC WORKS.

Dated May, 17th.

Recd. Encl.

G.O., 17th May 1888, No. 1452 W.

MAY.

Madras Harbour Works

Progress report of the — for March 1888, recorded with remarks.

Harbour Trust Board Office,

MADRAS, 14th May 1888.

No. 581

From

F. H. Barlow Esquire C.S.

Chairman, Harbour Trust Board,

MADRAS,

To

The Honorable Mr H. E. Stokes C.S.

Chief Secretary to Government,

Marine Department.

Ootacamund

112

1680/14

Sir

I have the honor to forward herewith for the information of Government. Copy of a letter from the Engineer Harbour Trust Board No 181 dated 7th May 1888, reporting upon the progress made on the Madras Harbour Works during the month of April 1888, and shall be glad to receive the information, asked for by Mr Thorowgood at para 5, regarding the supply of the 3000 tons of cement indented for on the

28th February 1888, if Government will be good enough to enquire.

I have the honor to be

Sir

Your most Obedient Servant

Chairman

Harbour Trust Board.

1680/15

ay 17.5.88
ay 15.5.88
3/92 ay 14.3.88
ay 27.2.88
ay 10.2.88
ay 4.2.88
ay 11.1.88
ay 11.1.88
ay 20.1.88
ay 11.1.88
ay 20.8.87
30.4.88.
17.5.88

CURRENT NO. 9

MARINE DEPARTMENT.

FROM

THE CHAIRMAN,
HARBOUR TRUST BOARD,
MADRAS,

TO

THE CHIEF SECRETARY TO GOVERNMENT,
Marine Department.
Ootacamund

DATED 14th } May 1888.
RECEIVED 23.5.88

ENCLOSURE 2 (Photos)

No. 581

CHIEF SECRETARY 23 MAY 88 MADRAS

SUBJECT.

Forwarding for the information of Govt. progress report of the Madras Harbour Works during the month of April 1888.

SECRETARY TO GOVERNMENT 21 MAY 88 P.W. DEPARTMENT, MADRAS.

U.P. O/o 17th May 1888

Transferred to the Public Works department

(By order)

W. S. Wedge
Assistant Secretary

7/5

No. 181.

1680/16

From

The Superintendent
Madras Harbour Works.

To

The Chairman
Harbour Trust Board
Madras

Madras 7th May 1888.

Sir

I have the honor to submit herewith a very brief report of the work done on the Harbour during April, together with 10 unmounted photographs of the present state of the South Pier end.

South Pier Works

2. There was a small quantity of rubble (619 tons) deposited to widen out narrow places discovered by taking cross sections over the base, and 80 of the 30 ton wave breaker blocks were put over by the Titan Crane wherever a gap presented itself throughout the whole length of new work. The average breadth of the screen of blocks at High Water is now 30 feet.

3. There were 51 wrought iron rails cramps cemented into the

top of the South tie blocks to fasten them together and with the withdrawal of the Titan Crane on the 24th the work was left at a stand still for the storm months of May.

Quarries

4. Very little was done at the quarries beyond maintaining the lines and slopes. There were 697 tons of stone and 302 tons of ballast sent down mostly to the work of the on pier embankment, but also to the blockmaking machinery.

Block making

Although cement arrived during pril it did not come in sufficient quantities to make it worth while to start the machinery until May 1st. The stone crushing machinery was working on April 30th. No blocks were consequently made in April, still on account of want of cement. I would recommend that steps be taken at an early date to find out whether the 3000 tons indented for on the 28th February 1888 are being supplied as our last 2000 tons arrived with godowns very nearly empty, and I ought by rights to have 2,000 tons on hand on the arrival of a fresh consignment.

1888/17 358

Stores received.

6. The S.S. "Dacca" brought 559 casks of Portland Cement, the S.S. "Gairlock" 2011 casks, and the S.S. "Almorah" 4116 casks. The cement is by Robins and Company, and by Francis Barrow and Company, and is of excellent quality. The casks (of which the contents of any 6 are very frequently being weighed) hold 405 to 411 lbs of pure cement. I cannot yet report on the total cost, as very many charges have to be added to the cost, freight and landing charges.

Iron Pier Repairs.

7. At the Iron pier the embankment progressed fairly well and two railways are now laid on it. A length of 110 ft of the timber work was renewed for the half width. Trucks and Cranes were repaired.

8. I am much disappointed in not yet having built up the turntable at the corner of the export goods shed, but the foundry that undertook to cast it failed so signally

on

on every occasion that I had to take the pattern away at last. I believe it would be cast best at the Perambore Workshops, and I propose to ask if the Locomotive Superintendent will undertake it.

I have the honor to be
Sir
Your most Obedient Servant
(Signed) H. W. Thorowgood
Asst. C.E.
Supt. Madras Harbour Works

(True Copy)

C. Binstead
Secretary
Harbour Trust Board

HARBOUR TRUST BOARD
4 MAY 88
MADRAS

Cl

5803/88

2/C No 409

PUBLIC WORKS DEPARTMENT.

4803

1680/18

Rd.

The Harbour Trust Board say that 3000 tons cement were indented for on 25th July – Kindly see if C.E. forwarding the indent can be traced.

Cl
25-5-88

Sand.

Please see G.O. No. 855–7 W of 14-3-88 – The cement might be included here, but we have no details –
L.S. 25.5.88

– C.E. for

Cl

No 1580

PUBLIC WORKS DEPARTMENT.

1680/19

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 7th June 1888

READ the following

From the Chairman M. H. T. Bd | No 581 dt 14.5.88
Endt Marine Dept dt 21.5.88.

5-8

Recorded.

2. The attention of the Chairman is invited to para 2 of G.O. No 1452 W dt 17 May 1888, with respect to the supply of the 3000 tons of cement indented for in February 1888.

1.6.88

4/6/88

14/6

To the Chairman M. H. T. Bd
" Marine Dept
" C. S. for Regr.

1685/20

doa
25/5/88

C. No 4863

DW

The only points requiring action seem to be that connected with Cements – para 5 of the Supdt's report – but the indent is so indefinitely described that it seems impossible to frame the draft of a telegram to the India office.

The required Cement is very possibly included in the Indent sent home with No: 83 BW of 16th March 88 – but we cannot be certain. DW might perhaps ascertain definitely at Madras.

C.S.
28-V.88

I believe the Cement is included in the Indent. Send the papers to DW – if necessary we can wire again.

Jdw
29/5/88

1680/25

1680/22

Put up the Progress
Reports for Feby. March
(1888) (& correspondence
regarding Cement &
The other papers can
be removed

A.E.

Clk.

The progress report for February 1888 was sent down with our Minutes on the 11th inst., or only a few days earlier than the progress report for March. The papers put up were the only papers (printed) here where cement is alluded to.

J.H.
2.4.88

SAW

The two previous Progress Reports and the recent correspondence regarding Cement

all seem to be at [illegible]
Please have the paper
put up.

R.S.
27-4-88

[illegible]

Papers please
the Cement [illegible]
[illegible]
[illegible]
papers relating to Cem[ent]
[illegible]

[illegible]

SAW
Papers [illegible]
The [illegible] Report
forward (No 52 W dated 17/5/88) is on the
Press. [illegible]
25-5-88

CAW
Case 4063 returned with
papers required.
The progress report for cement
will be [illegible] when received from
Press. The [illegible] of 482 [illegible]
[illegible] by the Supt [illegible]
[illegible] in
No 9730 d/ 14-5-88
[illegible]
28-5-88

C No 4063.

1680/24

Cements (2000 tons) indented
for in July 1887
1473 tons received
413 tons advised
114 tons to be accounted for

1680/23

CAW

No 104 D d/ 30-4-88
which contains some
information on the
subject, might be
put up at once.

[illegible]
1-6-88

[illegible]
[illegible]
4/6/88

LW
Submitted. Para 2 of
E.D 1452 W d/ 17 May 88 quoted
in the draft order refers to
their telegram to the Secty of
State. R.S. 4-6-88

[illegible] for removal of cements
31-5-88

1680/25

all seem to be at the
Stores here. The [illegible]
put up.

22-11-88

[illegible] with SP.
[illegible]
No 985 of 14-3-88

C No 4863.

1680/24

Cement (2000 tons) indented
for in July 1887

1473 tons received
413 tons advised
114 tons to be accounted for

Cement (3000 tons) indented
for 14th March 1888

As the Secy of State was
informed by wire on 27th April
that this supply was still
reqd. no further action
is necessary at present,
but Mr Thompson
says that perhaps
Mr Parker will advise
the Secretary of State
not to supply.

The Harbour Board will
shortly make a reference
about this; as it will
be a serious matter to
them to have the works
delayed ~~[illegible]~~ for want of cement

31.5.88

1680/25

Govt. of 1888 Madras.

PUBLIC WORKS.

Dated,

Recd.

Encl.

G.O. 7 June 1888, No. 1[illegible]5 M.

Madras Harbour Works

=

Progress report of the

for April 1888 recorded

with remarks.

95

4

57 [illegible] 716