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(2) Date of repair _____

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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 872

(W)

Press

Mis.

Dated 9-3-

1877.

Not to be folded or roughly handled

No. 215. Read the following letter from F. N. THOROWGOOD, Esq., c.e., Superintendent, Madras Harbour Works, to the Acting Joint Secretary to Government, Buildings and Roads Branch, dated Madras, 28th February 1877, No. 107 W.:-

I HAVE the honor to report the following amount of progress on these works since January 31st, the date of my last report.

2. NORTH PIER.—The operation of setting blocks by the Titan Crane has been carried on with all possible speed, and since the 2nd February divers have generally been at work preparing the beds for the foundations course. The result is that the work is gradually assuming a more regular and finished appearance.

3. The number of 27 ton concrete blocks that have been set at the pier end during the month is 72, and the total number of blocks set in the pier is now 147. The extreme length from point A on plan (the commencement of the bank) to the end of the block work is at this date 1,060 feet. Of this length 86 feet have been added during the past month, which is a very fair result for twenty-four working days.

4. The depth of water at the present termination is $8\frac{1}{2}$ feet below mean sea level, or about the same as on January 31st, 1877. The accompanying elevation of the pier shows the state of the bottom and the depth of water as obtained by accurate survey and soundings taken during the month. From this it will be seen that the bottom is very level.

5. I have constant observations carried on by the divers who report to me the state of the bottom as the work proceeds, and of course soundings are taken as often as necessary. I would state, however, that I am at present quite insufficiently provided with gear and boats for carrying out a regular system of sounding, and the difficulty of getting either boats or boatmen during the present state of the rice traffic is almost incredible. Proper wire sounding lines will have to be procured from England or Bombay.

6. To get over this difficulty of obtaining boats and men I have had to send to Cocanada (through the Master Attendant) for one of the screw hopper barges, and the *Hobart* arrived in Madras on the 18th of the month. There is, however, no chance of using the *Hobart* for her regular work of depositing rubble in the sea until the pier reaches deeper water.

7. The rubble base of the pier is at present made of stone tipped from boats and catamarans and from a raft which I have had built for the purpose. The stone employed is both laterite and Palaveram stone, the latter being the best for filling up spaces in levelling the beds. This system for preparing the rubble base is both rough and expensive, but, as it must be done, I have spared no trouble or expense to do it. I imagine that the present difficulty I have in obtaining boatmen, boats, and catamarans, will disappear when the rice traffic diminishes, and that I shall by that time be able to use the hopper barges and be independent of this unsatisfactory boat labor.

8. I cannot help remarking with regard to this point in the construction of the piers that I am greatly annoyed at not being able to use the two hopper barges, but

I trust that the Government will see that nothing is wanting but *depth of water*, and that sufficient depth of water cannot be reached (even supposing the weather to be favorable) for some weeks, and that after the depth has been reached, some days must elapse before the jetty is constructed at which to load the hoppers.

9. **CONCRETE BLOCKS.**—During the early part of the month the making of blocks by hand labor was carried on as formerly, and four blocks were made every day. Since the 12th February the blocks have all been made by the steam machinery, the greatest number made in a day being eight. The total number of large blocks made since August 1876 is now 481, and of these 94 have been made during the past month. The machinery will soon be worked so as to turn out 12 blocks a day, but I regret to state that I am still waiting for wheels and castings which have to be supplied and fitted up in this country. One of the greatest difficulties that I have met with at present in carrying out these works is the total want of resources in the neighborhood for supplying what is urgently needed, and the consequence is that I have had to procure things from Bombay to a large extent, and when any gearing is required which is not sent out from England I have had to make it here. The fact of the Public Works Stores and Workshops being in a transition state at the time added to the difficulty, as it became necessary to send round to any place that possessed a lathe to ask if I could have work done.

10. Another cause of delay in finishing the concrete machinery has been the want of wrought iron. Now, when nearly all the preliminary work is finished, the iron has arrived; but as it has been expected for the last six months, the large quantities of iron that have been used in making block frames, bolts, &c., has been either purchased at very high rates from the bazaar or procured from the Presidency Stores and Shops. Generally, however, the Presidency Stores had not the required sizes on stock.

11. The concrete blocks made by machinery are made with less cement than when made by hand. The stone is from Chinnamapett and is crushed by the stone crushers. I have discontinued the use of small stone from Palaveram.

12. **CONCRETE BLOCK PLATFORMS.**—The block platform for the south pier blocks has been extended, and a length of 525 lineal feet is now completed. No blocks have been made on this up to the present time.

13. **MACHINERY.**—As the machinery for making the north pier blocks is generally at work now, I think in future reports of progress the separate head may be omitted. I would, however, state that the pumping machinery which I hoped to have had in working order two weeks ago is not yet completed, as I am still waiting for castings. To avoid delay in getting brass castings I have managed to cast on these works, and have turned out some excellent castings of valves, bearings, &c. Unfortunately I cannot do the same with iron.

14. The supply of stone has been only sufficient for making concrete blocks and for ballasting railways. The stone from the South Indian Railway for the south surf bank has not yet been touched, but in a short time the sidings will be laid in at the quarry and work commenced. In the meantime I am anxious to make a speedy start with the south surf bank before the railway is completed, and I respectfully ask that I may be allowed to take immediate steps for depositing large stones as a

commencement. My views regarding the stopping of the south surf bank have already been placed before Government in my reply to G.O., No. 480, dated 12th February 1877. The carrying out of the southern pier is to my mind of such importance that I must ask for Government support even if I have to put some of the owners of rice pandals to much inconvenience.

15. **CONTRACTS.**—The question of the contract for stone for the south surf bank remains as before reported; but, as soon as the railway to the beach is completed, I intend to use the quarries, for the working of which tenders were asked on January 10th, 1877. The tender of a Mahomedan named Kazim Ali Nakavy appears to have been the one selected by the Harbour Works Committee; but he has had no instructions to commence quarrying, as the question of the construction of the south surf bank has raised by the Committee is still unsettled.

16. **STORES.**—During the month the S.S. *Australia* and the Ships *Cedric the Saxon* and *Khimjee Oodowjee* have arrived with stores of different sorts, the principal being cement and rails. The *Cedric the Saxon* has also brought a locomotive engine which is not required for immediate use.

17. **GENERAL MATTERS CONNECTED WITH NORTH PIER WORKS.**—Several small quantities of General Morgan's cement have been received on the works, and concrete made from these has been tested from time to time. I have also had several regular 27 ton concrete blocks made with this cement, but none of them have been set in the work up to the present date.

18. **SOUTH INDIAN RAILWAY EXTENSION.**—The line of railway from Cochrane's canal to the beach is fast approaching completion, and the pile driving at the bridge over the canal will be finished in one more day. At the present date there are 26 piles driven, and 90 lineal feet of the superstructure completed. The fencing through the hospital compound is finished, and the brick-work of the culverts and waterways crossed by the railway is nearly completed. The Municipal Commission wish to have the line across the monument esplanade fenced in. I am having fencing prepared for this purpose, but it will add considerably to the cost of the line.

19. **MARINE SURVEY.**—During the month Navigating Lieutenants Hammond and Pascoe arrived to extend the Marine Survey commenced by Lieutenant Jarrad. I have great difficulty in supplying them with boats, crews, leadsmen, &c., and I shall be glad to learn the wishes of Government respecting the cost of the materials and labor which I have to supply. At present I have had to set on three trustworthy men at the tide gauge, to provide a steam launch with the whole crew complete, coals, water, &c., and I have to place a Surveyor with numerous lascars at the service of the Marine Surveyors to set out the section lines on shore and manage the flags and beacons. Until I receive orders to the contrary I shall pay these additional charges as if they were incurred by the Harbour Works.

20. The accompanying plan shows that the sand is still being cut away by the action of the sea, and since I have removed much of the laterite from the southern arm of the surf bank the cutting away has been much more conspicuous. If I can commence the south surf bank next week, I think it is probable that at first there will be a small accumulation of sand on the north side; this will be the sand that has been cut away from the north pier and carried away southward.

Proceedings of the Madras Government, Public Works Department,
9th March 1877. No. 812.

No. 216. ORDER THEREON, 9th March 1877, No. 812.

CIVIL WORKS, No.23.

RECORDED.

2. His Grace the Governor in Council approves of the south surf bank being proceeded with when stone is available. And the Superintendent of the Harbour Works will make the requisite arrangements for the prosecution of the work as speedily as existing means will allow.

3. It is observed that the Marine Survey is being carried out under the direction of the Marine Survey Department, by whom the cost is to be met; and any assistance required should be sought for from the Master Attendant rather than from the Harbour Works Authorities.

(True Extract.)

Colonel,
Acting Joint Secy. to Govt., P.W.D.,
Buildings and Roads Branch.

To the Superintendent, Madras Harbour Works.
,, Marine Department.

Exd. E. C. Shunker.

Spare Copies

Letter from the Superintendent, Madras
Harbour Works No 107 W dated 28 Feb/77

FOR ORDERS.

W. H. H. to Colonel

My Joint Secy to Govt

What is the
The by - O - on the
purposes of the Harbour
work should have
been put up

There is no
be no objection to
the Southern Pier
going on - I mean

The use of Railway
Railway. Stock
I mean the line
of Rail along the
beach -

I understand, a bold,
let the South surf bank
with the beach on both sides
possible expenditure - I
hope too that better material
can be found
than in the South surf bank

W. H. H.

of the material of spots
found in the left hand
places at disposal for
replaces later in the
season?

2/2 1/2

Summertime is not
right. The time is
about a month or so
in summertime. The
S. bank can be seen
when standing with
by boat or a hill.

I do not think that
both boys are here yet
and the summer is
for making survey
has been very
of place in the

Great
the
the
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but I think
a small part
of the
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FOR ORDERS.

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R/S 7-3-77 25 3-77
C/S 1-3-77 24 3-77

Roads & Buildings

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N^o 107^W

Thom

P. V. Thoroughgood Esq: C.E.

Superintendent,

Madras Harbour Works.

To

The Chief Engineer,
for Roads & Buildings

Fort St. George

Madras, 28th February 1877

Sir

I have the honour to report the following amount of progress on these works since January 31st the date of my last report.

North Pier

2. The operation of setting blocks by the Titan crane has been carried on with all possible speed, and since the 2nd February divers have generally been at work preparing the beds for the foundations course. The result is that the work is gradually assuming a more regular and finished appearance.

3. The number of 27 ton concrete blocks that have been set at the pier end during the month is 72, and the total number of blocks set in the pier is now 147. — The

extreme length from point A on plan (the commencement of the bank) to the end of the block work is at this date 1060 feet. Of this length 86 feet have been added during the past month which is a very fair result for 24 working days.

4. The depth of water at the present termination is $8\frac{1}{2}$ feet below mean sea level, or about the same as on January 31st 1877. The accompanying elevation of the pier shows the state of the bottom and the depth of water as obtained by accurate survey and soundings taken during the month. From this it will be seen that the bottom is very level.

5. I have constant observations carried on by the divers who report to me the state of the bottom as the work proceeds, and of course soundings are taken as often as necessary. I would state however that I am at present quite insufficiently provided with gear and boats for carrying out a regular system of sounding, and the difficulty of getting either boats or boatmen during the present state of the

the rice traffic is almost incredible. Proper wire sounding lines will have to be procured from England or Bombay.

6. To get over this difficulty of obtaining boats and men I have had to send to Lerconada (through the Master Attendant) for one of the screw hopper barges and the Hobart arrived in Madras on the 18th of the month. There is however no chance of using the Hobart for her regular work of depositing rubble in the sea until the pier reaches deeper water.

7. The rubble base of the pier is at present made of stone tipped from boats and catamarans and from a raft which I have had built for the purpose. The stone employed is both laterite and Palawan stone the latter being the best for filling up spaces in breasting the beds. This system for preparing the rubble base is both rough and expensive, but as it must be done I have spared no trouble or expense to do it. I imagine that the present difficulty I have in obtaining boatmen, boats, and catamarans will disappear when the rice traffic diminishes and that I shall by that time be able to drive the Hopper barges and be independent of this unsatisfactory boat labour.

8. I cannot help remarking with regard to this point in the construction of the piers that I am greatly annoyed at not being able to use the two Hopper Barges, but I trust that the Government will see that nothing is wanting but depth of water, and that sufficient depth of water cannot be reached (even supposing the weather to be favourable) for some weeks, and that after the depth has been reached some days must elapse before the jetty is constructed at which to load the Hoppers.

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Concrete blocks

met with at present in carrying out these works is the total want of resources in the neighbourhood for supplying what is urgently needed, and the consequence is that I have had to procure things from Bombay to a large extent, and when any gearing is required which is not sent out from England I have had to make it here. The fact of the Public Works Stores and Workshops being in a transition state at the time added to the difficulty, as it became necessary to send round to any place that possessed a smith to ask if I could have work done.

10. Another cause of delay in finishing the concrete machinery has been the want of wrought iron. Now, when nearly all the preliminary work is finished, the iron has arrived, but as it has been expected for the last six months, the large quantities of iron that have been used in making block frames, bolts &c. has been either purchased at very high rates from the bazaar or procured from the Presidency Stores and shops. Generally, however, the Presidency Stores had not the required sizes in stock.

11. The concrete blocks made by machinery are made with less cement than when made by hand. The stone is from Chinnampett and is crushed by the stone crushers. I have discontinued the use of small stone from Talairam.

12. The block platform for the South Pier blocks has been extended, and a length of 525 lineal feet is now completed. No blocks have been made on this up to the present time.

Concrete Block Platforms

13. As the machinery for making the North Pier blocks is generally at work now, I think in future reports of progress the separate head may be omitted. I would, however, state that the principal machinery which I hoped to have had in working order two weeks ago is not yet completed, as I am still waiting for castings. To avoid delay in getting brass castings I have managed to cast on these works, and have turned out some excellent castings of valves, bearings &c. Unfortunately I cannot do the same with iron.

Machinery

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for ballasting railways. The stone from the South Indian Railway for the South Surf Bank has not yet been touched. But in a short time the sidings will be laid in at the quarry and work commenced. In the meantime I am anxious to make a speedy start with the South Surf Bank before the Railway is completed, and I respectfully ask that I may be allowed to take immediate steps for depositing large stones as a commencement. My views regarding the stopping of the South Surf Bank have already been placed before Government in my reply to G. O. No. 450 dated 12th February 1877. The carrying out of the Southern Pier is to my mind of such importance that I must ask for Government support even if I have to put some of the owners of rice pandals to much inconvenience.

South Surf Bank

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Hazim Ali Nakhvi appears to have been the one selected by the Harbour Works Committee, but he has had no instructions to commence quarrying as the question of the construction of the South Pier has raised by the Committee is still unsettled.

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18. The line of railway from Cochran's Larnal to the beach is fast approaching completion and the pile driving at the bridge over the canal will be finished in one more day. At the present date there are

Stores

General matters connected with North Pier Works

South Indian Railway Extension

26 piles driven, and 90 lineal feet of the superstructure completed. The fencing through the Hospital compound is finished and the brick work of the culverts and water ways crossed by the railway is nearly completed. The Municipal Commission wish to have the line across the monument esplanade forced in. I am having fencing prepared for this purpose but it will add considerably to the cost of the line.

Marine Survey

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I have the honor to be

Sir

Your most Obedient Servant

J. A. Horrogood.

Superintendent

Madras Harbour Works

The above is a list of the
 names of the persons who
 were present at the
 meeting of the
 Board of Directors
 of the
 City of New York
 on the
 1st day of
 January, 1871.

1870

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25.2.77 No 472
 21.2.77 No 476
 12.2.77 No 477
 12.2.77 No 480
 1.2.77 No 316 & 315

From The Superintendent
 Madras Harbour Works
 To The Chief Engineer
 No 2237
 for Roads & Buildings,
 Fort St. George.

Dated 28th February 1877

No 107 W

Submits report of progress
 of the works during the
 month of February 1877 -
 + W. W. Librarian

No 215

Per 2.3.77 1053/77
 1.3.77 1053/77

Al. W. 10

Public Works Department.

No 812

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the

Read the following:

From

The Supt. Madras Harbour Works } (H.E. No 107 of W. of 28th Feb 1877)

Recorded

2. His Grace the Governor
 in Council approves of
 the South Surf Bank
 being proceeded with when
 stone is available. And
 the Superintendent of the
 Harbour Works will make
 the requisite arrangements
 for the prosecution of the
 work as speedily as existing
 means will allow.

3. It is observed that
 the Marine Survey is being

carried

carried out under the direction
of the Marine Survey Dept.,
by whom the cost is to be
met; and any assistance
required should be sought
for from the Master Attendant
rather than from the Harbour
Works authorities.

W.H.
6.3.77

Detd - 9-3-77
Supt. M. H. Works Sides,
Marine Dept. ✓
Dated 21. 3. 77

W.H.
6.3.77

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12237
GOVT. OF 1877 MADRAS.
PUBLIC WORKS.

12
To the Capt. Harbour Works

Dated
Issued
Recd. Encl.

g. 9. 877, No. 812.
Nos. 215-218.
12-3-77
Returned to Vess
14/5/77
Taken up for reference

Madras Harbour Works
Progress Report during
the month of February
1877 of the —, recorded
with remarks.

Capt. Harbour Works

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