

(1) Number of pages _____

(2) Date of repair _____

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	3457	Press
B.P. No.		Mis.
Dated	16-12-	C876 195

Not to be folded or roughly handled

14

*Proceedings of the Madras Government, Public Works Department,
16th December 1876. No. 3,457.*

Read the following letters :—

No. 420. From F. N. THORCWOOD, Esq., Superintendent, Madras Harbour Works, to Major-General G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Madras, 1st December 1876, No. 91 W.

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

1 Plan.

2. *North Surf Bank.*—The action of the sea during the past month has shown itself rather severely on the top portion of the surf bank, and, as shown on the accompanying plan, the end of the tip is now only 870 feet from the commencement, whereas at the end of October the length measured on the centre was 950 feet. This represents a shortening of eighty feet, of which however fifty were due to the continuance of the heavy surf that was raging at the date of my last report.

3. The amount of laterite tipped at the end of the bank during the past month has only been forty-six tons; this quantity having been used as a protective measure when the tendency of the sea to cut the bank away was first observed.

4. The total quantity of laterite tipped in the bank is now 98,978 tons, and it is probable that very little more will be required before commencing to set concrete blocks.

5. The action of the waves from the north-east has been such as to cut the end of the bank off in a slanting direction, so that although there has been eighty feet of retreating on the centre line, that does not indicate that the bank has been reduced eighty feet in length throughout its entire cross section.

The impossibility of protecting the bank from further wasting away at the end is also accounted for by the unfortunate accident which befel the Titan crane on the 31st October, when two of its wheels gave way as it was coming back to pick up the blocks which were built as a protection for the north side of the bank in April last. This accident occurring at that particular time prevented me from using the Titan crane to set any blocks at the end of the bank between October 31st and November 20th, I therefore had nine large blocks built (as shown on the accompanying plan) at the end of the bank. Of these two fell over into the sea from being undermined, and one of these fell over when only three days old; but retained its shape and sharp edges perfectly well, thereby showing the excellence of the Portland cement with which it was made. At the present time seven blocks remain at the end of the bank, and, if any further undermining goes on, these blocks will fall over and form a protection. But I am of opinion that there will be very little further damage done to the end of the bank.

6. By the 20th November I had the Titan again in working order, and it is now travelling out to deposit the remaining blocks which were built "in situ" in April last.

7. I should like to state that, but for the kindness of Mr. Trevithick, the Locomotive Superintendent of the Madras Railway, I could not have got the new wheels made ready in this Presidency at all.

8. *Concrete Blocks.*—The making of concrete blocks has been carried on by hand labor as quickly as possible, and during the past month I received tenders from six Natives for the making of four blocks per diem.

9. I accepted the tender of a man named C. Rajagopaul Naidoo who tendered Rupees 9-12-0 per block as his price. This was not the lowest tender I received, but

the lowest but one. I accepted this man's tender, because I believed it to be a very fair one, and because whatever work he had done for me before (and he had done much) had been done in the most satisfactory manner.

10. The total number of concrete blocks for the pier made up to this date is 197, of these seventy-six have been made during the past month, and during the latter part of the month the blocks have been made at the rate of four a day. Besides these blocks which are made for the north pier itself I have had twenty-six smaller blocks made which I shall use as protective foreshore at the point where the actual block work joins the surf bank. These smaller blocks will be set by a 10-ton travelling crane which has just arrived at Madras.

11. *Engine-house and Machinery.*—The engine-house is now completed, the roof is covered in, and the floor is paved. I consider the brick work to be of very capital quality. The concrete-mixing station is not yet quite finished, but the brick work is complete, and the framing of five elevators is fixed. The brick work of the stone crushing machinery is completed, and two crushers are in position. The two long lines of shafting for driving the machinery are nearly finished. On November 29th steam was raised in two of the boilers, and the two steam engines were started; I never have seen engines start more satisfactorily. I kept them running for the greater part of the day and then examined their working parts. With the exception of the heating of one brass, there was absolutely no fault in the engines. I think that before Christmas the machinery will be completed.

12. *Concrete Block Platforms.*—The whole of one block platform is finished, and I am asking for tenders for making half of the other platform.

13. *Titan and Cranes.*—I have already stated what has happened to the Titan and what it is at present doing. Two light travellers for block-making are in course of erection, but, as there is no immediate need of these at present, they are not being hurried on.

14. *Quarries.*—The amount of laterite required during the past month has been so small that I have not visited the Ambatoor quarries. I am preparing a plan for reference in the matter of advertising part of Ambatoor quarry. When this is ready, I shall prepare an advertisement as directed in G.O., No. 3,088, of November 20th. The tenders for Chinnamapett stone will be received on the 9th December.

15. *Contracts.*—I have entered into several petty contracts for small amounts, such as the making of concrete blocks as already mentioned, the sinking of a well for supplying water to the steam engines, and the building of a godown for the Marine Department.

16. As I am anxious to carry out these preliminary works as quickly as possible, I do not advertise for tenders for these works, but my plan is to get tenders from some eight or ten persons and select the tender that seems most reasonable.

17. I have renewed the contract for the supply of Palaveram stone, and the price I pay at present is for stone unbroken and delivered in the yard Rupees 1-12-0 per ton, for the same stone broken quite small Rupees 2-2-0 per ton. I consider these prices very reasonable. The quantity required per day is only 30 tons, and this is easily supplied by the present contractor who appears to have great command of labor at Palaveram.

18. I would here draw particular attention to these prices paid for Palaveram stone, as I find that very wrong notions are in circulation with regard to what I pay.

19. The first arrangement I made was to pay Rupees 2 per ton for large unbroken stones, and Rupees 2-7-0 for the broken stone. This I subsequently reduced to Rupees 2-5-0 per ton, and at the end of a month I asked for fresh tenders. The result of this was that I pay now Rupees 1-12-0 for what I previously paid Rupees 2, and Rupees 2-2-0 for what was previously Rupees 2-5-0 per ton. The broken stone at Rupees 2-2-0 is delivered in the yard perfectly ready to go straight into the block moulds, and no further expenditure is incurred upon it.

20. *Cement and Stores.*—During the month five vessels have arrived in the Roads with stores for the Harbour Works, namely, the *Zenobia* with Portland cement, the *Viceroy* with a weigh bridge, the *El Dorado* with sundry stores and a 10 ton Jib crane, the *Hougoumont* with Portland cement, and the *Chaybassa* with rails and sundry stores.

21. I have not yet received the results of Mr. Dejou's experiments on General Morgan's cement. I therefore have not yet inserted in the Indian papers an advertisement asking for tenders for the supply of cement, as I imagine His Grace the Governor in Council wishes to know what the results of Mr. Dejou's experiments are. I expect to receive these results in a few days' time.

22. *Sand accumulation on Beach.*—The north-east wind continues to act on the accumulation of sand, which is daily diminishing, but not so quickly as at first. The spur or area of laterite rubble washed to the southward prevents some of the sand from being cleared out.

23. I have consulted with Mr. Parkes as to the advisability of removing this spur, but he is of opinion that for the present it had better not be touched.

24. *General matters connected with works.*—During the month of November I have visited in company with Mr. Parkes the ground at Chinnamapett from which it is proposed to get stone, and also the hills on the South Indian Railway from which it is proposed to make the surf bank for the south pier.

No. 420A. From the same officer, dated Madras, 11th December 1876, No. 94 W. WITH reference to my letter, No. 91 W, dated 1st December 1876, reporting the progress of the Madras Harbour Works to the end of the month of November 1876, I have the honor to transmit herewith a statement showing the expenditure on the works to the end of the same period.

Outlay on Madras Harbour Works up to 30th November 1876.

Heads of Estimate.	Cost for October 1876.	Cost for November 1876.	Cost to end of November 1876.	Total Cost.	Estimate.
<i>Preliminary Works.</i>					
Detailed survey	RS. 241 0 9	RS. 10 12 0	RS. 1,503 12 10	RS. 3,996 13 0	RS. 5,000
Marine do.	1,470 5 7	691 4 7	2,493 0 2		
Railways—			38,251 1 4		
Rails, &c., from England ..	4,858 0 9	4,211 14 10	36,467 3 9	1,19,636 0 3	1,50,000
Sleepers	11,631 1 5	6,446 12 8	44,917 11 2		
Formation		2 10 3	1,878 8 4	1,878 8 4	10,000
Opening quarries	6,882 11 5	929 6 0	19,602 15 14	19,602 15 4	65,000
Preparing block ground ..					45,000
Jetties for shipping rubble stone ..					30,000
Land					
<i>CONSTRUCTION OF PIERS.</i>					
<i>North Pier.</i>					
Surf bank	20,136 1 10	8,534 0 7	1,62,320 12 3	1,62,320 12 3	2,37,150
Rubble base (a)	953 2 1	964 13 10	6,596 9 8	6,596 9 8	4,82,600
Extra rubble for bank (if needed) (b) ..	1,589 8 0		1,770 5 10	1,770 5 10	1,00,000

NOTE.—(a) For current expenses on Steam Hoppers as well as work done by Masula Boats.
(b) The surf bank is now extended to a little beyond its proposed limit and further expenditure on it will not be great.

*Proceedings of the Madras Government, Public Works Department,
16th December 1876. No. 3,457.*

Heads of Estimate.	Cost for October 1876.	Cost for November 1876	Cost to end of November 1876.	Total Cost.	Estimate.
<i>North Pier—(Contd.)</i>	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS.
Concrete blocks—					
Making	15,214 4 8	15,241 12 9	35,230 9 3	35,230 9 3	10,00,500
Setting .. ..	.. ..	.. ..	.. ..	.. ..	3,06,500
Light-house .. ..	.. ..	.. ..	.. ..	.. ..	30,000
<i>South Pier.</i>					
Surf bank .. ..	.. ..	.. ..	.. ..	.. ..	2,37,180
Rubble base (a)	677 11 7	988 4 5	5,435 5 8	5,435 5 8	4,82,680
Extra rubble for bank (if needed) .. ..	.. ..	.. ..	.. ..	.. ..	1,00,000
Concrete blocks—					
Making .. ..	.. ..	.. ..	.. ..	.. ..	10,00,500
Setting .. ..	.. ..	.. ..	.. ..	.. ..	3,06,500
Light-house .. ..	.. ..	.. ..	.. ..	.. ..	30,000
Buildings	5,118 6 7	2,093 2 9	25,954 12 6	25,954 12 6	75,000
<i>Plant.</i>					
Locomotive engines	215 11 0	2 9 6	1,042 15 3	1,042 15 3	60,000
Rolling stock	23 13 10	7,832 9 10	10,471 5 1	10,471 5 1	35,000
Floating plant .. ..	.. ..	.. ..	1,11,881 5 8	1,11,881 5 8	1,45,000
Machinery	6,616 14 6	22,079 7 0	1,52,196 6 2	1,52,196 6 2	1,25,000
Quarry and general tools	971 12 5	1,055 8 9	11,987 7 3	11,987 7 3	50,000
Buoys and beacons .. ..	.. ..	.. ..	651 5 7	651 5 7	3,000
Office furniture	178 0 6	192 4 0	2,115 7 6	2,115 7 6	2,000
<i>Establishment.</i>					
Salaries	7,678 13 2	3,085 0 0	51,631 5 11	59,095 7 3	*2,45,690
Office contingencies	203 11 8	58 10 10	997 6 4		
Travelling allowance	1,961 7 6	132 0 0	6,456 1 0		
Medical .. ..	.. ..	.. ..	10 10 0		
<i>Contingencies at 5 per cent. on Total Estimate.</i>					
Prince of Wales's visit and other contingencies	130 8 3	27 10 9	9,427 2 4	15,121 4 2	2,45,690
Protecting North Beach	367 9 4	298 12 9	5,694 1 10		
Total ..	87,125 12 10	74,907 8 1	7,46,985 12 0	7,46,985 12 0	

(a) For current expenses on Steam Hoppers as well as work done by Masula Boats.

MADRAS,
11th December 1876.

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

No. 421.

ORDER THEREON, 16th December 1876, No. 3,457.

CIVIL WORKS, No. 23-A.

ORDERED to be recorded.

(True Extract.)

Major-General, R.E.,
Secretary to Government.

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

Exd. E. C. Shunker.
Spare Copies

Memo 1902 of 15/12/16 J.C. 4V
With reference to the ~~minutes~~ ^{minutes}
in which the Harbour Trust
Report for the month of November
describes ~~his statement~~ ^{the}
~~matter of~~ that certain contracts
have been entered into by him
the undersigned is directed to
ask Mr. Thompson ^{to} ~~for a~~ report

Cost for Cost for Cost to me Total Cost Estimate

71

October 1876

Brought forward 76983 00 79009 59 672969 7 672969 7

Collected from

Salaries 76983 02 30035 51 51601 51

Office Contingencies 203 11 8 56 0 0 999 5 4

Travelling Allowance 1901 7 6 132 64 56 1

Medical 12 10 10

Contingencies at 5 per cent on the Estimate

Price of Water, fuel and other contingencies 130 8 3 27 10 9 9427 2 4

Protecting North Beach 3499 4 298 12 9 5694 1 10

Total 89125 12 0 74997 8 2 746905 12 0 746905 12 0

Note (a) for current expenses on Steam Hygiene

Madras 11 December 1896

(b) as well as work done by the State Hygiene

little beyond its proposed limit and further expenditure on it will not be great.

Shreeve commits, in his opinion, the advantage of limiting the ~~number of individuals~~ to the option of tendering to a few preferred individuals, whereby he does not advantage all bidders for competition. Now whether his notion in the present case has been submitted to & approved of the Committee appointed by the Executive Council in all financial matters. 1897 15/12

Whether appointing members

Heads of Estimate

Cost for October 1876 Cost for November 1876 Total Cost Estimate

Preliminary Works

Detailed Survey 241 9 10 12 1300 12 10 3996 13 5000

Marine Survey

1470 57 191 47 2490 2 3020 47 15000

Railways

Railways from England 2050 9 424 14 2467 3 3020 47 15000

Formation

1031 15 6446 12 4497 12 2 10 1070 8 4 10000

Opening Quarries

Preparing Block Pier 602 15 929 6 19602 15 19602 15 45000

Putting for shipping Rubble stone

1031 15 6446 12 4497 12 2 10 1070 8 4 10000

Land

Construction of Pier 2038 10 8334 7 16320 12 3 112320 12 3 237100

Surf bank

Rubble base 950 21 965 13 6596 9 8 6596 9 8 202600

Extra Rubble for bank (if needed)

1029 8 1770 5 10 1770 5 10 100000

Concrete Works

Marking

Setting

Lighthouse

South Pier

Surf bank

Rubble base

Extra Rubble for bank (if needed)

Concrete blocks

Marking

Setting

Lighthouse

Buildings

Plant

Locomotive Engines

Rolling Stock

Floating Plant

Machinery

Quarries & General Tools

Ways and Means

Office Furniture

Carried forward

P.W.D.

1876

No. 911 W.

From

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS.

To

*The Secretary to Government,
Public Works Department,
Fort St. George,
MADRAS, 11th December 1876.*

SIR,

*With reference to my letter No. 911 W,
dated 1st December 1876, reporting the progress
of the Madras Harbour Works to the end of
the month of November 1876, I have the honour
to transmit herewith a statement showing the
expenditure on the works to the end of the same
period.*

I have the honour to be,

Sir

Your most obedient servant,

J. N. Thoroughgood.

Superintendent

Madras Harbour Works

From

The Superintendent
Madras Harbour Works

To The Secretary to Government
Public Works Department
Fort St George

Dated 11th December 1876
Recd

My Sir:

I forward, Statement of
Expenditure for November 1876

is circulated in continu-
-ation of the Progress
Report for November



From

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS.

To

Major General G. W. Walker R. E.

Secretary to Government,

Public Works Department,

MADRAS, 1st December 1876.

SIR,

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

North Surf Bank 2. The action of the sea during the past month has shown itself rather severely on the top portion of the surf bank, and as shown on the accompanying plan, the end of the tip is now only 870 feet from the commencement, whereas at the end of October the length measured on the centre was 950 feet. This represents a shortening of 80 feet of which however 50 were due to the continuance of the heavy surf that was raging at the date of my last report.

3. The amount of laterite tipped at the end of the bank during the past month has only been 46 tons, this quantity having been used as a protective measure when the tendency

tendency of the sea to cut the bank away was first observed.

4. The total quantity of laterite tipped in the bank is now 98,978 tons, and it is probable that very little more will be required before commencing to set concrete blocks.

5. The action of the waves from the North East has been such as to cut the end of the bank off in a slanting direction, so that although there has been 80 feet of retreating on the centre line, that does not indicate that the bank has been reduced 80 feet in length throughout its entire cross section.

The impossibility of protecting the bank from further wasting away at the end is also accounted for by the unfortunate accident which befel the Titan Crane on the 31st October - when two of its wheels gave way as it was coming back to pick up the blocks which were built as a protection for the North side of the bank in April last. This accident occurring at that particular time prevented me from using the Titan Crane to set any blocks at the end of

the bank between October 31st and November 20th. I therefore had nine large blocks built (as shown in the accompanying plan) at the end of the bank. Of these two fell over into the sea from being undermined, and one of these fell over when only three days old but retained its shape and sharp edges perfectly well, thereby showing the excellence of the Portland Cement with which it was made. At the present time seven blocks remain at the end of the bank, and if any further undermining goes on these blocks will fall over and form a protection. But I am of opinion that there will be very little further damage done to the end of the bank.

6. By the 20th November, I had the Titan again in working order, and it is now travelling out to deposit the remaining blocks which were built "in situ" in April last.

7. I should like to state that but for the kindness of Mr. Northick, the Locomotive Superintendent of the Madras Railway, I could not have got the new wheels made ready in this Presidency at all.

The

8. The making of concrete blocks has been carried on by hand labour as quickly as possible - and during the past month I received tenders from six natives for the making of 12 blocks per diem.

9. I accepted the tender of a man named G. Rajagopaul Aiyar who tendered Rs. 12. 8 per block as his price. This was not the lowest tender I received, but the lowest but one - I accepted this man's tender because I believed it to be a very fair one, and because whatever work he had done for me before (and he had done much) had been done in the most satisfactory manner.

10. The total number of concrete blocks for the pier made up to this date is 197, of these 76 have been made during the past month, and during the latter part of the month the blocks have been made at the rate of 4 a day. Besides these blocks which are made for the North Pier itself I have had 26 smaller blocks made which I shall use as protective foreshore at the point where the actual block work joins the

Concrete Block

the House & Machinery

the surf bank. These smaller blocks will be set by a 10 ton travelling crane which has just arrived at Madras.

11. The Engine house is now completed - the roof is covered in, and the floor is paved. I consider the brickwork to be of very capital quality. The concrete mixing station is not yet quite finished, but the brickwork is complete, and the framing of five elevators is fixed. - The brickwork of the stone crushing machinery is completed, and two crushers are in position. The two long lines of shafting for driving the machinery are nearly finished. - On November 29th steam was raised in two of the boilers, and the two steam engines were started - I never have seen engines start more satisfactorily. - I kept them running for the greater part of the day and then examined their working parts. With the exception of the heating of one trap there was absolutely no fault in the engines. - I think that before Christmas the machinery will be completed.

Concrete Block Platform

12. The whole of one block platform is finished, and I am asking for tenders for making

making half of the other platform. -

13. I have already stated what has happened to the Titan, and what it is at present doing. - Two light travellers for block making are in course of erection, but as there is no immediate need of these at present they are not being hurried on. -

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Titan & Latvile

Quarries.

Contracts

but my plan is to get tenders from some 8 or 10 persons and select the tender that seems most reasonable. -

17. I have renewed the contract for the supply of Palavram stone - and the price I pay at present is for stone unbroken and delivered in the yard Rs 1. 12. 0 per ton, for the same stone broken quite small Rs 2. 2. 0 per ton. - I consider these prices very reasonable. - The quantity required per day is only 30 tons and this is easily supplied by the present Contractor who appears to have great command of labour at Palavram. -

18. I would here draw particular attention to these prices paid for Palavram stone, as I find that very wrong notions are in circulation with regard to what I pay. -

19. The first arrangement I made was to pay Rs 2 per ton for large unbroken stones, and Rs 2. 7. for the broken stone - This I subsequently reduced to Rs 2. 5. 0 per ton and at the end of a month I asked for fresh tenders. The result of this was that I pay now Rs 1. 12 for what I previously paid

paid Rs 2, and Rs 2. 2. 0 for what was previously Rs 2. 5. 0 per ton. The broken stone at Rs 2. 2. 0, is delivered in the yard perfectly ready to go straight into the block moulds and no further expenditure is incurred upon it.

20 During the month 5 vessels have arrived in the roads with stores for the Harbour Works - namely the "Zenobia", with Portland Cement - the "Viceroy" with a weigh bridge - the "El Dorado" with sundry stores and a 10 ton Jib Crane - The "Hougoumont" with Portland Cement and the "Chaybassa" with rails and sundry stores.

21 I have not yet received the results of Mr. Dejeux's experiments on General Morgan's Cement. I therefore have not yet inserted in the Indian papers an advertisement asking for tenders for the supply of cement, - as I imagine His Grace the Governor in Council wishes to know what the results of Mr. Dejeux's experiments

Cement & Stores

Sand Accumulation on Beach

22 Experiments are. I expect to receive these results in a few days time.

The North East wind continues to act on the accumulation of sand, which is daily diminishing, but not so quickly as at first. The spur or area of laterite rubble washed to the Southward prevents some of the sand from being cleared out.

23. I have consulted with Mr. Parkes as to the advisability of removing this spur, but he is of opinion that for the present it had better not be touched.

General matters connected with Works.

24. During the month of November, I have visited in company with Mr. Parkes, the ground at Chinnampett from which it is proposed to get stone, and also the hills on the South Indian Railway from which it is proposed to make the surf bank for the South Pier.

I have the honour to be,
Sir,
Your most Obedient Servant,
H. Thoroughgood,
Superintendent
Madras Harbour Works

8027-4-76 No 1056
 " 12-5-76 " 1197
 " 15-6-76 " 1492
 " 18-7-76 " 1802
 " 15-8-76 " 2117
 " 26-9-76 " 2568
 " 12-10-76 " 2740
 " 20-11-76 " 3088
 " 20-11-76 " 3107

From *352*
 The Superintendent
 P.W.D.
 Madras Harbor Works
 2 DEC 76
 8720
 To The Secretary to Government
 Public Works Department
 Fort Saint George

Dated 1st
 Recd 7 December 1876

Mgr W
 Enclosure 1 *Man*

Submit Report of progress
 of the Harbor Works for the
 month of November 1876.

Memo: 1902 of 15/12/76.

With Librarian

N 420

C. C. H. 12-76
 C. C. H. 12-76
 C. C. H. 12-76

PUBLIC WORKS DEPARTMENT.

Read the following:

Letter from the Superintendent, Madras
 Harbor Works No 912 dated 1st Dec 1876.

FOR ORDERS.

C. M. Nathan, M.A. Smith
 Secretary to Government

1/12/76

I do not understand
 the advantage of
 these particular letters
 & why Mr. Thompson
 does not address
 the Superintendent
 I do not understand
 the purpose of these letters
 & why Mr. Thompson
 does not address
 the Superintendent

[Faint handwritten notes at top right]

11
No 3457 of 11/12/76.
Order to be recorded.
AMM

[Handwritten initials]

Issued like the question
about partial tenders
answered Ree

[Faint handwritten notes, possibly a list or summary]

420/21

[Faint handwritten notes at bottom left]

Supt. M. H. W. 11/12/76
manuscript
drop. 22. 12. 76

87268
9040
Govt. of Madras.
PUBLIC WORKS.

To *the Supdt of the M. & C. Canal*
Dated _____
Issued _____
Recd. _____ Encl. _____

G. O. No. 16 *Dec 1876* No. 3157

Nos. 420/21

*Madras Harbour & Dock
Engineer of the —
November 1876, to order*

Supdt. M. & C.