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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P.W. DEPARTMENT

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Not to be folded or roughly handled

2924
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GOVERNMENT OF MADRAS
PUBLIC WORKS DEPARTMENT.

19th July 1878, No 2,924 W.

Buildings and Roads
Civil Works

Read the following papers —

No 184 Despatch from the Right Honorable the Secretary of State for India

Public Works,
No. 9

INDIA OFFICE, LONDON,
6th June 1878

MY LORD DUKE,—In continuation of my predecessor's Public Works Despatch of the 7th March last, No 5, I forward, for your Grace's information, copy of a report, dated 9th May 1878, by Mr. W Parkes on the progress of the Madras Harbour Works during the quarter ended 31st March 1878

I have, &c,
CRANBROOK.

His Excellency the Most Noble
The Governor in Council, Fort St George

MADRAS HARBOUR

Report of Progress for the Quarter ending 31st March 1878

23, ARINGTON STREET, 9th May 1878.

I HAVE the honor to forward herewith a plan and two photographs taken 5th April, showing the progress made in the works of the above Harbour in the quarter ending 31st March last

2 It will be seen that the advance has been much greater than in the previous three quarters, and I consider it satisfactory and creditable to the energy and good management of the Superintendent and his staff. The North Pier has advanced 344 feet and the South Pier 347 feet

3 This is not the full rate of progress that may be anticipated. The same "Titan" that is now at work on the North Pier at Madras advanced the Breakwater at Kurrachee in the month of November 1872 214 feet, and in December 196 feet, while the greatest month's work at Madras was 165 feet in February. This, however, is, as much as could be expected in so early a stage. As more experience is gained in carrying on the work at high pressure during favorable weather, more results will be obtained with less personal exertion. The organisation is a rather complicated one, and the experienced member of the working staff had to be divided for the first time between the two piers

Fort St George

4. A glance at the plan will show that this considerable advance at both piers must have done much to carry them past the difficulties caused by shallow water, and the neighbourhood of the shore, which so much retarded the work last year. The end of the North Pier now stands in water 7 to 8 feet deep, and the South Pier in water 4 to 5 feet deep, than that in which the end of the North Pier stood in March last year. I therefore hope that the construction from sand will be very much less than last year, and such as there may be will be more easily met.

5. I am informally telegraphed that up to 30th April no sand had appeared in the foundations of either pier. The obstruction commenced on the 1st April last year.

6. Three hundred feet of rubble base were at that date nearly complete in advance of both piers for receiving the concrete blocks. The steam tugs or barges are now at work bringing rubble stone from Cox's Bay, a small natural beach about 20 miles south of Madras, and deposits are also made by manual labour from the beach. Both of these are temporary expedients only to be continued till a proper shipping place can be made alongside the North Pier to receive stone from the quarries on the Madras Railway. They in water will while the height of rubble base is small, and a small quantity of stone per day advances the work at a sufficient rate, but the rate of supply will not be sufficient as the work advances into deeper water. I expect, however, that the shipping party will now be very shortly established.

7. I can therefore report that everything is now in good train for taking advantage of every opportunity of favourable weather for advancing the work, though for the next few months' most important progress must be expected to be made in the quarter now expired.

8. I much regret, however, having to state that from the 1st April to 30th May, the working of the pier was suspended for a reason that to me was quite unexpected, and as to the sufficiency of which I have not yet the means of judging. I was at that time out of the country by Mr. Pearson (who is in temporary charge of the work during the absence from Madras of Mr. Thorowgood) in a letter dated 6th April, which I received on the 27th. On the 30th I received a telegram stating that block-setting had been actually suspended since the 1st, but would be resumed the next week. It is gratified for further information as to the cause of the suspension, and received a reply to the effect that it was solely due to the blocks not having had sufficient time to harden.

9. This reply is so far satisfactory that it excluded the supposition of any new serious difficulty. A few weeks more or less for the blocks to harden is a mere question of detail which may be easily arranged for in and so it proved to be necessary. I must, however, disavow the supposition that the only difficulties were not as I had formulated up in the provision to be made against such a contingency as is now alleged to have arisen.

10. The supply of blocks is dependent on the area of the block ground. This should be large enough to contain a number of blocks equal to that which can be set in the piers in the time necessary for new blocks to harden. That time was determined on the experience of the Kurrahee works, and the result was compared with the practice at other places where concrete blocks are used under more or less differing conditions. On referring to the Kurrahee records I find that the work was carried on with a supply of blocks identical, both as to number and age, with that which was on hand when the Madras block-setting was suspended.

11. The suspension, therefore, must be due either to some accidental and unforeseen interference with the hardening qualities of the Madras concrete, or to overcaution on the part of the executive officers. In the case provisionally made I engaged a repetition of such a miscarriage, and Mr. Thorowgood (who, as I before mentioned, was absent when the suspension was determined on) will, on his return to Madras, make full inquiry into the matter and report to me.

12. In my last report (paragraphs 8-11) I called attention to the expenditure upon the works compared with my original estimate. I showed that all the necessary preliminary works, buildings, plant and machinery had been provided for the sum (£180,000) which I have set down in the estimate for that purpose. I also showed that the works under all the most important heads were being carried out at rates within my estimate, but mentioned that the works actually in the sea were not sufficiently advanced to present a definite comparison of estimate and expenditure.

13. The advance made in the last quarter, however, enables me to do this. In the estimate the sea works were divided into three stages—

	£
1st.—The surf bank of loose rubble stone from the shore to the 2½ fathom line	23,719
2nd.—The shallow water section of 3 blocks in height from the 2½ to the 4 fathom line	18,031
3rd.—The deep water section of 4 blocks in height from the 4 fathom line outwards	100,935

14. The two first of these are now completed in the North Pier. The point of junction between the two is not so well marked in execution as it is in the estimate, a part on of the work being of character intermediate between the two sections, but the termination of the shallow water section is well marked at the point marked O on the plan, and this is 20 feet within the point reached on the 28th February, up to which date the account of expenditure has been made up.

* 15. Allowing for the cost of this 20 feet the aggregate expenditure on the surf bank and shallow water section has been Rupees 3,50,863. The estimated cost was £11,780, so that taking the rupee at par value there has been a saving of £6,694. There may be some further trifling adjustments both in payments and allowances, but not enough to affect the general result. The work is now proceeding according to the regular deep water section of four blocks in height resting on a rubble stone base. The present rates are rather within my estimate, and we may anticipate a saving rather than an increase upon these as the works proceed.

16. The South Pier is not yet completed through the shallow water section of three blocks in height, but as the rates are now pretty well ascertained, I am enabled to say that the saving upon that will be at least £13,000, making about £20,000 on the two piers. This is exclusive of the £20,000 which was added to the estimate for the surf banks without my concurrence. The saving, therefore, on the estimate as it appears in the monthly returns will be £40,000. But for this further £20,000 I am in no way responsible.

17. The reason for so large an excess in the original estimate should be explained. It was an allowance for meeting the difficulties which in some form or other I felt some would arise in pushing the works through the surf and shallow water, but for estimating the cost of which there were no definite data. I made the allowance in the form of an excessive quantity of rubble stone for the surf bank, but without banding myself or the Superintendent to employing this excessive quantity as the actual mode of meeting the difficulties. It was impossible to specify the best mode of meeting them until we saw the nature of the difficulties. Ultimately they were overcome by allowing the sea to play freely upon the rubble stone, and then protecting the parts of the bank which appeared liable to further change by concrete blocks thrown over the rubble stone slopes at random. The experience gained at the North Pier enabled Mr. Thorowgood to work on a better-defined system at the South Pier. Thus and the fact that the waste of the sand from the north side of the piers under the action of the southerly seas is much greater at the North Pier than at the South, and thus exposes a greater length of the work to the succeeding northerly seas, are the causes of the still greater economy of the South Pier.

18. There has not been much movement of sand during the quarter under review. The beach south of the South Pier has begun to advance, but it is during the quarter now current and the next that the greatest accumulation from the southward will take place. The South Pier, however, is now sufficiently advanced to prevent any of the wave-driven sand passing into the Harbour. There will no doubt be an accumulation as before to the southward of the South Pier, but this is of little consequence, and will be less and less formidable looking every year.

19. Little new light has been thrown upon the nature of the sand movement which caused so much delay last year. Mr. Thorowgood and Mr. Beardmore were for some time engaged upon another important survey to which I shall presently allude, and Mr. Thorowgood's absence and absence since the completion of this has, I presume, delayed the other surveys. It is therefore as yet uncertain how far the present freedom of sand is due to the sand having retreated, or how far to the works having advanced over a critical spot.

20. The survey on which Mr. Thorowgood and Mr. Beardmore have been engaged is one of the whole roadstead. The contour lines shown on the accompanying plan are taken from it. Those shown on former plans were taken from a survey by Lieutenant Jamieson, R.N., made in 1870. Unfortunately the two sets of lines are not strictly comparable, as there is a doubt about their being referred to the same datum. It was intended that they should be so, but as the result of assuming that they were so would be to show that all the depths above 4 fathoms have increased about 2 feet, which if not impossible is certainly very improbable, I think such a conclusion should not be accepted without confirmation.

21. Messrs. Thorowgood and Beardmore's chart, however, is a valuable record of the present state of the bottom, and though it must not be taken as evidence of an increase of depth it may be taken as positive evidence that the works have produced no effect on the depths much beyond the 4 fathom line. The 2, 3, and 4 fathom lines follow, though in a successively decreasing degree, the new form assumed by the coast line under the action of the waves as modified by the works, the deeper contours retain their old direction, generally parallel to the original straight line of shore.

22. Mr. Thorowgood and Mr. Beardmore deserve much credit for the promptitude and energy with which they took advantage of a short period of calm to make this survey, and I fear that the exertion and exposure were the cause of Mr. Thorowgood's illness. But I think that when it requires to be repeated as will be the case as the works advance, the duty should

be carried out by a regular Marine Surveyor, leaving the Engineers of the works free to utilise the calm weather in making the more detailed surveys in the immediate neighbourhood of the works. A proper application to the Government for this purpose will be made.

23 I would submit that a copy of this report be communicated to the Government of Madras.

I have, &c.

(Signed) W PARKES.

To the Under Secretary of State for India

No 184-A. From F N. THOROWGOOD, Esq, Superintendent of the Madras Harbour Works, to the Secretary to Government, Public Works Department, Buildings and Roads, dated Madras, 1st July 1878, No. 16 W.

I HAVE the honor to submit the following report of the progress on these works during the month of June

2 NORTH PIER.—The weather during the past month has not been very favorable for divers work, but the North Pier is now in such deep water that work can often be carried on there when nothing can be done at the South Pier. During the month 120 blocks have been successfully set in the superstructure, advancing the work by a length of 72½ feet. The total length of block work from the point B was on June 30th 776½ feet. Of this length 420½ feet have been built since January 1st, 1878, giving an average of 70 feet per month throughout the first six months of this year.

3. RUBBLE BASE.—The work of tipping the rubble base has been carried on as usual by musallah boats, catamarans, and by throwing in stone from the top of the Titan Crane. By these means 3,781 tons of laterite have been deposited during June, against 1,452 tons deposited during May. The loading place for the hoppers is not yet ready.

4 BLOCK-MAKING.—No blocks have been made during the month of June, but all things are in readiness, and this work will be resumed on the 1st July, and will be kept up until the yard is again filled.

5 QUARRIES.—From Ambathoor quarry there have been received 3,061 tons of large and small laterite, and 156 tons of railway ballast for making up the line. The sidings at Ambathoor have been kept in repair and new sleepers put down, but I have not yet been prepared for opening up a new portion of land. This must be done shortly, when the output of laterite will have to be sufficiently great to supply rubble base for both piers.

6. The quarries on the South Indian Railway have worked well, and by this line 4,537 tons of stone have been delivered to the South Pier. Of this 2,476 tons is for the rubble base, and the remainder for block-making at the North Pier.

7. SOUTH PIER.—The work of setting blocks at the South Pier is very dependent upon the weather, as the sea constantly breaks in front of the block work. On the 19th June block-setting was resumed, and up to the 30th there were 12 blocks set. This has advanced the work a length of 33½ feet, and the total length of block work from the point marked E is now 456½ feet.

8. RUBBLE BASE.—The rubble base is deposited in a similar manner to that of the North Pier, and 3,156 tons of rubble stone have been tipped over during June.

9. SAND ACCUMULATION, &c.—The sand has accumulated at a wonderful rate since the middle of June, and has advanced 125 feet seaward along the side of the pier since May 31st. It is also causing great trouble in front of the work, which trouble appears to be increasing. Longitudinal and cross sections have been taken on the 3rd, but I regret that they will not be completed in time to accompany this report.

10. At the same time as the sand accumulates to the south of the pier, it is cut away on the north side, and these changes will affect the plan for sheds on the beach, and may influence the position of an intercepting sewer. My report on Captain Taylor's sheds was therefore premature.

11 DRAINS.—This great sand accumulation has given a great deal of additional trouble in the work of extending the sewer to the south of the pier. The sewer has been carried through the surf bank and is brought some way alongside the pier on the south side, but at present is stopped for want of pipes which are being cast at the Public Works Workshops. The sewage is not yet carried through the diversion.

12 I would now in reference to this subject of drains respectfully ask permission to wait a short time longer before replying to paragraph 2 of the G O, No. 2,472 W, of June 12th. It seems not improbable that greater changes may yet occur, as those of which I now speak have been so sudden.

13 SEA ENCROACHMENT TO THE NORTH OF HARBOUR WORKS.—On the 14th June it was discovered that the sea was encroaching rather quickly to the north of the Harbour, and that part of the road to the north of Mr Coleman's house was being washed away. That further northward towards Casemode the encroachment was more serious, and that a police tannah was in danger of being undermined.

14 Immediate measures were taken for protecting this part of the coast by means of a pitching of laterite alongside the road, and, at present, by two additional groynes. These groynes do not as yet catch much sand. For this protective work up to June 30th, 650 tons of laterite have been employed, and the work is going on as speedily as the bad state of the roads will allow.

15. With regard to the encroachment of the sea at this point, Mrs C. Sadler, of Royapooram, who addressed Government on 28th November 1877, has twice applied to me to know if she is to receive any compensation for her lost property, but I believe no orders have been issued on this matter as yet.

16 PLANS AND SECTIONS.—One general plan and two longitudinal sections of the piers should accompany this report, but they will have to follow shortly afterwards. The delay is unavoidable owing to sickness amongst my surveying staff at a time when the survey has to be extended further than usual.

17. STORES.—The S S. *Navarino* arrived during June bringing some steel wheels and axles, &c, for trolleys on which to travel about the works, also gear for the elevators of the stone-crushing machines.

18 EXPENDITURE.—The total expenditure on the works up to June 30th has been Rupees 20,16,889. This amount includes the price paid for the 600 tons of coal in May and June.

MR JOHN CHICKEN.—I regret to state that Mr Chicken, whose illness I mentioned in my report for May, is still extremely unwell. At the Surgeon's advice he went to Bangalore, but has derived no benefit. His absence from the works is most severely felt at a time when the new crushing machinery, &c, is being started.

No 184-B From the same Officer, dated Madras, 4th July 1878, No. 17 W.

I HAVE the honor to forward one general plan and two longitudinal sections of the piers referred to in paragraph 16 of my progress report for the month of June.

No 185. ORDER THEREON, 19th July 1878, No. 2,924 W.

HIS GRACE the Governor in Council notices that sand has accumulated to the north of the south groyne. It seems impossible under the ever varying conditions of the work to draw any definite conclusions from this circumstance, but Mr. Parkes'

For the Governor

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6 PUBLIC WORKS DEPARTMENT, 19TH JULY 1878, No 2,924 W

impression that the south groyne was sufficiently advanced to stop the passage of sand has not been supported by the facts.

(True Extract)

(Signed) E A FOORD, Colonel, R.E.
Secretary to Govt, P.W.D.

(True Copy.)

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

To the Superintendent of the Madras Harbour Works
" Marine Department

For the Secy.



PUBLIC WORKS AND ROAD
CIVIL WORKS.

Sept. of (1878) 1878.

PUBLIC WORKS.

TO THE SECRETARY OF
THE PUBLIC WORKS DEPARTMENT

1878.

JULY.

Nov. 1878-1879.

Public Works
No. 9.

29 2/2
India Office, London
6 June 1878.

My Lord Duke,

In continuation of
my predecessor's Public Works
Despatch of the 7th March
last, No. 5. I forward for
your Grace's information
copy of a report, dated
9th May 1878, by Mr. W.
Parkes on the progress of
the Madras Harbour Works
during the quarter ended
31st March 1878.

I have the honor to be,
My Lord Duke,

Your Grace's most obedient
humble servant,
C. A. B. 1878

His Excellency,
The Most Noble,
The Governor in Council
Fort St. George.

Lopez

Madras Harbour

272

Report of Progress for the quarter
ending 31 March 1875.

23 Abingdon Street,
9th May 1875.

Sir,
I have the honor to forward
herewith a plan and two photographs
taken 5 April, showing the progress
made in the works of the above Harbour
in the quarter ending 31 March last.
2. It will be seen that the advance
has been much greater than in the
previous three quarters, and I consider
it satisfactory and creditable to the
energy and good management
of the Superintendent and his staff.
The North Pier has advanced 344 feet
and the South Pier 347 feet.

The Under Secretary
of State
for India.

3. This is not the full rate of progress that may be anticipated. The steamer "Titan" that is now at work on the North Pier at Madras advanced the Breakwater at Kuddachce in the month of November 1872, 214 feet, and in December 196 feet, while the greatest month's work at Madras was 165 feet in February. This however is as much as could be expected in so early a stage. As more experience is gained in carrying on the work at high pressure during favorable weather, more results will be obtained with less personal exertion. The

organization is a rather complicated one, and the experienced members of the working staff had to be divided for the first time between the two piers.

4. A glance at the plan will show that the considerable advance at both piers must have done much to

to carry them past the difficulties caused by shallow water, and the neighborhood of the shore, which so much retarded the work last year. The end of the North Pier now stands in water 7 to 8 feet deeper, and the South Pier in water 4 to 5 feet deeper, than that in which the end of the North Pier stood in March last ^{year}. Therefore hope that the obstruction from sand will be very much less than last year, and such as there may be will be more easily met.

5. I am informed by telegram that up to 30 April no sand had appeared in the foundations of either pier. The obstruction commenced on the 1st April last year.

6. 300 feet of rubble ^{base} were also at that date nearly complete in advance of both piers for receiving the concrete blocks. The steam hopper barges are now at work bringing rubble stone from Cudlong a small natural boat

near harbor 20 miles south of Madras,
and deposits are also made by Masulih
boats from the beach. Both of these are
temporary expedients only to be continued
till a proper shipping place can be
made alongside the North Pier to receive
stone from the quarries on the Madras
Railway. They answer well while the
height of rubble bank is small, and a
small quantity of stone per day advances
the bank at a sufficient rate, but the
rate of supply will not be sufficient
as the bank advances into deeper water.
I expect however that the shipping jetty
will now be very shortly established.

7. I can therefore report ^{that} everything
is now in good train for taking
advantage of every opportunity
of favorable weather for advancing
the work, though for the next few
months more interruptions must be
expected than ^{as usual} in the quarter now
expired.

8. I much regret however
having to

to state that from the 1st April to 6th May
the setting of blocks was ^{29th} suspended
for a reason that to me was quite
unexpected, and as to the sufficiency
of which I have not yet the means
of judging. I was at first informed
of the intention by Mr. Beardmore/⁴⁰
is in temporary charge of the work during
the absence from illness of Mr. Horngood
in a letter dated 6th April which I
received on the 27th or the 30th. I received
a telegram stating that block-
setting had been actually suspended
since the 1st but would be resumed
the next week. I telegraphed for further
information as to the cause of the suspension
and received a reply to the effect
that it was solely due to the
blocks not having had sufficient
time to harden.

9. This reply is so far satisfactory
that it excludes the supposition
of any new serious difficulty. A
few weeks more or less for the
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Question

question of detail which may be easily arranged for in future if proved to be necessary. I must however also exclude the supposition that the best data available were not used in determining upon the provision to be made against such a contingency as is now alleged to have arisen.

10. The supply of blocks is dependent on the area of the block ground. This should be large enough to contain a number of blocks equal to that which can be set in the pier in the time necessary for new blocks to load. That time was determined on the experience of the Kurrachee works and the result was compared with the practice at other places where concrete blocks are used under more or less differing conditions. On referring to the Kurrachee records I find that the work was carried on with a supply of blocks identical both as to number and age with that which was on hand when

when the Madras blocksetting was suspended. 392

11. The suspension therefore must be due either to some accidental and unforeseen inferiority in the hardening qualities of the Madras concrete or to overcaution on the part of the executive officers. In either case provision can be made against a repetition of such a miscarriage, and Mr. Thoroughgood who as I before mentioned was absent when the suspension was determined on will on his return to Madras make full enquiry into the matter and report to me.

12. In my last report (paras 8-11) I called attention to the expenditures upon the works compared with my original estimate. I showed that all the necessary preliminary works, buildings, plant and machinery had been provided for the sum (£80,000) which I have set down in the estimate for that purpose. I also showed that the works under

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all the most important heads were being carried out at rates within my estimate, but mentioned that the works actually in the sea were not sufficiently advanced to prevent a definite comparison of estimate and expenditure.

13 The advance made in the last quarter however enables me to do this. In the estimate the sea works were divided into three stages.

First The surf bank of loose rubble stone from the shore to the $2\frac{1}{2}$ fathom line £23,718.

Second - The shallow water section of 3 blocks in height from the $2\frac{1}{2}$ to the 4 fathom line £18,061.

Third - The deep water section of 4 blocks in height from the 4 fathom line outwards to the 906.

14. The two first of these are now completed in the North Pier. The point of junction between the two is not so well marked in section as it is in the estimate, a portion of the work being for the rock

characters intermediate between the two sections, but the termination of the shallow water section is well marked at the point marked 1 on the plan, and this is 20 feet within the point reached on the 20th February up to which date the account of expenditure has been made up.

15. Allowing for the cost of the 20 feet the aggregate expenditure on the surf bank and shallow water section has been Rs 3,50,863. The estimated cost was £4,750, so that taking the Rupee at par value there has been a saving of £6694. There may be some further trifling adjustments both in payments and allowances, but not enough to affect the general result. The work is now proceeding according to the regular deep water section.

of four blocks in height resting on
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The saving therefore on the estimate
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29/5/00
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15 2326
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20. The survey on which Mr. Throisgood and Mr. Beadmore have been engaged is one of the whole roadstead. The contour lines shown on the accompanying plan are taken from it. Those shown on former plans were taken from a survey by Lieut. Sarrard R.N. made in 1876. Unfortunately the two sets of lines are not strictly comparable as there is a doubt about their being referred to the same datum. It was intended that they should

be so, but as the result of assuming that they were so would be to show that all the depths above 4 fathoms have increased about two feet, which if not impossible is certainly very improbable, I think such a conclusion should not be accepted without confirmation.

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the waves as modified by the works; the deeper contours retain their old direction, generally parallel to the original straight line of shore. 29/24

22. Mr. Thoroughgood and Mr. Beardmore deserve much credit for the promptitude and energy with which they took advantage of a short period of calm to make this survey and I fear that the exertion and exposure were the cause of Mr. Thoroughgood's illness. But I think that when it requires to be repeated as will be the case as the works advance, the duty should be carried out by a regular marine surveyor, leaving the engineers of the works free to utilize the calm weather in making the more detailed surveys in the immediate neighbourhood of the works. A proper application to

to the Government for this purpose will be made.

23. I would submit that a copy of this report be communicated to the Government of Madras.

I have &c.
(Signed, W. Parkes.)

North Pier

No. 16 W

From

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS.

To

Colonel C. A. Ford & Co.
Secretary to Government, P.W. Dept.
Roads & Buildings, 1st July. 1878
MADRAS.

SIR,

I have the honor to submit the following report of the progress on these works during the month of June -

2 The weather during the past month has not been very favourable for divers' work, but the North pier is now in such deep water that work can often be carried on there when nothing can be done at the South pier. - During the month 120 blocks have been successfully set in the superstructure, advancing the work by a length of $12\frac{1}{2}$ feet. The total length of blockwork from the point B was on June 30th $776\frac{1}{2}$ feet. Of this length $420\frac{1}{2}$ feet have been built since January 1st 1878, giving an average of 70 feet per month

month throughout the first six months
of the year.

Rubble

5 The work of lifting the rubble
in this pier is carried on as usual by
manual labor, culmcranes and by
throwing in stone from the top of the
stone crane. By these means 875 tons
of talerite have been deposited during June,
against 1152 tons deposited during May.
The loading place for the Hoppers is not
yet ready.

Workmen

6 No blocks have been made during
the month of June, but all things are in
readiness and this work will be resumed
on the 1st July, and will be kept up until
the yard is again filled.

Quarry

8 From Ambathoor quarry there
have been received 875 tons of large and
small talerite, and 36 tons of railings
ballast for making up the lines. The
siding at Ambathoor have been kept
in repair and new sleepers put down, but

22 25 27
I have not yet been prepared for opening up
a new portion of land. This must be done
shortly, when the out-turn of laterite will
have to be sufficiently great to supply rubble
base for both piers.

6 The quarries on the South Indian
Railway have worked well, and by this
line 4397 tons of stone have been delivered
to the South pier. Of this 2476 tons is
for the rubble base, and the remainder
for blockmaking at the North Pier.

South Pier

7 The work of setting blocks at the
South pier is very dependent upon the
weather, as the sea constantly breaks
in front of the blockwork. On the 19th
June block setting was resumed and up
to the 30th there were 42 blocks set. This
has advanced the work a length of
 $33\frac{3}{4}$ feet, and the total length of block-
work from the point marked B is
now $456\frac{3}{4}$ feet.

Rubble Base

8 The rubble base is deposited in

in a similar manner to that of the North pier, and 3156 tons of rubble stone have been tipped over during June. -

9. The sand has accumulated at a wonderful rate since the middle of June, and has advanced 125 feet seaward along the side of the pier since May 31st. It is also causing great trouble in front of the wharf, which trouble appears to be increasing. Longitudinal and cross sections have been taken on the 30th, but I regret that they will not be completed in time to accompany this report. -

10. At the same time as the sand accumulates to the South of the pier, it is cut away on the North side, and these changes will affect the plan for sheds on the beach, and may influence the position of an intercepting sewer. My report on Captain Taylor's Sheds was therefore premature. -

11. This great sand accumulation has given a great deal of additional trouble

Sand Accumulation
from pier

Prav

2921.
in the work of extending the sewer to the South of the pier. The sewer has been carried through the surf-bank and is brought some way alongside the pier on the South side, but at present is stopped for want of pipes which are being cast at the Public Works Workshops. The sewerage is not yet carried through the diversion. -

12. I would now, in reference to the subject of drains respectfully ask permission to wait a short time longer before replying to para 2 of the Y. C. 2472-18 of June 12th. It seems not improbable that greater changes may yet occur, as those which I now speak have been so sudden. -

Sea encroach-
ment to the
North of Harbour
Tracks.

13. On the 10th June, it was discovered that the sea was encroaching rather quickly to the North of the Harbour, and that part of the road to the North of Mr. Holman's house was being washed away. That further northward towards Cassin's the encroachment was more serious, and

and that a perfect lammah was in danger of being undermined. -

14. Immediate measures were taken for protecting this part of the coast, by means of a pitching of laterite alongside the road and, at present, by two additional groynes. These groynes do not as yet catch much sand. For this protective work up to June 30th, 650 tons of laterite have been employed and the work is going on as speedily as the bad state of the roads will allow. -

15. With regard to the encroachment of the sea at this point, Mrs. H. Satter, of Royapuram, who addressed Government on 28th November 1877, has twice applied to me to know if she is to receive any compensation for her lost property, but I believe no orders have been issued on this matter as yet. -

16. One general plan and two longitudinal sections of the piers showed, accompanying this report, but they will have

Plans & Sections

Stores

Expenditure

Mr. John Cheek

have to follow shortly afterwards. The delay is marvellous owing to sickness amongst my surveying staff, at a time when the survey has to be extended further than usual.

17. The S. S. "Savanne" arrived during June bringing some steel wire and as low as for bottles on which to travel about the works, also gear for the elevators of the stone crushing machines.

18. The total expenditure on the works up to June 30th was Rs. 1,20,000. This amount includes the price paid for the 600 tons of coal in May and June.

19. I regret to state that Mr. Cheek, whose illness I mentioned in my letter of 11th May, is still extremely unwell. At the surgeons' advice he went to Bangalore, but has returned in a worse state. His absence from the works is much felt at a time when the new construction machinery is being started.

Yours faithfully,
J. H. S. Satter
Superintendent
Public Works Department

5040 2472 W 8/12 June 78

2265 W - 23 May -

2197 W - 2-5-78

2088 W - 8-7-78

1881 W - 18 April 78

1557 W - 26 March -

984 W - 28 Feb -

558 W - 4 -

14 W - 4 Jan -

1185 W - 8-3-78

CE 2738 - 2-6-78

1185 W - 8-3-78

1185 W - 8-3-78

1185 W - 8-3-78

1185 W - 8-3-78

Road & Buildings

From The Superintendent
Madras Harbour 1788

1216 W

Dated 1st July 1878

Submits report of progress
on the works during
the month of June 1878

To advy 3-4-78

Recd 13 7 78

CE 5 7 78

No. 17 W

2724
5

From

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS

To

Colonel E. A. Ford, R. E.
Secretary to Government, P. W. Dept.
for Roads & Buildings,
Fort George, Madras, 1st July 1878

SIR,

I have the honor to forward one
general plan and two longitudinal
sections of the piers, referred to in para:
16 of my progress report for the month
of June.

I have the honor to be,

Sir

Your most Obedt Servant,

J. H. Morozgood.

Superintendent
M. H. Works

16816
clerk

No 2924 Public Works Department

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 19 July/78. 2924
Read the following: 2924

Despatch from the Secretary
of State for India (No. 12 of 116 June 1878)

From the Superintendent
Madras Harbour (No. 16 of 11 July 1878)
— " 17 of 11 July 1878

This being the summer
in banded notices that
sand has accumulated
to the North of the Sri
Lagoon - It seems im-
possible under the ever
varying conditions of the
work to draw any
definite conclusion for
this circumstance - but
Mr. Parker's impression.

R.P.

that the South Agency
was sufficiently advanced
to stop the passage of
road has not been sup-
ported by the facts.

est
19/7

The Salt Water Bank
The Marine Dept
Office 32

Draft 25-7-78

21/7

21

112

PUBLIC WORKS DEPARTMENT.

Despatch from the Secretary of State for
India No. 9 dated 6th June 1878.

FOR ORDERS

Edmond Colver A.C.

Letter to Genl. P. W. D.

I do not feel competent to
suggest any order or
remarks by our Judge.
It being the one which
is dependent upon the
Furness I think does not
altogether support Mr. Parker
view is that the S. freight is
sufficiently advanced & especially
any accumulation of goods in this
the Harbor area.

The question of time requires for
the books & the due is in constant
I think this is a curious h? the
Ch. Eng? shd suggest that
R.I. shd be an interest for

Requiert. in Publick. U. d. Litter.
Madras, N. G., d. 10. 6. 1797.

5
Parsu 57 901

FOR ORDERS

2984
2984

23

Rec'd 13778
Cir 4-7-78
L. Steel 9, 4:44

Gr. 1887 & 17.4.78.
24/72 & 12.6.78

N^o 2

Public Works

6th June 1870.

The
Letter to Fort St. George

N^o 9.

sent 28 June 78

Recd 13 7-78
Cir 17 7-78
O.L. Phil 9 July

P. D. D.
Letter from the Superintendent
Madras Harbour Works, No. 16.11, dated
1st July 1878.

For Order.

The plans showing
the progress made
during the month
will be circulated
and receipt from the
Superintendent.

As I have been informed
by the Engineer
and the Surveyor
at Fort St. George

& a Mr. Collier
Secy. Government
P. D. D.

Did the Ch. Engineer in-
spect the matters here re-
ported on them by our de-
puties to Madras in
connection with the
"depot works" - Can he

Not afford some re-
marks?
8/7 1867

Logbook 3-1867
Dec. 1867
Dec. 1867

Mr. Kept
27/11/78

Take
Memorandum from the Secy of State for India 29/6/78
Letter from the Supt Harbour Works 16/5/78, 1/7/78

With reference to
the remarks of the Hon
Mr. Anderton, the Chief
Engineer has the honor
to state that the more
recent report on the
state of the Harbour
works is Mr. Thompson's
for the month of June
Both the Chief Engineer
and Deputy Chief Engi-
neers have mentioned
in Council that sand
had accumulated
to the north of the South
Pier somewhere
about the side of the
old Breakwater.

Mr. Kept

This sand will probably
be swept away again.

As regards the position
in the supply, this
this arose from the block
ground not being large
enough which has already
been remarked on by
Government in G.O.

No 597 W 917 May 1878

The time required for
the blocks to harden
has been ascertained
from experience at
the Kurrachee as
well as the Madras
Works.

247
r/f

2925
1/6

26

22/3/78

27

Roads & Buildings
The Superintendent
Madras Harbour Works

Circulated in
Continuation of the Progress
Report circulated on the
5th Inst.

1074

11/8/78

1074
Dated 11th July 1878

1st Enclosures 8/10.

Plans
Submit the plans & sections
of the Progress Report for
June 1878

Circulated

1074
11/8/78
11/8/78
11/8/78

2924
20

100

1000

2924
20

2921
28

R. A.

8196

7th

2504



Harbor

U. S. 19 July 1878

Wm. D. Miller

Madras Harbour

Passing orders on the
Despatch from the Secy of
State forwarding Sir Parker's
Report on the — for the
2^d Sunday 31 Mar 1878