

(1) Number of pages 28
(2) Date of repair 26/2/67
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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P.W. DEPARTMENT

G.O. No.	28(W)	Press.
~~B.P. No.~~		~~Mis.~~
Dated	6-1-1882	197.

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Copy

28
GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

6th January 1882, No. 28 W.

Buildings and Roads.
Civil Works.

Read the following paper :—

No. 23. Despatch from the Most Honorable the Secretary of State for India.

Public Works.

No. 37.

INDIA OFFICE, LONDON,
30th Nov. 1881.

SIR,—I forward herewith, for the information of your Excellency's Government,
Dated 15th November 1881. copy of a Report by Mr. Parkes on the
progress of the Madras Harbour Works
for the quarter ended 30th September 1881.

2. The interest of this report has been of course much lessened by the damage which has occurred to the works since it was written, but there are points dealt with in it, in respect to the shore movements caused by the construction of the harbour, which may probably prove of use to your Excellency's Government.

3. It was with much concern that I heard, by your telegrams of the 12th and 15th instant, of the serious damage which had been done to the harbour on the 12th November from the effects of a severe cyclone and of the loss of life which occurred on the occasion. I am now awaiting full particulars regarding the disaster, and shall be anxious to learn the extent of the injury and the proposals that may be made in consequence.

4. You will have learnt by my telegram of the 24th instant that Mr. Parkes is proceeding to Madras on the 9th December in order to investigate matters personally, and to report on the means necessary to replace the piers and remedy any defects in their construction.

5. I have allowed Mr. Parkes to proceed on the usual terms, viz., payment of his actual travelling and personal expenses with a salary of £160 per mensem during his absence, and I have complied with his request for an advance of £300 to be made to him before he leaves England on the 9th December next.

I have, &c.,

(Signed) HARTINGTON.

His Excellency the Right Honorable

The Governor in Council, Fort St. George.

MADRAS HARBOUR.

Report of Progress for the Quarter ending 30th September 1881.

23, Abingdon Street, 15th November 1881.

SIR,—Appended is a plan showing the state of the above Harbour Works on the 30th September, and I enclose a photograph taken on the 8th October.

2. The progress shown is very much less than in the corresponding quarters of the previous two years. This is mainly owing to the exceptionally rough weather which has prevailed. The operation of block-setting was also rather more complicated than hitherto, owing to the blocks being arranged for the widening of the heads, and therefore of special form, and sometimes requiring special fitting.

3. The number of blocks set in the south pier was 342. In the corresponding quarter of 1880 the number was 1,008. There was, however, in this pier no special cause of delay or difficulty other than those I have mentioned. The piers are now both advanced to their extreme lengths, but the returns inwards cannot be erected till after the rough weather of the north-east monsoon, now due. The Titan cranes require to be turned round, and this is an operation requiring some time. It would be difficult to run them back to places of safety on settled portions of the piers from their new positions. Mr. Thorowgood, therefore, determined to defer this operation till he has sufficient fine weather in prospect to finish the work and bring the cranes back.

4. There remain to be set, however, only 150 blocks at the north pier, and 240 at the south pier, so that there is little danger of their not being both completed by March.

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7. The works for the improvement of the beach are progressing. The raising and levelling is almost completed, and one half of the new surface metalled. Of the two stone banks which are to form the approaches to the new jetties, one is complete, and the other about half complete. The jetties themselves are not commenced.

8. The advance of the shore line to the south of the harbour continues much as before, but the tendency seems to be to extend the widening of the beach to the southward, rather than to advance along the line of the pier. This is no doubt owing to the wave reflected from the pier, counteracting the alongshore movement of the direct wave.

9. The changes within the harbour are of much interest in connection with the results of a complete survey of the interior of the harbour, made by Messrs. Thorowgood and Beardmore in September. The depths found by them are shown on the plan by black figures. Those of their previous survey of September 1879 are shown by blue lines.

10. On comparing the two, it will be seen that though at both dates the outer contours show some irregularities, which may reasonably be attributed to the disturbances caused by ships' anchors and cables, there is no general increase or decrease of depth. On the 5-fathom line, however, there is a tendency to increased depth, the figures being more uniformly to shoreward of the line. In the shallower contours of 4, 3, and 2 fathoms, as well as in the half fathoms, the northern half of the harbour has uniformly deepened, and the southern generally so, though with some exceptions. On the whole, between 5 fathoms and 2 fathoms there is an average deepening of about 8 inches.

11. The exceptions to the general rule of deepening which are found in the south-west corner of the harbour may be easily accounted for. During the last two years the north pier has been in advance of the south, and consequently the harbour has been more exposed to the southerly seas. These, while causing a general deepening, produce at the same time an along-shore beach movement from north to south.

12. The destination of the sand which has been washed up from the bed of the harbour is obvious in the advanced shore line. I have not received the levels of the beach above water in the same detail as the soundings, but there is certainly an approximate balance in the amounts of loss and gain above and below water. There is an apparent inconsistency in the high water reclamation. This, if within the wash of the surf, might temporarily affect the position of the high-water line, but the persistent action of the waves on the slope below water ultimately restores it to its normal position.

13. I think these results ought finally to set at rest the vague apprehensions which are still from time to time expressed of the silting up of the harbour. Probably this is the last action of the perfectly free ocean wave upon the area of the harbour, and it has been a deepening rather than a shoaling one.

14. There is, however, one point to which my attention has been privately drawn, though I do not think it has been officially reported, viz., the passage of sand through the interstices between the blocks of the south pier. Water heavily charged with sand is driven through these

interstices, and the sand is dropped inside. The rubble stone foreshore, for a length of 400 or 500 feet abreast of the belt of surf outside, is covered with sand to a depth of 2 or 3 feet, and it has been suggested, in ignorance of the deepening of the harbour itself, that it is from this source that sand has been brought to cause the advance of the beach line between the piers.

15. I think any apprehensions in this respect are quite groundless. The sand which finds its way through the pier is insignificant in quantity at present, and must become less as the accumulation inside rises and itself forms an obstruction to the entrance of more. There is absolutely no transporting power which can carry it away in any direction, so that it must lie where it falls, and will simply form a perfectly harmless heap.

16. The erosion of the shore beyond the revetment north of the harbour has been greater than in the last two years, and some rubble stone has been deposited with the view of retarding the erosive action beyond the limit of the present completed revetment.

17. As the question of the propriety of making a considerable extension of the protective works has lately been raised, I think it may be desirable to offer some explanation of the present state of the case. On the 25th January last I submitted to the Government of Madras a report on the subject based on a careful comparison of all the previous surveys, in which I showed that the shore line was subject to very considerable changes for which the harbour works were in no way responsible. There was evidence that before the line of shore was interfered with by the harbour piers, changes had taken place on as large a scale as any that had taken place since. At the same time some of the recent changes were undoubtedly attributable to the influence of the works, and it was only fair that compensation for the damage so caused should be borne by the harbour works funds.

18. All the protective works hitherto executed have been carried on under the harbour works staff, and the cost charged to the head of "Contingencies" in the accounts. The shore is now completely protected to a distance of 3,460 feet from the north pier, and the question now under consideration is as to the treatment of the shore to the northward of this. For this I think a different mode of treatment may be required, but there is no question as to the incidence of such charges as it may be necessary to incur being the same as before.

19. The question as regards future treatment is this:—Within the limits of the present protective works the property abutting on the shore is of such value, both intrinsically and in regard to public interests, that there could be no doubt as to the necessity of protecting it at all cost. In the part now subject to encroachment, however, the case is different. The land is of much less value, and if the present owners were equitably compensated, the sea might be allowed to encroach without any public interests being affected. The question is mainly one of cost, that is, of a comparison between the cost of protecting the shore, and of compensating the owners of the land. There are other points to be taken into consideration in the final adjustment of the balance, but they are secondary to that of cost. First, a certain amount of land has already been washed away and can hardly be regained. Second, the land has always been held subject to liability to erosion by the sea by causes independent of the harbour works. Third, a frontage of rubble stone revetment is incompatible with the purposes to which much of the shore has hitherto been devoted, the landing of timber and beaching of boats. Considerations based upon these points tend rather to limiting than extending the principle of protection.

20. A valuation of the land and other property threatened with erosion has lately been made by the Collector of Madras, but the details have not yet reached me. This will probably give sufficient materials for forming an estimate of how far it will be desirable to extend the physical protection. But in the meantime there are materials to show that the question is one which should not be decided on insufficient data.

21. The only mode of protecting the shore is by means of a longitudinal revetment, and this would cost about Rs. 35 per lineal foot. A piece of land about 300 yards north of the present termination of the revetment was purchased by the Government two years ago at the rate of $\frac{1}{16}$ th of a rupee per square foot. If this be assumed as the value of the adjoining land, 250 feet of it would have to be washed away before the cost of the revetment would be reached. The actual erosion in five years has been about 150 feet. At this point then it may be said that the relative costs of protection and compensation are, roughly speaking, balanced.

22. If, however, we go northward to near the present limit of erosion, we find land worth $\frac{1}{16}$ th of a rupee per square foot. Here, therefore, 3,500 feet would have to be washed away before the cost of the revetment be reached. Such an amount of erosion need not be contemplated, and the cost of the revetment would, in my opinion, be in no way justified.

23. It is, of course, impossible to predict precisely what will be the limits of erosion, but I think if a plan be made showing the line of shore for some distance north and south, the amount of erosion which has already taken place, and the strip of land which has a value equal to the cost of a revetment, the proper termination of the protective works will be indicated within very narrow limits.

24. In the meantime, I submit that the Government cannot do wrong in acquiring all the land abutting on the shore, whether it is to be ultimately protected or not. If this is not done, I believe the legal difficulties will be far more formidable than the physical ones.

25. The outgoings in respect of this tendency to erosion, whether taking the form of protective works, or of compensation or purchase of land, are not without an equivalent on the other side the account. The land gained on the south of the harbour is at present of rather larger area than that lost on the north. This is already partially utilized, and it will, no doubt, be more so. The proceeds in some form should be placed to the credit of the harbour funds. I think, considering the value of the southern side, it is quite possible that the ultimate result of the transfer of land from north to south may be a substantial profit.

26. With respect to the effect of the sheltering piers, now that they are virtually completed, I am collecting what evidence I can from the commanders of ships and others, and, so far, I have met with nothing but a full acknowledgment of the great facilities afforded by the harbour in the landing and shipping of passengers and goods. No difficulties have been suggested which cannot be met by modifications in the internal arrangements which are within the discretion of the harbour authorities or the commanders themselves. Of course there is a large field for suggestions of further improvement, and these are not wanting from various quarters, but though no doubt much may be done to develop the advantages of the harbour, I think more time is required to determine in what direction the next steps should be taken. In the meantime there is no doubt that the harbour ought to be earning a substantial revenue, and that without any burden on the trade, if the dues were imposed in an equitable manner. In confirmation of this I may quote the authority of Captain Taylor, the Master Attendant, who, in a letter to a local newspaper says, "It has already become a success so far as great convenience to the trade is concerned, and the interest of the capital sum is clearly leviable."

27. I have not yet received the statement of expenditure to the 30th September; when I have done so, I will prepare and submit the usual abstract.

I have, &c.,

(Signed) W. PARKES.

The Under Secretary of State for India.

P.S.—Since writing the above I have received the following telegrams, dated 12th and 14th November:—

"Heavy sea, both Titans gone, much damage to piers.

"North intact to twenty-three, thirty destroyed beyond except quadrant south right to twenty-eight hundred badly breached beyond, hoppers sunk, Berlie and half crew lost, six buoys broken away, storm passed away."

I am preparing a special communication to you on the subject.

W. P.

No. 24.

ORDER THEREON, 6th January 1882, No. 28 W.

ORDERED to be recorded.

(True Extract.)

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

To the Superintendent of the Madras Harbour Works.
" Master Attendant.
" Marine Department.
" Examiner of Public Works Accounts.

Exd. S. T. Austin.
Spare Copies.

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1882) Madras.

PUBLIC WORKS.

To
THE SUPERINTENDENT OF MADRAS
HARBOUR WORKS.
&c. &c. &c.

Dated January 6th.

Issued

Recd.

Encl.

G.O., 6th January 1882, No. 28 W.

JANUARY.

Nos. 23-24.

Madras Harbour Works.—Despatch from the Secretary of State forwarding copy of a report by Mr. Parkes on the progress of the — for the quarter ended 30th September 1881. Recorded.

Public Works,
No. 37

To His Excellency The Right Honourable The Governor
in Council, Fort St. George.

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* Dated 15th November 1881.

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2. The interest of this report has been, of course, much lessened by the damage which has occurred to the works since it was written, but there are points dealt with in it, in respect to the shore movements caused by the construction of the harbour, which may probably prove of use to your Excellency's Government.

3. It was with much concern that I heard, by your telegrams of the 12th and 15th instant, of the serious damage which had been done to the harbour on the 12th November from the effects of a severe cyclone, and of the loss of life which occurred on the occasion. I am now awaiting full particulars regarding the disaster, and shall be anxious to learn the extent of the injury and the proposals that may be made in consequence.

4. You will have learnt by my telegram of the 24th instant, that Mr. Parkes is proceeding to Madras on the 9th December in order to investigate matters personally, and to report on the means necessary to replace the piers and remedy any defects in their construction.

5. I have allowed Mr. Parkes to proceed on the usual terms, namely, payment of his actual travelling and personal expenses, with a salary of 160*l*. per mensem during his absence, and I have complied with his request for an advance of 300*l*. to be

made to him before he leaves England on the 9th December next.

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Your most obedient humble Servant,

(Signed) HARTINGTON.

ENCLOSURE.

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2. The progress shown is very much less than in the corresponding quarters of the previous two years. This is mainly owing to the exceptionally rough weather which has prevailed. The operation of block-setting was also rather more complicated than hitherto, owing to the blocks being arranged for the widening of the heads, and therefore of special form, and sometimes requiring special fitting.

3. The number of blocks set in the south pier was 342. In the corresponding quarter of 1880 the number was 1,008. There was, however, in this pier no special cause of delay or difficulty other than those I have mentioned. The piers are now both advanced to their extreme lengths, but the returns inwards cannot be erected till after the rough weather of the north-east monsoon, now due. The Titan cranes require to be turned round, and this is an operation requiring some time. It would be difficult to run them back to places of safety on settled portions of the piers from their new positions. Mr. Thorowgood, therefore, determined to defer this operation till he has sufficient fine weather in prospect to finish the work and bring the cranes back.

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No 2

Public Works

30th Nov. 1881.

Copy
Letter to Lord St. George
No 37 enclosure

Recd 30 Dec 81.

2262.

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No 37

dated 15th November, 1881.

India Office,

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W. H. W. W.

Sp. 298020 - 25-11-81
Des. 7147457 - 1881
Sp. 285450 - 15-11-81
2927 - 284 - 22-11-81
25494 - 15-11-81

Supt Mr. H. W. W. W.
Marine Dept
San W. W. W.

Sept 13-1-82

P. W. C. A. M.

Recd. 3 Jan 1882

13th Jan 1882
A. 28th Jan 1882

Ordered to be
recorded.

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10. On comparing the two, it will be seen that though at both dates the outer contours show some irregularities, which may reasonably be attributed to the disturbances caused by ships' anchors and cables, there is no general increase or decrease of depth. On the 5-fathom line, however, there is a tendency to increased depth, the figures being more uniformly to shoreward of the line. In the shallower contours of 4, 3, and 2 fathoms, as well as in the half fathoms, the northern half of the harbour has uniformly deepened, and the southern generally so, though with some exceptions. On the whole, between 5-fathoms and 2 fathoms there is an average deepening of about 8 inches.

11. The exceptions to the general rule of deepening which are found in the south-west corner of the harbour may be easily accounted for. During the last two years the north pier has been in advance of the south, and consequently the harbour has been more exposed to the southerly seas. These, while causing a general deepening, produce at the same time an alongshore beach movement from north to south.

12. The destination of the sand which has been washed up from the bed of the harbour is obvious in the advanced shore line. I have not received the levels of the beach above water in the same detail as the soundings, but there is certainly an approximate balance in the amounts of loss and gain above and below water. There is an apparent inconsistency in the high-water line of June, but I think this may be accounted for by the excavation of sand for the beach reclamation. This, if within the wash of the surf, might temporarily affect the position of the high-water line, but the persistent action of the wave on the slope below water ultimately restores it to its normal position.

13. I think these results ought finally to set at rest the vague apprehensions which are still from time to time expressed of the silting up of the harbour. Probably this is the last action of the perfectly free ocean wave upon the area of the harbour, and it has been a deepening rather than a shoaling one.

14. There is, however, one point to which my attention has been privately drawn, though I do not think it has been officially reported, viz., the passage of sand through the interstices between the blocks of the south pier. Water heavily charged with sand is driven through these interstices, and the sand is dropped inside. The rubble stone fore-shore, for a length of 400 or 500 feet abreast of the belt of surf outside, is covered with sand to a depth of 2 or 3 feet, and it has been suggested, in ignorance of the deepening of the harbour itself, that it is from this source that sand has been brought to cause the advance of the beach line between the piers.

15. I think any apprehensions in this respect are quite groundless. The sand which finds its way through the pier is insignificant in quantity at present, and must become less as the accumulation inside rises and itself forms an obstruction to the entrance of more. There is absolutely no transporting power which can carry it away in any direction, so that it must lie where it falls, and will simply form a perfectly harmless heap.

16. The erosion of the shore beyond the revetment north of the harbour has been greater than in the last two years, and some rubble stone has been deposited with the view of retarding the erosive action beyond the limit of the present completed revetment.

17. As the question of the propriety of making a considerable extension of the protective works has lately been raised, I think it may be desirable to offer some explanation of the present state of the case. On the 25th January last I submitted to the Government of Madras a report on the subject based on a careful comparison of all the previous surveys, in which I showed that the shore line was subject to very considerable changes for which the harbour works were in no way responsible. There was evidence that before the line of shore was interfered with by the harbour piers, changes had taken place on as large a scale as any that had taken place since. At the same time some of the recent changes were undoubtedly attributable to the influence of the works, and it was only fair that compensation for the damage so caused should be borne by the harbour works funds.

18. All the protective works hitherto executed have been carried on under the harbour works staff, and the cost charged to the head of "Contingencies" in the accounts. The shore is now completely protected to a distance of 3,460 feet from the north pier, and the question now under consideration is as to the treatment of the shore to the northward of this. For this I think a different mode of treatment may be required, but there is no question as to the incidence of such charges as it may be necessary to incur being the same as before.

19. The question as regards future treatment is this:—Within the limits of the present protective works the property abutting on the shore is of such value, both intrinsically and in regard to public interests, that there could be no doubt as to the necessity of protecting it at all cost. In the part now subject to encroachment, however, the case is different. The land is of much less value, and if the present owners were equitably compensated, the sea might be allowed to encroach without any public interests being affected. The question is mainly one of cost, that is, of a comparison between the cost of protecting the shore, and of compensating the owners of the land. There are other points to be taken into consideration in the final adjustment of the balance, but they are secondary to that of cost. First, a certain amount of land has already been washed away and can hardly be regained. Second, the land has always been held subject to liability to erosion by the sea by causes independent of the harbour works. Third, a frontage of rubble stone revetment is incompatible with the purposes to which much of the shore has hitherto been devoted, the landing of timber and beaching of boats. Considerations based upon these points tend rather to limiting than extending the principle of protection.

20. A valuation of the land and other property threatened with erosion has lately been made by the Collector of Madras, but the details have not yet reached me. This will probably give sufficient materials for forming an estimate of how far it will be desirable to extend the physical protection. But in the meantime there are materials to show that the question is one which should not be decided on insufficient data.

21. The only mode of protecting the shore is by means of a longitudinal revetment, and this would cost about Rs. 35 per lineal foot. A piece of land about 300 yards north of the present termination of the revetment was purchased by the Government two years ago at the rate of $\frac{1}{100}$ th of a rupee per square foot. If this be assumed as the value of the adjoining land, 250 feet of it would have to be washed away before the cost of the revetment would be reached. The actual erosion in five years has been about 150 feet. At this point then it may be said that the relative costs of protection and compensation are, roughly speaking, balanced.

22. If, however, we go northward to near the present limit of erosion, we find land worth $\frac{1}{100}$ th of a rupee per square foot. Here, therefore, 3,500 feet would have to be washed away before the cost of the revetment be reached. Such an amount of erosion need not be contemplated, and the cost of the revetment would, in my opinion, be in no way justified.

23. It is, of course, impossible to predict precisely what will be the limits of erosion, but I think if a plan be made showing the line of shore for some distance north and south, the amount of erosion which has already taken place, and the strip of land which has a value equal to the cost of a revetment, the proper termination of the protective works will be indicated within very narrow limits.

24. In the meantime I submit that the Government cannot do wrong in acquiring all the land abutting on the shore, whether it is to be ultimately protected or not. If this is not done, I believe the legal difficulties will be far more formidable than the physical ones.

25. The outgoings in respect of this tendency to erosion, whether taking the form of protective works, or of compensation or purchase of land, are not without an equivalent on the other side the account. The land gained on the south of the harbour is at present of rather larger area than that lost on the north. This is already partially utilized, and it will, no doubt, be more so. The proceeds in some form should be placed to the credit of the harbour funds. I think, considering the value of the southern site, it is quite possible that the ultimate result of the transfer of land from north to south may be a substantial profit.

26. With respect to the effect of the sheltering piers, now that they are virtually completed, I am collecting what evidence I can from the commanders of ships and others, and, so far, I have met with nothing but a full acknowledgment of the great facilities afforded by the harbour in the landing and shipping of passengers and goods. No difficulties have been suggested which cannot be met by modifications in the internal arrangements which are within the discretion of the harbour authorities or the commanders themselves. Of course there is a large field for suggestions of further improvement, and these are not wanting from various quarters, but though no doubt much may be done to develop the advantages of the harbour, I think more time is required to determine in what direction the next steps should be taken. In the meantime there is no doubt that the harbour ought to be earning a substantial revenue, and that without any burden on the trade, if the dues were imposed in an equitable manner. In confirmation of this I may quote the authority of Captain Taylor, the Master Attendant, who, in a letter to a local newspaper says, "It has already become a success so far as great convenience to the trade is concerned, and the interest of the capital sum is clearly leviable."

27. I have not yet received the statement of expenditure to the 30th

September; when I have done so, I will prepare and submit the usual abstract.

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

The Under Secretary of State
for India.

P.S.—Since writing the above I have received the following telegrams, dated 12th and 14th November:—

"Heavy sea, both Titans gone, much damage to piers.

"North intact to twenty-three, thirty destroyed beyond except quadrant south right to twenty-eight hundred badly breached beyond, hopper sunk, Berlic and half crew lost, six buoys broken away, storm passed away."

I am preparing a special communication to you on the subject.

W. P.

No 6.

Public Works

30th Nov. 188.

The
Letter to Lord St. George

No 37 enclosure.

End
P.H. 14/

Recd 24 Dec. 188.

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Gobt. of (1882) Madras.

PUBLIC WORKS.

To

Dated

Issued

Recd.

Encl.

G. O. *Spang* 1882, No. 2814.

Nos. 23 to 24

Madras Harbour Works
Receipt from the
Levy of State for copy
of a report by Mr. Parker
on the progress of the
— for the quarter ending
30th Sept 81.

Recorded

Receipt Regd.

206/1