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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Public Works DEPARTMENT

G.O. No. / B.P. No.	2670 W	Press. / Mis.
Dated	24.10.1878	~~197~~

Print

Not to be folded or roughly handled

2670
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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

24th October 1879, No. 2,670 W.

Buildings and Roads.
Civil Works.

Read the following paper:—

No. 44. Despatch from the Right Honorable the Secretary of State for India.

Public Works.

No. 23. India Office, London, 18th September 1879.

My Lord Duke,—Herewith is forwarded for your Grace's information copy of a report which has been furnished to me by Mr. Parkes, C.E., on the progress made on the Madras Harbour Works from the 28th February to the 30th June 1879.

Dated 14th August 1879.

I have, &c.,

(Signed) CRANBROOK.

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

From W. PARKES, Esq., C.E., to the Under Secretary of State for India, dated London, 14th August 1879.

Madras Harbour.—Report of Progress for the four months from 28th February to 30th June 1879.

I have the honor to submit herewith a plan showing the state of the above works on the 30th June last, and a photograph on the 6th July.

2. Since the 28th February the superstructure of the north pier had advanced 261 feet, and that of the south pier 351 feet, both being of the full height of 29 feet in four courses of concrete blocks.

3. A much greater advance would have been made at both piers but for two exceptional causes of delay.

4. I mentioned in my last report, dated 29th April, that the work would have to be stopped for want of diving dresses, which had been indented for on the 1st October 1878. These dresses did not arrive, till the 19th May. The work of the north pier had to be absolutely stopped on the 26th March, but that of the south pier was kept going at a reduced rate with diving dresses borrowed from the Madras Railway Company and the Marine Department.

5. A fortnight after resuming work with the new dresses some of the gearing of the south pier Titan gave way in lowering the 1,830th block.* No damage was done beyond the delay of replacing the broken wheels by new castings made in the shops of the Public Works Department, which was not completed by the 30th June.

* Upwards of 14,600 blocks have been lowered by the similar machinery of the north pier Titan without accident.

6. A telegram, however, on the 31st July informed me that the north pier had advanced a further 207 feet, and the south pier 100 feet, which is very satisfactory progress.

7. There was some interruption from bad weather during the months of April, May and June, and on the 20th and 21st May there was a cyclone of no great severity, the centre of which passed some distance to the northward of Madras. The sea raised by this acted on the imperfect foundations of that portion of the south pier which had been carried over the sandy accumulation of the previous monsoon, and caused a slight subsidence of a portion of north wall, and an opening of the centre joint for 76 feet in length.

8. This effect was similar to that which took place under precisely similar conditions at the north pier last November. It is simply the sinking of the blocks through a stratum of sand on to a foundation of rubble stone below. The line and level of the work are of course rather disturbed, but these can be rectified. The stability is in no way affected. The portions of the work which were originally founded on a bed of clean rubble have only subsided uniformly a few inches, and the blocks are jammed closer together.

9. The deposit of rubble base in advance of the block work is proceeding regularly. During the hurricane season the hopper barges are, as a matter of precaution, kept in shelter at Coconada, and in their absence the work is carried on more slowly and expensively by cargo boats, but at the end of June there was a good length of foundation at each pier as shown on the plan. The depth of rubble under the blocks is now 15 feet at the north and 12 feet at the south pier; the actual depth of water 37 feet and 33 feet.

10. Up to the 31st July there was no sign of any sand at the end of the south pier. At the same date last year there was an accumulation 8 feet deep over the rubble. According to any intelligible theory the place at which a return of the trouble might have occurred is past, but there yet remains three months of the season during which sand is liable to accumulate, and till that time has expired it may be as well to abstain from pronouncing the "sand difficulty" a thing of the past.

11. The changes of the coast line both within the harbour limits and to the southward present some new features of interest due to the advance of the piers. The plan shows the line to the south of the harbour as it was in February last. Comparing this with the line on the 30th June shows an accumulation extending along the beach for nearly half a mile to the southward, and with a maximum width of rather over 200 feet. But the place at which the width of accumulation is greatest is not as hitherto close to the pier but 600 feet from it.

12. This is no doubt due to the fact that the vertical face of the pier, now advanced 900 feet beyond its termination in June 1878, reflects the unbroken waves which infringe upon the outer portion of its length, and these are diverted towards the shore in such a manner as to meet those following from seaward and alter the direction of their break on the beach. Thus their along shore transporting power is neutralised at some distance from the pier.

13. The present line of shore is, with the exception of the 600 feet nearest the pier, from 80 to 100 feet in advance of the line in June 1878. That line was 300 feet in advance of the line in June 1877. From this we may safely predict generally that the whole advance, which will attain its limit about October, will be much less than last year, but as the line is in the months of June and July in the act of advancing its position at a fixed date may be dependent to an important extent upon the season being a few days earlier or later, so that no definite estimate of the whole year's advance should be based upon the comparison of the relative positions of the lines at this period.

14. While the form of the shore line to the south of the harbour shows the effect of throwing back a portion of the waves by reflection from the pier, that within the harbour limits shows the result of cutting off their direct action from the shore, and that is quite as marked.

15. It will be seen that the line of February between the piers very nearly corresponds with that of June. It may be taken to represent also that of February and March 1878. But the line of June 1878 is very different. The waves which are now cut off then broke on the shore within the harbour limits and drove the sand northwards, cutting away 200 feet in the southern half and adding as much in the northern half. This year there has been no such result, but the line of shore has remained fixed. The reflection of the waves from the further 900 feet advance of the north pier has no doubt helped to this.

16. The contours shown on the plan are laid down from the depths taken in October 1878. There have been partial surveys made more recently, but these show no material change except in the accumulation formed under the lee of the south pier in the south-west monsoon of 1878. This appears to be in process of moving shorewards, the outer soundings taken in May last showing an increase, and the inner ones a diminution, of depth, but they are too few to show the present general form of the shoal, so I think it better to wait for a more complete survey before drawing any conclusions.

17. The coast line to the north of the harbour is being carefully watched and the changes in it recorded. Groynes are being made where they seem likely to retain sand. A survey made in the end of May showed a considerable erosion of the unprotected portion of the beach between

one and two miles north of the harbour, but a subsequent survey in June showed some recovery, so that it seems likely the erosion was due more to the exceptional action of the cyclone of May than to the interference of the northerly travel of sand by the harbour works. No property of value appears at present to be touched.

18. One subsidiary work chargeable to the item "Contingencies" in my estimate has made some progress during the four months under review. This is the drain for intercepting the town sewage from the harbour. The portion of it intended to intercept the drains which at present discharge within the harbour limits has not yet been commenced, but that portion which is intended to convey the sewage from an existing outfall near the fort has been completed as far as the south pier. It is intended to continue this, forming junctions with the existing sewers as it proceeds to the sea beyond the north pier. The formation of this however is, I understand, in abeyance for the present, pending the local settlement of a question as to its being made large enough to carry off the occasional storm waters as well as the constant flow of sewage.

19. My report to the Government of Madras, dated 24th January last, on the subject of the expenditure upon the works up to 31st December, has already been laid before you. The following abstract statement will bring the information on that subject up to 30th April, which is the date to which the expenditure is given in the latest statement I have received. I should explain that the figures in the column of expenditure are somewhat differently arranged from those in the official statement, though the total is the same. The changes I have made will give more clearly the materials for judging of the prospects of future expenditure:—

	Total Estimate.	Estimate of portion completed.	Expenditure to 30th April.	Excess.	Saving.
	RS.	RS.	RS.	RS.	RS.
Plant and Preliminaries ...	8,00,000	8,00,000	9,05,532	1,05,532	...
North pier	20,56,860	8,62,811	8,06,499	...	56,312
South pier	20,56,860	6,74,665	5,10,642	...	1,64,023
Blocks in stock ...	Will be transferred to piers as the works proceed.	1,19,440	1,14,282	...	5,158
Materials on hand (actual cost)		1,12,196	1,12,196	...	...
Total ...	4,913,720	25,69,112	...	...	...
Contingencies, 10 per cent.	4,91,372	2,56,911	74,519	...	1,82,392
Establishment, 5 per cent.	2,45,686	1,28,450	1,95,445	66,995	...
Total ...	56,50,778	29,54,473	27,19,115	1,72,527	4,07,885

20. The above shows that up to the end of April about half the estimated amount had been spent with the result of a saving on the proportional part of the estimate of 2,35,358 rupees. It must not be inferred however from this that an equal saving will be effected in carrying out the latter half of the work. The first half includes two items of which the estimates were necessarily of an uncertain character, "Plant and preliminaries," and the surf and shallow water sections of the piers. The former shows an excess, and the latter a saving. The allowance for "contingencies" has been so far drawn upon to the extent of only 3 per cent., while the establishment has cost 7½ per cent. instead of 5 per cent. allowed.

21. These differences are to a great extent only matters of account. There are many items charged to "Plant and preliminaries" which if considered in view of the data available for making the original estimate might now be fairly charged to "Contingencies," as having been rendered necessary by circumstances which could not have been foreseen. The excess under one head may therefore be set against the saving under the other without doing any violence to the records of expenditure.

22. The saving under the three heads which include the pier works proper having an aggregate of 2,25,493 rupees is made up of two items which must be separately taken account of, though it is impossible to define exactly the limit of each. There is, first, a sum in round numbers of 2,00,000 rupees which is the saving effected on the estimated cost of overcoming the "sand difficulty" in the surf and shallow water, and there is, secondly, the balance of 25,493 rupees which may be taken as the saving on the current expenses of the rubble base and concrete block work so far as it had then extended, viz., 2,750 lineal feet out of about 8,000.

23. The 2,00,000 rupees may, on the assumption that there will be no return of the sand difficulty, be considered as a saving absolutely effected. The portion of the work to which it has reference is completed; it was of an exceptional character, and there will be nothing analogous to it in our future operations. But the second item gives the real difference between

the estimate and expenditure on about one-third of the total quantity of work of the ordinary character now in progress, and it is by an analysis of this item that the prospects of expenditure for the future can be best judged of.

24. This sum of 25,493 rupees is itself the difference between a small saving in one department of the work, and a small excess on another. There is a saving in the manufacture and placing in the sea of the concrete blocks, and an excess in the rubble base. As we advance into deeper water the proportion of rubble base required will increase, and thus the saving up to the present time will be drawn upon to meet a future excess. If however the present rates are maintained there will probably be in the end a very near balance.

25. Any forecasting of the expenditure on "Contingencies" would of course be mere speculation. The works now being charged to this head are, first, the interception of the town drainage, and, second, the protection of the shore north of the harbour. The repairs of sea damage to the works themselves, should this be required, will also be charged to this head.

26. With respect to the excess of 66,995 rupees in the cost of "Establishment," this must be taken in connection with the circumstances under which the sand difficulty was met. It was mainly met by simply waiting for the operations of nature, a process which costs nothing for works, but involves the continuance of the whole cost of the staff. Thus for nine months in 1877 there were used in the north pier only about 18,000 rupees worth of materials, and for eight months in 1878 only three times that value at the south pier. The establishment maintained during those periods would have been sufficient for about twenty times the amount of productive expenditure at the north pier, and six or seven times that at the south pier. I think therefore a large portion of the excess in establishment may be set against the saving of 2,00,000 on the piers. If the work is carried on for the future at the rate I anticipate, the present current charges for establishment will be about 5 per cent. on the expenditure.

27. On the whole I may submit that although the exceptional causes of delay referred to in paragraph 3 have prevented my reporting so great an advance as I had hoped during the last four months under review, yet that the progress made during the portions of that time that the works were in full operation was satisfactory and justifies the anticipations I have before expressed as to the completion of the works after making due allowance for these delays. I fear that I may have to report some delay during the current quarter in consequence of the failure in the supply of the locally manufactured cement, but special arrangements have been made for an early supply from England, and I have requested that provision shall be at once made to prevent the stock again running short.

No. 45. ORDER THEREON, 24th October 1879, No. 2,670 W.

Ordered to be recorded.

(True Extract.)

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

To the Superintendent, Madras Harbour Works.
" Secretary, Harbour Committee.

Exd. S. T. Austin.
Spare Copies

2620/3

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1879} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT, MADRAS HARBOUR WORKS.

&c., &c., &c.

Dated October 24th.

Issued

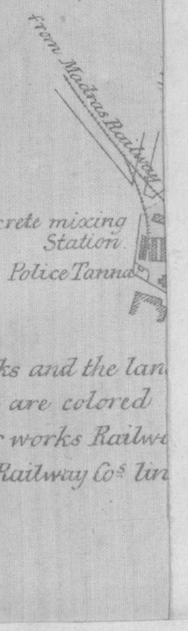
Recd. Encls.

G. O., 24th October 1879, No. 2,670 W.

OCTOBER.

Nos. 44-45.

Madras Harbour Works.—Despatch from the Secretary of State forwarding Mr. Parkes' report on the progress made from the 28th February to the 30th June 1879 on the —, recorded.



The Works and the lan
by them are colored
Harbour works Railwa
Madras Railway Co's lin

MADRAS HARBOUR.

PLAN SHEWING THE STATE OF THE WORKS

30TH JUNE 1879.

2670
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The Works and the land occupied by them are colored Red
Harbour works Railway lines .....
Madras Railway Co's lines _____

From Madras Railway
MADRAS RAILWAY TERMINUS
RAILWAY COMPANY'S YARD
Railway Company's Jetty
Concrete mixing Station
Police Tanna
Boat House
Outfall of Sewer
Office
Outfall of Intercepting Sewer
Lime Pottery
NORTH SURF BANK
Protection Blocks
CONCRETE BLOCK WORK
30 June 1878
28 Feb. 1879
30 June 1879
Rubble Base
31 July 1879
Complete
Original High Water Line
H. W. M. 30 June 1879
H. W. M. 30 June 1878
Sewer
TOWN
BLACK
Custom House
High Court
Memorial Stone
Intercepting Sewer
28 February
Groyne
Line of Intercepting Sewer
2 fathoms
3 fathoms
4 fathoms
5 fathoms
6 fathoms
7 fathoms
450 ft.
550 ft.
15 ms.
SOUTH SURF BANK
NEW BLOCK GROYNE
Intercepting Sewer
Unfinished Jetty
from South Indian Railway
New Battery
Light House
Groyne
ESPLANADE
Completed portion
Outfall of Sewer

The Contour lines shew the Depths below De Havilands Mean Sea Level in October 1878.

Sigd/ W. Parkes.
London 14th Augt 1879.

feet 100 0 300 1000 1500 2000 2500 3000 feet.

DRAWN OR TRANSFER BY V.VARDARAJAH MOODELY AND LITHS BY R.J.BALDREY. GOVT LITHO DEPT 1879

91

India office, London
18th September 1879.

2670/5

Public Works
No 25

dated 14 August 1879.

My Lord Duke,

Herewith is forwarded for your Grace's information copy of a report which has been furnished to me by Mr Parkes C.E. on the progress made on the Madras Harbour works from the 28th February to the 30th June 1879.

I have the honor to be,
my Lord Duke
Your Grace's most obedient
humble servant,
Cranbrook

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

2670/6

P.W.D.
23CC179
No. 7

No. 5

Public Works

18th Sept. 1879

The
Secretary to Govt. St. George

No. 23

G.O. 24-10-79 to 26-10-79

Read 11 October 1879

Received 4/10

Madras Harbour

Report of Progress for the four months from 28th February to 30th June 1879

23 Abingdon Street
11th August 1879.

Sir,

I have the honor to submit herewith a plan shewing the state of the above works on the 30th June last, and a photograph on the 6th July.

2. Since the 28th February, the superstructure of the north Pier had advanced 261 feet and that of the South Pier 351 feet, both being of the full height of 29 feet in four courses of concrete blocks.

3. A much greater advance would have been made at both piers but for two exceptional causes of delay.

4. I mentioned in my last report dated 29th April that the work would have to be stopped for want of diving dresses, which had been indented for on the 1st October 1878. Those dresses did not arrive till the 19th May - The work of the north Pier had to be absolutely stopped on the 26th March, but that of the South

+ Recorded in G.O. 1790 dt 9 July 79

The Under Secretary of State for India.

South Pier was kept going at a reduced rate with diving dresses borrowed from the Madras Railway Company and the Marine Department.

5. A fortnight after resuming work with the new dress some of the gearing of the South Pier Titan gave way in lowering the 1839th block *.

No damage was done beyond the delay of replacing the broken wheels by new castings made in the shops of the Public Works Department, which was not completed by the 30th June.

6. A telegram however on the 31st July informed me that the North Pier had advanced a further 207 feet and the South Pier 100 feet, which is very satisfactory progress.

7. There was some interruption from bad weather during the months of April, May and June, and on the 20th and 21st May there was a hyelone of no great severity the centre of which passed some distance to the northward of Madras — The sea raised by this acted on the imperfect foundations of that portion of the South Pier which had

* Upward of 4600 blocks have been lowered by the similar machinery of the North Pier Titan without accident

had been carried over the sandy accumulation of the previous monsoon, and caused a slight subsidence of a portion of North Wall, and an opening of the centre joint for 76 feet in length.

8. This effect was similar to that which took place under precisely similar conditions at the North Pier last November — It is simply the sinking of the blocks through a stratum of sand on to a foundation of rubble stone below. The line and level of the work are of course rather disturbed, but these can be rectified — The stability is in no way affected — The portions of the work which were originally founded on a bed of clean rubble have only subsided uniformly a few inches, and the blocks are jammed closer together.

9. The deposit of rubble bed in advance of the block work is proceeding regularly — During the hurricane season the hopper barges are as a matter of precaution kept in shelter at Coconada, and in their absence the work is carried on more slowly and expensively by cargo boats, but at the end of June there was a good length of foundation at each pier as shown on

on the plan - The depth of rubble under the blocks is now 15 feet at the North and 12 feet at the South Pier; the actual depth of water 37 feet and 33 feet -

10. Up to the 31st July there was no sign of any sand at the end of the South Pier - At the same date last year there was an accumulation 8 feet deep over the rubble - According to any intelligible theory the place at which a return of the trouble might have occurred is past, but there yet remain three months of the season during which sand is liable to accumulate, and till that time has expired it may be as well to abstain from pronouncing the "sand difficulty a thing of the past.

11. The changes of the coast line both within the Harbour limits and to the Southward present some new features of interest due to the advance of the piers - The plan shows the line to the South of the Harbour as it was in February last - Comparing this with the line on the 30th June shows an accumulation extending along the beach for nearly half a mile to the Southward, and with a maximum width of rather over 200 feet - But the place at which the width of accumulation is greatest

is

H.C. 267 9

is not as hitherto close to the pier but 600 feet from it -

12. This is no doubt due to the fact that the vertical face of the pier, now advanced 900 feet beyond its termination in June 1878, reflects the unbroken waves which infringe upon the outer portion of its length and these are diverted towards the shore in such a manner as to meet those following from seaward and alter the direction of their break on the beach - Thus their alongshore transporting power is neutralized at some distance from the pier.

13 The present line of shore is, with the exception of the 600 feet nearest the pier, from 80 to 100 feet in advance of the line in June 1878 - That line was 300 feet in advance of the line in June 1877 - From this we may safely predict generally that the whole advance, which will attain its limit about October, will be much less than last year, but as the line is in the months of June and July in the act of advancing its position at a fixed date may be dependent to an important extent upon the season being a few days earlier or later so that no definite estimate of the whole years advance should be based upon the comparison

of

of the relative positions of the lines at this period –

14. While the form of the shore line to the South of the Harbour shews the effect of throwing back a portion of the waves by reflection from the pier, that within the harbour limits shows the result of cutting off their direct action from the shore, and that is quite as marked.

16. It will be seen that the line of February between the piers very nearly corresponds with that of June. It may be taken to represent also that of February and March 1878 – But the line of June 1878 is very different – The waves which are now cut off then broke on the shore within the Harbour limits and drove the sand Northwards cutting away 400 feet in the Southern half and adding as much in the Northern half.

This year there has been no such result, but the line of shore has remained fixed – The reflection of the waves from the further 900 feet advance of the North Pier has no doubt helped to this –

16. The contours shewn on the plan are laid down from the depths taken in October 1878 – There have been partial surveys made more recently, but these show no material change except in the accumulation formed under the lee of the South Pier in the South West Monsoon of 1878 – This appears to be in process of moving shorewards the outer soundings taken in May last showing an increase and the inner ones a diminution of depth, but they are too few to show the present general form of the shoal so I think it better to wait for a more complete survey before drawing any conclusions –

17. The coast line to the North of the Harbour is being carefully watched and the changes in it recorded – Groynes are being made where they seem likely to retain sand – A survey made in the end of May showed a considerable erosion of the unprotected portion of the beach between one and two miles North of the Harbour, but a subsequent survey in June showed some recovery, so that it seems likely the erosion was due more to the exceptional action of the Cyclone of May than to the interference of the Northerly travel of sand by the Harbour Works – No property of value appears at present to be touched.

18. One subsidiary work chargeable to the item "Contingencies" in

in my estimate has made some progress during the four months under review.

This is the drain for intercepting the town sewage from the harbour. The portion of it intended to intercept the drains which at present discharge within the harbour limits has not yet been commenced, but that portion which is intended to convey the sewage from an existing outfall near the Fort has been completed as far as the South Pier – It is intended to continue this, forming junctions with the existing sewers as it proceeds to the sea beyond the North Pier – The formation of this however as I understand in abeyance for the present, pending the local settlement of a question as to its being made large enough to carry off the occasional storm waters as well as the constant flow of sewage –

19. My report to the Government of Madras dated 21st January last on the subject of the expenditure upon the works up to 31st December has already been laid before you – The following abstract statement will bring the information on that subject up to 30th April, which is the date to which the expenditure is given in the latest statement I have received –

I should explain that the figures in the column of expenditure are somewhat differently arranged from those in the official statement though the total is the same. The changes I have made will give more clearly the materials for judging of the prospects of future expenditure

	Total Estimate	Estimate of portion completed	Expenditure to 30 April	Excess	Saving
Plant and Preliminaries –	600,000	600,000	9,05,632	1,05,632	–
North Pier –	20.66.860	8,62,811	8,06,499	–	56,312
South Pier –	20.66.860	6,74,668	5,10,642	–	1,64,023
Blocks in stock –	will be transferred to Abstract the works proceed	1,17,442	1,14,292	–	3,158
Materials on hand (actual cost) –		1,12,196	1,12,196	–	–
Total –	4,913,720	26,69,417	–	–	–
Contingencies 10 per cent –	4.71.372	2,66,941	74,519	–	1,82,392
Establishment 5 per cent –	2.45,686	1,28,450	1,95,445	66,995	–
Rs.	56.50.778	29,54,273	27,19,115	1,72,527	4,07,885

20. The above shows that up to the end of April about half the estimated amount had been spent with the result of a saving on the proportional part of the estimate of 2,35,358 rupees – It must not be inferred

inferred however from this that an equal saving will be effected in carrying out the latter half of the work – The first half includes two items of which the estimates were necessarily of an uncertain character. "Plant and Preliminaries", and the surf and shallow water sections of the piers – The former shows an excess, and the latter a saving – The allowance for "contingencies, has been so far drawn upon to the extent of only 3 per cent, while the Establishment has cost 7½ per cent instead of 6 per cent allowed –

21. These differences are to a great extent only matters of account – There are many items charged to "Plant and Preliminaries" which if considered in view of the data available for making the original estimate might now be fairly charged to "Contingencies" as having been rendered necessary by circumstances which could not have been foreseen

The excess under one head may therefore be set against the saving under the other without doing any violence to the records of expenditure

22. The saving under the three heads which include the pier works proper having an aggregate of 2,25,493 rupees is made up of two items which must be separately taken account of, though it is impossible to define exactly the limit of each – There is first a sum in round numbers of 2,00,000 rupees which is the saving effected on the estimated cost of overcoming the "sand difficulty" in the surf and shallow water, and there is secondly the balance of 25,493 rupees which may be taken as the saving on the current expenses of the rubble base and concrete block work so far as it had then extended viz 2750 lineal feet out of about 2000 –

23. The 2,00,000 rupees, may, on the assumption that there will be no return of the sand difficulty, be considered as a saving absolutely effected – The portion of the work to which it has reference is completed, it was of an exceptional character, and there will be nothing analogous to it in our future operations – But the second item gives the real difference between the estimate and expenditure on about one third of the total quantity of work of the ordinary character now in progress, and it is by an analysis of this item that the prospects of expenditure for the future can be best judged of.

23 – This sum of 26,493 rupees is itself the difference between a small

small saving in one department of the work, and a small excess on another – There is a saving in the manufacture and placing in the sea of the concrete blocks, and an excess in the rubble base – As we advance into deeper water the proportion of rubble base required will increase, and thus the saving up to the present time will be drawn upon to meet a future excess – If however the present rates are maintained there will probably be in the end a very near balance –

24. Any forecasting of the expenditure on "Contingencies" would of course be mere speculation – The works now being charged to this head are 1st. The interception of the Town Drainage, and 2nd. The protection of the shore north of the Harbour. The repairs of sea damage to the works themselves, should this be required will also be charged to this head.

25. With respect to the excess of 66,995 rupees in the cost of "Establishment" this must be taken in connection with the circumstances under which the sand difficulty was met – It was mainly met by simply waiting for the operations of nature, a process which costs nothing for works, but involves the

the continuance of the whole cost of the staff – Thus for 9 months in 1894 there were used in the North Pier only about 18,000 rupees worth of materials, and for 8 months in 1895, only three times that value at the South Pier – The establishment maintained during those periods would have been sufficient for about 20 times the amount of productive expenditure at the North Pier and 6 or 7 times that at the South Pier – I think therefore a large portion of the excess in Establishment may be set against the saving of 2,00,000 on the Piers –

If the work is carried on for the future at the rate I anticipate, the present current charges for establishment will be about 5 per cent on the expenditure.

26 On the whole I may submit that although the exceptional causes of delay referred to in para: 3 have prevented my reporting so great an advance as I had hoped during the last four months under review – yet that the progress made during the portions of that time that the works were in full operation was satisfactory and justifies the anticipations I have before expressed as to the completion of the

2670
14

the works after making due ~~no~~ allowance for these delays — I fear that I ~~may~~ have to report some delay during the current quarter in consequence of the failure in the supply of the locally manufactured cement, but special arrangements have been made for an early supply from England, and I have requested that provision shall be at once made to prevent the stock again running short.

I have to

(signed) W. Parkes.

P.W.D.
930T79

No 6

1030

No 2565

Copy Report by Mr. Parkes,
dated 14th August 1879. with
Plan.

G.6. 24-10-79 ab 2690 Kn

Proof

Referred to in Public Works Letter 4
Madras, No 23, dated 10th Sept 1879

44 – 45

The Works

MADRAS HARBOUR.

PLAN SHEWING THE STATE OF THE WORKS

30TH JUNE 1879

2670/15

The Works and the land occupied by them are colored Red.
Harbour Works Railway lines .....
Madras Railway Co's lines ——

MADRAS RAILWAY TERMINUS
RAILWAY COMPANY'S YARD
From Madras Railway
Concrete mixing Station
Police Tannah
Town Police
Railway Company's Jetty
Boat House
Outfall of Sewer
Office
Rubble Protection
Outfall of Intercepting Sewer
Chinee Bakery
North Surf Line
Protection Blocks
CONCRETE BLOCKWORK
30 June 1876
28 Feb 1879
30 June 1879
Rubble base completed
31 July 1879
H W M 30 June 1879
H W M 30 June 1878
Completed High Water Mark
Iron Store
Custom House
SCREW PILE PIER
High Court
Memorial Stone
28 February 1879
Groyne
Line of Intercepting Sewer
2 Fathoms
3 Fathoms
450 feet
550 feet
TOWN
BLACK
SOUTH SURF BANK
NEW BLOCK GROUND Sewer Intercepting
H W M 28 February 1878
H W M 30 June 1878
H W M 30 June 1879
Unfinished Jetty
from South Indian Railway
New Battery
Lighthouse
Groyne
ESPLANADE
Completed Portion of
Outfall of Sewer

The Contour lines shew the Depths below De Haviland's Mean Sea Level in October 1878.

W Parkes
London 14 Aug 1879

feet 100 0 500 1000 1500 200 300 500 feet

VACHER & SONS, 29, PARLIAMENT ST WESTMINSTER

P.W.D.
230779
No. 756

G.O. 1790 W. 7.7.79.

P. W. SECRETARIAT—1879-80.

KEEP-WITH.

Current No. [illegible]

Letter No. 23

Dated the 18th Sept/79.

from the Secy to State for India

Forwards Report by Mr Parkes on the progress made on the Madras Harbour Works from the 28th Feb. to the 30th June/79.

Sub.

Ref 14/10 The dep[t] proposes to take along the contour lines outside the harbour, & the same as that along the corresponding lines inside N. 2070 Was 24th Oct. 79

Order — Ordered

Print

be recorded.

15/12/79

Supt. M.S. Works

Secy. Harbour Committee

Do Do

13-11-79

Cir 16.10.79. Ptd 21-10-79

o.s. Chief 34 Octr.

Ca 7565

Govt. of (1879) Madras.

PUBLIC WORKS.

To

Dated

Issued

Read. Encl.

G. O., 24 Oct 1879, No. 2670

Nos. 44-45

Madras Harbour Works

Despatch from the Secy. of State forwarding Mr Parkes' report on the progress made from the 26th July to the 30 June 1879 on the — recorded.

6-10-79
C