.....துறை

குறிப்பிட்டவர் பொறுப்பிலிருக்கும் பதிவுக் கட்டினின்றும் எடுக்கப்பட்ட தாள்.

அச்சு / பல்லகை / வாலாயம்

எண்.....

தேதி 200

எடுத்த தேதி. (1)	எதன் பொருட்டு			தாள் எடுக்கும் எழுத்தர் அல்லது சிற்றாழ்த்தர் கருக்கொப்பம். (5)	திருப்பிக் கொடுத்த தேதி. (6)	சிற்றாழ்த்தரின் கருக்கொப்பம். (7)
	துறை (2)	நடப்பு எண். (3)	ஆண்டு (4)			

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Archives I 10,006—16-8 77.

(1) Number of pages 50

(2) Date of repair Dec. 86.

(3) Initials of the Referencer [illegible]

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P. W. D DEPARTMENT

G.O. No. / B.P. No.	2298 / 99 PW.	Press. / Mis.
Dated	4.10.1985	197 .

Not to be folded or roughly handled

229879
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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

4th October 1880, No. 2,299 W.

Buildings and Roads.
Civil Works.

Read the following papers:—

No. 14. Despatch from the Most Honorable the Secretary of State for India.

INDIA OFFICE, LONDON.
2nd September 1880.

Public Works,
No. 16.

MY LORD DUKE,—Herewith is forwarded for your Grace's information copies of reports, dated 14th and 26th August 1880, by Mr. Parkes, C.E., on the progress made on the Madras Harbour Works during the quarter ending 30th June last.

I have, &c.,
(Signed) HARTINGTON.

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

MADRAS HARBOUR.

Report of Progress for the Quarter ending 30th June 1880.

I HAVE the honor to submit, herewith, a plan showing the state of the works of the above on the 30th June last and a photograph taken from the top of the lighthouse on the 10th July.

2. Since the 30th March the north pier had advanced 277 feet and the south pier 255 feet. The rubble base had also advanced about 300 feet at the north and about 200 feet at the south pier, 31,875 tons and 20,501 tons having been deposited at the two piers respectively.

3. This quarter is not a favorable one for work, the month of May especially being liable to stormy weather, and it was considered desirable to suspend block setting at both piers for a few weeks in order that the Titans might be run back from the newly set blocks, and the blocks themselves secured by iron ties till the bad weather season was past.

4. There were, however, no such heavy seas as there had been in the same month in previous years, though there was disturbance enough to prevent work from being carried on advantageously.

5. Works on shore were carried on with full activity; 1,374 concrete blocks were made, sufficient to make 809 lineal feet of pier, and the intercepting drain was advanced 1,970 feet. By the last accounts this drain was being carried under the north surf bank to its outfall outside the harbour, and I hope it will shortly be brought into use.

6. On one point I am sorry to have to report unfavorably, viz., the health of the executive staff. The season has been unusually trying and some of the most useful and energetic members are disabled. Mr. Beardmore, the Assistant Engineer, as you are aware, is at home much out of health. Mr. Lowe, the indefatigable Head Foreman, the terms of whose re-engagement have lately been before you, is seriously ill at Ootacamund; and Mr. Gunther, a very valuable Foreman Engineer, was also laid up by sunstroke at the date of my last advices. Several other members of the staff, European and Native, had also suffered. That the work has made such good progress under these trying circumstances is, I submit, a strong testimony to Mr. Thorowgood's good management. Mr. Cartright, who is acting for Mr. Beardmore, and Mr. Underdown, who has lately replaced Mr. Allen as Foreman Diver, are however giving valuable service.

7. The movements of the sand no longer cause any anxiety, but the changes of the coast line under the influence of the present monsoon are curious and interesting. I called attention a year ago to the fact that the accumulation of sand to the south of the harbour was not imme-

diately contiguous to the south pier, but had its maximum about 600 feet to the southward. This year there is no advance close to the pier, but the maximum is 800 to 1,000 feet to the southward. This is no doubt to be attributed to the wave reflected from the southern face of the pier meeting the direct wave and neutralizing its transporting power at some distance from the pier.

8. This is shown in the portion of beach between the piers in a still more striking manner. During the south-west monsoons of 1877 and 1878 the beach was cut away from the neighbourhood of the south pier and accumulated near the north pier. In 1879 there was no change in the coast line between the piers. In the present season the results of 1877 and 1878 have been reversed. The sand has been cut away from the north end and accumulated at the south end. This is clearly due to the southerly wave which passes the end of the south pier in deep water being reflected from the inside face of the north pier and thrown obliquely on the beach, thus producing precisely the same result as the northerly seas produce on an open portion of the coast. Mr. Thorowgood says that the result of this reflection is at present to produce a heavy surf within harbour limits. This will of course be prevented by the further advance of the south pier.

9. The changes in the coast line north of the harbour appear to have been less than in some previous seasons. The protective works which extend for rather more than half a mile from the north pier are now virtually completed. The total amount expended upon them is about Rs. 67,000, of which about Rs. 16,000 have been spent since last November when the stone revetment was rather seriously breached by the sea. It is now much stronger than before, and though I am not prepared to say that further cost in its maintenance and renewal may not be required in future years, the above will show that the charge is not liable to be a serious one, though the amount must remain to some extent uncertain.

10. As I have not received the detailed statement of cost up to the end of June, I am unable to furnish my usual summary at the present time. There has been, however, no extraordinary expenditure to cause any departure from the rule which has recently been maintained, that the cost of the portion of the work now in course of execution agrees very closely with the estimate.

23, ABINGDON STREET,
14th August 1880. (Signed) W. PARKES.

The Under Secretary of State for India.

From W. PARKES, Esq., M. Inst. C.E., to the Under Secretary of State for India, dated 23, Abingdon Street, 26th August 1880.

Madras Harbour.

SINCE submitting to you on the 14th instant my report on the progress of the above Harbour Works for the last quarter, I have received the statement of expenditure up to the 30th June, of which the following is an abstract, presented in a form similar to those I have submitted on previous occasions.

2. The expenditure returned to the Government is Rs. 43,13,980, but expenses in addition had been incurred to the extent of Rs. 95,191, but not carried to account, making a total of Rs. 44,09,171 as the actual cost of the work to date.

——	Total Estimate.	Estimate of portion completed.	Expenditure to 30th June.	Excess.	Saving.
	Rs.	Rs.	Rs.	Rs.	Rs.
Plant and preliminaries	3,00,000	3,00,000	9,07,857	1,07,857	..
North Pier	..	15,39,438	15,23,243	..	16,195
Rubble base in advance	20,56,860	A 85,650	85,650	..	..
South Pier	..	12,02,060	10,41,481	..	1,60,581
Rubble base in advance	20,56,860	B 65,665	65,665	..	..
Blocks in stock	Will be transferred to piers as the work advances.	1,79,880	1,60,380	..	19,500
Materials on hand		C 2,19,320	2,19,320	..	..
Total ..	49,13,720	40,92,013	40,03,596	..	..
Contingencies, 10 per cent.	4,91,372	4,09,201	1,44,719	..	2,64,482
Establishment, 5 per cent.	2,45,686	2,04,600	2,60,356	56,256	..
Total ..	56,50,778	47,05,814	44,09,171	1,64,113	4,80,758

NOTE.—In the cases A, B, C, the same amount is given for both estimate and expenditure, as the exact amount cannot be ascertained in either case till the portions of the work to which they relate have been completed. About one half of C is for cement in stock.

3. The work continues to progress at a cost very closely approximating to the estimate on the whole, though there are differences in the separate items. The north pier shows a less saving (Rs. 16,195 as against Rs. 32,387), and the south pier a greater (Rs. 1,60,581 as against Rs. 1,43,302) than in the previous quarter. This is due to there having been a longer proportion of rubble base deposited at the north pier than at the south, and that under a disadvantage from interruption by weather. This is the item in which the cost exceeds the estimate. In the quarter now current, the balance will no doubt be restored.

4. The saving on "contingencies" continues to increase; and as two of the heaviest charges against this item have now nearly ceased, viz., the protection of the north shore at a cost to date of Rs. 69,575, and the intercepting drain at a cost of Rs. 20,539, we may anticipate that it will continue to do so at a greater rate for the future, unless some unforeseen demands upon it should arise.

The excess on establishment continues to decrease. It was Rs. 65,279 in September 1879, Rs. 57,811 in March 1880, and Rs. 56,256 in June 1880.

5. I think it is desirable to take this opportunity of offering an approximate estimate of the cost of completing the work, as I am informed that the question has arisen at Madras as to the sufficiency of the sanctioned estimate to cover the cost of the modifications of the design of the pier heads which I have reported as being necessary, but of which I have not yet been able to submit the particulars. The following will show, however, that there will be an ample margin to cover any conceivable demand in this respect.

6. I take as the basis of my estimate the actual cost of the several branches of the work in the last quarter which has been a more expensive one than the average, owing to interruptions from weather. Thus I find that at the north pier 300 feet lineal of rubble base cost Rs. 78,049, or Rs. 260 per foot. There remains 200 feet more to be deposited, for which I assume the same rate, and I further assume that, on the length of 910 feet, which includes 50 feet for a toe in advance of the end of the concrete block work, 10 per cent. additional will be required to complete the bank. I estimate the south pier rubble base on the same principle, 200 feet having cost Rs. 42,875, or Rs. 214 per foot, and I take the superstructures at Rs. 275 per foot, which has been the cost at each pier.

7. Estimated on this basis the cost of carrying both piers to their full extent at the ordinary section without any allowance for widening at the heads and for the returns shown on the plans or for the lighthouses will be—

	Rs.
North Pier—	
Rubble base, 200 feet, at Rs. 260	52,000
Do. completion of 910 feet, at Rs. 26	23,660
Superstructure, 860 feet, at Rs. 275	2,36,500
South Pier—	
Rubble base, 1,100 feet, at Rs. 214	2,35,400
Do. completion of 1,600 feet, at Rs. 214	34,240
Superstructure, 1,550 feet, at Rs. 275	4,26,250
	10,08,050

8. The estimate for the whole works, exclusive of contingencies and establishment, is Rs. 49,13,720. The cost to the 30th June was Rs. 36,23,896, so that there remains unexpended Rs. 12,89,820. If from this be deducted the above Rs. 10,08,050, there will remain Rs. 2,81,774 available for the extra work of the pier heads and the lighthouses.

9. The questions which remain undetermined about the pier heads relate to their form more than their extent or their cost. It may be safely assumed that the cost will be well covered by that of 100 lineal feet of rubble base and 200 lineal feet of superstructure at each pier. This would also provide for the sub-marine part of the work for the lighthouses, so that the estimates for them will be reduced from the Rs. 30,000 each in the sanctioned estimate to the cost of the towers above the pier level, and the lanterns and apparatus, say Rs. 10,000 each.

10. The cost of these extras will therefore be approximately—

	Rs.
200 Lineal feet of rubble base, say	52,000
400 „ „ of superstructure	1,10,000
2 Lighthouses	20,000
Total ..	1,82,000

to meet which we have a surplus of Rs. 2,81,774, without drawing on the item of contingencies at all; that as I have before shown will probably give a further surplus of between 2 and 3 lakhs of rupees. Credit may also be taken for a further undetermined sum by the sale or transfer of a large amount of machinery and plant which originally cost about £50,000; I therefore submit

that there can be no legitimate question as to the sufficiency of the estimate to meet any reasonable demands upon it.

11. The final determination of the form of the pier heads is largely dependent on the result of observations of the effect of the piers upon the waves, as well as upon questions of practical construction, upon which experience is being gained. For this reason and feeling sure on the grounds above stated that no increase of the sanctioned estimate is required, I am anxious to defer making any definite recommendation till my materials are more complete.

No. 14-A. From the Superintendent, Madras Harbour Works, dated 27th September 1880, No. 41 W.

No. 15. ORDER THEREON, 4th October 1880, No. 2,298 W.

RECORDED.

2. Copy will be furnished to the Government of India.

(True Extract.)

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

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

No. 16. (DOCKET No. 2,299 W., dated 4th October 1880.)

COPY forwarded.

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

Exd. E. C. Shrinker.
Spare Copies/

2298/99
3

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1880} Madras.

PUBLIC WORKS.

To

THE SECRETARY TO THE
GOVERNMENT OF INDIA.

Dated October, 4th.

Issued

Read. Encl.

G. O., 4th October 1880, No. 2,299 W.

OCTOBER.
Nos. 14-16.

FORWARDING copy of Despatch of the Secretary of State for India with the Progress Report of the Madras Harbour Works for the quarter ending 30th June 1880 furnished by Mr. Parkes.

Madras Harbour

W 9589

23 Abingdon Street
26 August 1880

Sir,

Since submitting to you on the 14 instant my report on the progress of the above Harbour Works for the last quarter I have received the Statement of Expenditure up to the 30th June of which the following is an abstract presented in a similar form to those I have submitted on previous occasions.

2. The Expenditure returned to the Government is Rupees 43,13,700 but Expenses in addition have been incurred to the extent

The Under Secretary of State
for India

of Rupees 95,191, but not carried to account making a total of Rupees 44,09,171 as the actual Cost of the work to date.

	Total Estimate	Estimate of portion completed	Expenditure to 30 June	Excess	Saving
Plant & Preliminaries	8,00,000	8,00,000	9,07,857	107857	
North Pier			16,39,438	15,23,243	16,195
Rubble base in advance	2066860	A 85,650	85,650		
South Pier			12,02,060	10,41,421	160,581
Rubble base in advance	2050,860	B 65,665	65,665		
Blocks in Stock	will be transferred to Piers as the work advance		179880	160380	19,500
Materials on hand		C	219320	219320	
Totals			49,13,720	40,92,015	4,00,596
Contingencies 10 per cent			49,372	40,9201	144719	264482
Establishment 5 per cent			2,45,686	2,04,600	2,60,826	56256

Note. In the cases A. B. C. the same amount is given for both estimate and expenditure as the exact amount cannot be ascertained in either case till the portions of the work to which they relate have been completed - About one half of C. is for Cement in stock.

3. The work continues to progress at a Cost very closely approximating to the Estimate on the whole, though there are differences in the separate items. The North Pier shews a less saving (Rs 16,195 as against Rs 32307) and the South Pier a greater (Rs 1,60,581 as against Rs 1,43,302) than in the previous quarter - This is due to there having been a larger proportion

of rubble base deposited at the North Pier than at the South and that under a disadvantage from interruption by weather. This is the item in which the Cost exceeds the Estimate. In the Quarter now Current the balance will no doubt be restored -

4. The saving on "Contingencies" Continues to increase, and as two of the heaviest Charges against this item have now nearly ceased viz. the protection of the North Shore at a Cost to date of Rs 69,675 and the intercepting drains at a Cost of rupees 20,539 we may anticipate

that it will continue to do so at a greater rate for the future unless some unforeseen demands upon it should arise.

4. The excess on Establishment Continues to decrease It was Rs 65,279 in Sept 1879, Rs 57,811 in March 1880 and Rs 56,256 in June 1880.

5. I think it is desirable to take this opportunity of offering an approximate estimate of the cost of Completing the work as I am informed that the question has arisen at Madras as to the sufficiency of the sanctioned Estimate to Cover the Cost of the modifications of the design of the pier heads which I have reported as being necessary

but of which I have not yet
been able to submit the par-
-ticulars. The following will
shew however that there will
be an ample margin to cover
any Conceivable demand in
this respect.

6. I take as the basis of my
estimate the actual Cost of the
several branches of the work
in the last quarter, which has
been a more expensive one than
the average owing to interruptions
from weather. Thus I find that
at the North Pier 300 ft lineal
of pubble base cost Rupees 78,049
or 260 Rupees per foot. There
remains 200 feet more to be
deposited for which I assume
the same rate and I further
assume that on the length of
910 feet which includes 50 feet
for a toe in advance of the
end of the Concrete blockwork,
10 per Cent additional will be required to
complete the bank - I estimate
the South Pier pubble base on
the same principle, 200 feet having
Cost Rs 42,075 or 214 rupees per
foot and I take the superstruc-
tures at Rs 275 per foot which
has been the Cost at each pier.

7. Estimated on this basis
the cost of carrying both piers
to their full extent at the

ordinary section without any allowance for pordening at the heads and for the returns shewn on the plans, or for the lighthouses will bee

North Pier

	Rupees
Rubble base 200 feet at Rs 260	52,000
—do— Completion of 910 feet at Rs 26	23,660
Superstructure 860 feet at Rs 275	2,36,500

South Pier

Rubble base 1100 feet at Rs 214	2,35,400
—do— Completion of 1603 feet at Rs 21.4	34,240
Superstructure 1550 feet at Rs 275	4,26,250
Rupees	10,08,050

6 The Estimate for the whole works exclusive of Contingencies and Establishment is Rs 49,13,720 The Cost to the 30th June was Rupees 36,23,896 so that there

remains unexpended Rs 12,89,820 - If from this be deducted the above Rs 10,08,050 there will remain Rs 2,81,774 available for the extra work of the Pier heads and the lighthouses.

7 The questions which remain undetermined about the pier heads relate to their form more than their extent or their Cost. It may be safely assumed that the Cost will be well covered by that of 100 lineal feet of rubble base and 200 lineal feet of superstructure at each pier. This would also provide for the submarine part of the work for the lighthouses

so that the Estimates for them will be reduced from the Rs 30000 each in the sanctioned Estimate to the cost of the towers above the pier level and the lanterns and apparatus, say Rs 10,000 each.

10 The cost of these extras will therefore be approximately 200 lineal feet of rubble base say Rs2,000. 1,000 lineal feet Superstructure — 10,000
2 lighthouses - - - - - - - - - 20,000
Total Rs102,000

to meet which we have a surplus of Rs 2,81,774 without drawing on the items of Contingencies at all

That as I have before shewn I will probably give a further surplus of between 2 and 3 lacs of rupees Credit may also be taken for a further undetermined sum by the sale or transfer of a large amount of machinery and plant which originally cost about £50,000 I therefore submit that there can be no legitimate question as to the sufficiency of the Estimate to meet any reasonable demands upon it.

11. The final determination of the form of the pier heads is largely dependent on the result of observations of the effect

of the piers upon the waves as well as upon questions of practical construction upon which experience is being gained. For this reason, and feeling sure on the grounds above stated, that no increase to the sanctioned estimate is required, I am anxious to defer making any definite recommendation till my materials are more complete.

I have &c.

(Signed) W. Parkes.

(True Copy)

H. Harrowood.
Superintendent M. H. Works.

P.W.D.
OBSERVD
No. 6140

India Office,
London, 2nd Sept: 1880.

Public Works.

No 16

My Lord Duke,

Herewith is forwarded for Your Grace's information, — copies of — reports, dated 14th & 26th August, 1880, by Mr Parkes C.E. on the progress made on the — Madras Harbour Works during the Quarter ending 30th June last.

I have the honor to be,
my Lord Duke,
Your Graces most obedient,
humble Servant,

Hatherton

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

(Copy)

Madras Harbour

Report of Progress for the Quarter ending 30th June 1880

23 Abingdon Street
14th August 1880

Sir,

I have the honor to submit herewith a plan shewing the state of the works of the above on the 30th June last and a Photograph taken from the top of the Lighthouse on the 10th July.

2. Since the 30th March the North Pier had advanced 277 feet and the South Pier 256 feet. The rubble base had also advanced about 300 feet at the North, and about 200 feet at the South Pier. 31,875 tons and 29,501 tons having been deposited at the two Piers respectively.

3. This Quarter is not a favorable one for work the month of May especially being liable to stormy weather, and it is considered desirable to suspend block setting at both piers for a few weeks in order that the

Plans

Titano might be run back from the newly set blocks, and the blocks themselves secured by iron ties till the bad weather season was past.

4. There were however no such heavy seas as there had been in the same month in previous years, though there was a disturbance enough to prevent work from being carried on advantageously.

5. Works on shore were carried on with full activity — 1374 concrete blocks were made, sufficient to make 200 lineal feet Pier and the intercepting drain was advanced 1970 feet. By the last accounts this drain was being carried under the North surf bank to its outfall outside the Harbor and I hope it will shortly be brought into use.

6. On one point I am sorry to have to report unfavorably viz the health of the executive staff. The season has been unusually trying and some of the most useful

useful and energetic members are disabled. Mr Beardmore the Assistant Engineer as you are aware is at home much out of health. Mr Howe the indefatigable head Foreman, the terms of whose reengagement have lately been before you, is seriously ill at Cuttacamund and Mr Gunther a very valuable Foreman Engineer was also laid up by a sunstroke at the date of my last advices. — Several other members of the staff European and Native, had also suffered. — That the work has made such good progress under these trying circumstances is I submit a strong testimony to Mr Thorowgoods' good management. — Mr Cartright, who is acting for Mr Beardmore and Mr Underdown who has lately replaced Mr Allen as

Foreman

Foreman Diver, are however
giving valuable service.

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no longer
cause any anxiety, but the changes
of the coast line under the influence
of the present Monsoon are curious
and interesting - I called attention a
year ago to the fact that the accumulation
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the southward - This year there
is no advance close to the
pier but the maximum is

800 to 1000 feet to the southward. This is no
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porting power at some distance from the Pier.
8. This is shown in the portion of beach
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in deep water being reflected from the inside
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on the beach; this producing precisely the
same result as the Northerly seas produce
on an open portion of the coast. Elsewhere
say

Foreman Diver, are however
giving valuable service.

7. The movements of the sand no longer cause any anxiety, but the changes of the Coast line under the influence of the present Monsoon are curious and interesting - I called attention a year ago to the fact that the accumulation of sand to the South of the Harbor was not immediately contiguous to the South Pier but had its maximum about 600 feet to the southward - This year there is no advance close to the pier but the maximum is

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says that the result of this reflection is at present to produce a heavy surf within Harbour limits. This will of course be prevented by the further advance of the South Pier.

9. The changes in the Coastline North of the Harbour appear to have been less than in some previous seasons. The protective works which extend for rather more than half a mile from the North Pier are now — virtually completed. The total amount expended upon them is about Rs 67.000 of which about Rs 16.000 have been spent since last November when the stone revetment was rather seriously breached by the sea. It is now much stronger than before and though I am not prepared to say that further cost in its maintenance and renewal may not be required in future years, the above will shew that the charge is not liable to be a serious one, though the amount must remain to some extent uncertain.

10. As I have not received the detailed statement of cost up to the end of June, I am unable to furnish my usual Summary at the present time. There has been, however no extraordinary expenditure to cause any departure from the rule which has recently been maintained, that the cost of the portion of the work now in course of execution agrees very closely with the estimate

I have &c

(Sd) W. Parkes.

No 5.

Copy Report by Mr Parkes,
and 764
dated 14th Augt 1880.

P.W.D.
4 OCT 80
No

Referred to on Rubble Works Letter to Madras, No. 16, dated 3rd Septr 1880.

1507.

P 9888/16

Madras Harbour

23. Abingdon Street
26th August, 1880.

Sir,

Since submitting to you on the 14th instant my Report on the progress of the above Harbour Works, for the last quarter, I have received the statement of expenditure up to the 30th June, of which the following is an abstract, presented in a form similar to those I have submitted on previous occasions.

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North Pier		18,39,438	15,23,243		16,195
Rubble base in advance	2456,860 A	85,650	85,650		
South Pier		12,02,060	10,41,691		1,60,369
Rubble base in advance	20,56,860 B	65,668	65,668		
Blocks in Stock	Mettle transferred to Pier as the work advances	1,79,880	1,60,380		19,500
Materials on hand	C	2,19,320	2,19,320		
Total	4913,720	40,92,013	40,03,596		
Contingencies 10 per Cent	491,372	409,201	1,44,719		264,482
Establishment 5 per cent	245,686	204,600	2,60,136	56,286	
	56,50,778	4705,814	44,09,171	1,64,113	460,758

Note

note. In the cases A.B.C the same amount is given for both estimate and expenditure as the exact amount cannot be ascertained in either case till the portions of the work to which they relate have been completed. About one half of C is for cement in Stock.

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3. The work continues to progress at a cost very closely approximating to the estemate on the whole, though there are differences in the separate items. The North pier shows a less saving (Rs: 16,195 as against Rs: 32,387) and the South Pier a greater (Rs: 1,60,581 as against Rs 1,43,302) than in the previous quarter. This is due to there having been a longer proportion of rubble base deposited at the North pier than at the South, and that under a disadvantage from interruption by weather. This is the item in which the cost exceeds the estimate. In the quarter now current, the balance will no doubt be restored.

4. The Shewing on "contingencies" continues to increase, and as two of the heaviest charges against this item have now nearly ceased, viz; the protection of the North Shore at a cost to date of Rs: 69,575, and the intercepting drain at a cost of Rs: 20,539, we may anticipate that it will continue to do so at a greater rate for the future, unless some unforseen demands upon it should arise.

The excess on establishment continues to decrease. It was Rs 65,249 in September 1879; Rs: 87,811 in March 1880, and Rs: 56,256 in June 1880.

5. I think it is desirable to take this opportunity of offering an approximate estimate of the cost of completing the work as I am informed that the question has arisen at Madras as to the sufficiency of the sanctioned estimate to cover the cost of the modifications of the design of the pier heads which I have reported as being necessary, but of which I have not yet been able to submit the particulars. The following will show however that there will be an ample margin to cover any conceivable demand in this respect.

6. I take as the basis of my estimate the actual cost of the several branches of the work in the last quarter which has been a more expensive one than the average, owing to interruptions from weather. Thus I find that at the North pier 300 feet lineal of rubble base cost Rs. 78,049 or 260 Rupees per foot. There remains 200 feet more to be deposited for which I assume the same rate, and I further assum

assume that, on the length of 910 feet, which includes 50 feet for a toe in advance of the end of the concrete block work, 10 per cent — additional will be required to complete the bank. I estimate the South pier rubble base on the same principle, 200 feet having cost Rs 42,875 or 214 Rupees per foot, and I take the superstructures at Rs. 275 per foot, which has been the cost at each pier.

7. Estimated on this basis, the cost of carrying both piers to their full extent at the ordinary section without any allowance for widening at the heads and for the returns shewn on the plans or for the Lighthouses will be,

	Rupees
North Pier	
Rubble base 200 feet at Rs 260	52,000
—do— completion of 910 feet at Rs 26	23,660
Superstructure 860 feet at Rs 275	2,36,500
South Pier	
Rubble base, 1100 feet at Rs: 214	2,35,400
do — completion of 1600 ft at Rs 21.4	34,240
Superstructure 1550 feet at Rs 275	4,26,250
Rupees	10,08,050

8. The estimate for the whole works exclusive of contingencies and establishment is Rs 29,13,920. The cost to the 30th June was Rs: 26,23,896, so that there remains unexpended Rs, 12,89,920. If from this be deducted the above Rs: 10,08,050, there will remain Rs: 2,81,774 available for the extra work of the Pier heads and the Lighthouses.

9. The questions which remain undetermined about the Pier heads relate to their form more than their extent or their cost. It may be safely assumed that the cost will be well covered by that of 100 lineal feet of rubble base and 200 lineal of superstructure at each pier. This would also provide for the Submarine part of the work for the lighthouses so that the estimates for them will be reduced from the Rs, 30,000 each in the sanctioned estimate to the cost of the Towers above the pier level, and the Lantern and Apparatus, say Rs, 10,000 each.

10. The cost of these extras will — therefore be approximately,

200 lineal feet of Rubble base say	Rs: 52,000
400 — Superstructure	1,10,000
2 Lighthouses	20,000.
Total	Rs: 1,82,000

to meet which we have a surplus of Rs 2,81,774, without drawing on the item of contingencies at all. That as I have before shewn, will probably give a further surplus of

2298/99
18

of between 2 and 3 lacs of Rupees. Credit may also be taken for a further undetermined sum by the sale or transfer of a large amount of machinery and plant which originally cost about £ 50,000. I therefore submit that there can be no legitimate question as to the sufficiency of the estimate to meet any reasonable demands upon it.

11. The final determination of the form of the pier heads is largely dependent on the result of observations of the effect of the piers upon the waves, as well as upon questions of practical construction, upon which experience is being gained. For this reason and feeling sure on the grounds above stated that no increase of the sanctioned estimate is required, I am anxious to defer making any definite recommendation till my materials are more complete.

I have, &c.,

(sd) W. Parkes.

The Under Secretary
of State for India.

P.W.D.
4 OCT 80
No. 6275
19

No. 44 W

2787 Sta
19

From

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS,

To Colonel R. H. Sankey C.B.R.E.
Secretary to Government-Pt. Dept.
Buildings and Roads.

MADRAS, 27th September 1880

SIR,

1 Enclosure

I received by the last English mail a report written by Mr. Parkes the Engineer-in-Chief of this Harbour to the Under Secretary of State for India, August 28th, and I now have the honor to forward a copy of the same for the information of Government.

2. As the question of the cost of the Pier Heads has been under discussion before Government I think Mr. Parkes's report on the subject will not fail to be of interest, and

and will shew that no fear
of exceeding the estimate need
be entertained.

I have the honor to be,
Sir,
Your most Obdt Servt

E. J. Harrowood Mdst U.S.
Superintendent
M.A. Works

2/28/99
Jo

Jd. 26-1-80 · No 196 W
Progr. No 1396 dy 28-5-80
G.O. 20-2-80 No 895 W
Mis No 1236 W dy 25-5-80
" 14354 " 18-6-80 ayt
Ep. 29-7-80 No 1812 W
Mis No 2087 W dy 4-9-80 ayt

X

Buildings & Roads
P.W.D.

28SEP80
No 6140

From,
The Superintendent
Madras Harbour
Works

No 41 W

Dated 27 September
1880

Enclosure 1

No 8 W

Madras Harbour

Forwards report of Mr
Parkes on—

6-29-9-80 Rd 4-10-80

1587 Pub

India Office,
London, 2nd Sept: 1880

22788/80
21

Public Works.

No 16

My Lord Duke,

Herewith is forwarded for Your Grace's information, copies of reports dated 14th & 26th August, 1880, by Mr Parkes C.E. on the progress made on the Madras Harbour Works, during the quarter ending 30th June last.

I have, &c,
(sd) Hartington.

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

43

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92

No. 2.

Public Works
2nd Sept. 1880

Copy C No. 6275
Letter to Fort St. George.

No. 16.

6140. 22/8/80
22/8/79

2/8/80
9/11

the Secy. of State
has already sent
a copy of the
letter, & the
letter as it has
been passed by
the L.G.
It is proposed to
make the same
order as for
last — there
will of course
be no need
to circulate the
S's letter.
G.P.
9/10
C A W
Ver
22/8/80
1/10/80
Secretary of State

fo. 927 d. 12.4.80.

No. 4.

P.W.D. Public Works
4 OCT 80
No. 6275
2nd Sept. 1880.

Via
Ef-2
Letter to Fort St. George
No. 16 dated 27/9

B.P.P.
Rec'd 6/10/80
No. 2295 W of 4 Oct. 80
6275/1880

Recorded 16
forwarded to
the Secretary of
India.

A.E. No. 2299 W. 4/10/80

Copy forwarded.

Cir 28-9-80. Ptd 1-10-80.
D.L. Shal 82 Sept

J. E. M. B. 11.4
Secy. A.H. Com. 13 21 Desd 14-8

Free Copy of Despatch
of the Sec. of State for India
with the Governor in
Council of the Presidency of
Fort St. George dated
30th June 1880 forwarded
by Post Packet.

92/15

6295
1140.

Govt. of (1879) Madras.

PUBLIC WORKS.

To

Dated

Issued

Recd. Encl.

G. O., 4th Oct. 1880 No. 2298

2299

Nos. 1 to 6

Statement Showing Harbours
Booked

Reported yearly the
Receipts & Charges for the
Year ended 30th June 1880

Recorded

25 28/2
2