

(1) Number of pages _____

(2) Date of repair _____

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works

DEPARTMENT

G.O. No.	2740-41	Press
B.P. No.		Mis.
Dated	12-10-	1876 195-

Not to be folded or roughly handled

Read the following papers:—

No. 181. From F. N. THOROWGOOD, Esq., Superintendent, Madras Harbour Works, to Major-General G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Madras, 30th September 1876, No. 75 W.

1. Plan of surf bank.
2. Section of do.

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

2. I have kept steadily on tipping laterite from the small wagons into the north surf bank, and, although when a heavy surf has occurred the end has

always been spread out, yet the advance has been considerable.

3. The amount of laterite tipped into the surf bank alone is 15,074 tons, and the amount supplied by the quarries at Ambatoor is 17,223 tons. The amount represented by the difference between these has been used for various purposes, such as ballast for Railway lines, foreshore to the wharf of the Madras Railway Company at Royapooram, and chiefly for forming the road for the Titan crane to travel out upon, which road is shown in green on the accompanying plan.

4. The total quantity of laterite tipped in the north surf bank from the commencement is 96,520 tons. The increase of length consequent upon the tipping is 93 feet since the 31st August, but this will be reduced considerably by the first heavy surf that attacks it. The length from point A on plan to the edge of the slope at the end was 955 feet on 31st August, and it is 1,048 on 30th September. I had hoped that by running ahead with this portion of the work to get out beyond the surf and into deep water, but in spite of the fair progress of the past month, the surf line remains still in front of the work, and the last soundings that I took (shown on the section) only gave 9 feet of water at 30 feet from the end. Although this is unfavorable to the setting of blocks, I am still hoping by some means to set some blocks at the end before many days have past, but I can hardly hope to set them in their proper position because of the broken water. In my last Report I stated that I was in hopes of being able to use the hopper barges by loading them at the iron pier, but I have not been able to do this, as I could not get a railway laid in time. The Hopper Barges were sent away by the Master Attendant on 24th September, and are now at Cocanada.

5. I have been carrying on the making of concrete blocks by hand labor as quickly as possible, and have generally succeeded in turning out two blocks per

Concrete Blocks.

diem. Up to the present date there are sixty-nine blocks made, fifty-two of these having been made since the last report. These blocks I consider to be very satisfactory, as they are very well and truly shaped and soon set thoroughly hard. They are composed of the same materials as I mentioned in my last report, the chief stone being Palaveram whinstone, of which I am having about 20 tons per day delivered here broken small for Rupees 2-5-0 per ton. I can however now get it for less, and shall therefore change the supplier.

6. I should wish here to draw attention to the reason of my only having such small supplies, and of not having entered into contracts for the supply of sufficient

stone for the work when in full progress. My reason is that it is at present impossible to dispose of large amounts, and, until the block-making machinery and the hopper barges are at work, the small supply will amply suffice. I need hardly say that the machinery is being pushed ahead as quickly as possible, but the hopper barges are beyond reach.

7. The brickwork of the engine-house and concrete-mixing station is now nearly finished, the chief thing that remains to be done being the chimney; this is now brought up to 35 feet from the foundation. The scaffolding and centering have all been removed from the concrete-mixing station.

8. The boilers (four in number) are all fixed in position, and the steam pipes connected. The bed plates and cylinders of the engines are also fixed and bolted down, the shaft and fly-wheel is being placed in its bearings at this date. The shafting for working the concrete-mixers and stone-breakers is being put up, but this cannot be finished till the engine shaft is quite correctly in its place, which will be the case in the course of a week.

9. Six concrete-mixers are secured in their permanent position, and the hoppers or funnels for filling the mixers are all fixed in the brickwork in their proper places.

10. The concrete block platform on the north side of the yard is completed at its western end as shown in green on the accompanying plan, and a portion of the south line of platform is commenced.

11. I am able to report that the Titan crane is quite finished, and I had steam up for trial on the 28th September. Every thing went satisfactorily, but I could not try the travelling gear, as I am still in want of rails and fastenings strong enough to carry the great weight of the Titan. The Madras Railway Company have been good enough to lend me some rails that will answer, and when I get the fastenings I shall begin to travel the Titan outward.

12. There is a rather serious difficulty connected with travelling out the Titan and that is the difference of level between the present top of the surf bank and the proposed pier of concrete blocks as shown on the drawings. The surf bank is shown as being 13 feet above mean sea level, and the concrete blocks as being 50 above the same level, so that the Titan has to be got down to the low level before blocks can be set correctly. I propose to lower the end of the surf bank and to throw the upper portion of laterite forward and at both sides of the end before advancing the Titan; during this process the tipping of laterite must entirely stop.

13. These quarries have been working very well during the past month, but the new sidings and loading places have not been made as I am still waiting for rails. However, this has occasioned no delay, as the supply has been as great as could be tipped into the sea at present. The quality of the stone is good and the size of the boulders as large as can be obtained without more expensive plant at the quarry.

14. The only other sources of supply of stone for the works are from Palaveram and Covelong, and these supply small quantities of excellent whinstone, broken

small for concrete. I have got nothing more from Chinnamapett, as I am awaiting the decision of Government as to that being a source of supply. This I understand from a memorandum, No. 1,405, dated 19th September, will not be given till my plan for Tirutany sidings is resubmitted. I have ascertained that this is still in the hands of the Railway authorities; on my receiving it from them, I will at once resubmit it to Government; at the same time I feel persuaded that Chinnamapett would be the cheapest and best source of supply.

15. I have entered into a contract with a builder for converting a godown on the harbour works ground into a proper store, with an office for the storekeeper.

At present the storekeeper has no office near his chief stores, and this leads to difficulties in the matter of delivering out materials and keeping a correct record. The alteration will only cost Rupees 250, and the advantage will be very great.

16. During the month the ships *Clarence* and *Syria* have landed 4,822 casks of Portland cement; the casks from the *Syria* had mostly burst open on the

voyage, and, after a survey had been held on the damaged casks, the Committee of Survey were of universal opinion that the ship was not liable for the damage. Other stores have been received from the P. & O. Steamer *Gwalior*.

17. I have not received any more of General Morgan's cement, but have carried on further experiments with the small amount on stock. There are still nearly 2,000 tons of this cement due on an outstanding order, but I understand delay is caused by some accident or alteration in the machinery at the factory. The result of my further experiments is not satisfactory, and the cement seems very variable in quality which I consider a most dangerous feature. If it is agreeable to Government, I will forward a list of experiments that I have made on this cement when made into concrete.

18. The staff remains the same in number as before, but a change has been made by substituting another clerk in the place of Mr. D'Monte, who has left.

19. I would here draw attention to a misunderstanding of mine in my last Report about the pay of the Managing Clerk Mr. E. D'Caster. It appears that the Examiner of Public Works Accounts had only recommended the slight increase of pay (viz., from Rupees 30 to Rupees 40 per month) to the consideration of Government. I reported it as having taken place. I should be glad if it could be made to date back from the 1st September; but I have no doubt that a Government Order will shortly be issued on the subject.

20. The Marine Surveyors from Calcutta have been engaged preparing to take soundings and current observations, and making a chart to receive the same.

Many circumstances have occurred to delay their starting to take soundings—first, the absence of a tide gauge, and then the difficulty of making a satisfactory one; secondly, the delay in getting a suitable steam launch, and getting it into working order with a proper crew. These have been the principal difficulties, but I hope that by 2nd October they will have got to work.

*Proceedings of the Madras Government, Public Works Department,
12th October 1876. No. 2,710.*

21. The cost of this survey of the Roads, which I consider should have been made before a single stone was tipped, will form a serious item in the expenditure; it is a difficult and long undertaking. I should be glad to know if the Madras Government intend that the whole expense should be borne by the Harbour Works, or, if it is not possible, to have the expense shared by the Marine Survey of India. A chart of Madras Roads will be useful to all persons interested in shipping, and will have a wider circulation than if it were a plan simply connected with the harbour. Until I know what is to be done in the matter of payments for this survey, I am paying for any thing that is required out of the Harbour Works Funds. I have had to take on two lascars to look after the launch when the Surveyors have done with her, and also two trustworthy men to register tidal observations; the cost of all these will be about Rupees 100 per mensem, which, till further orders, I shall put down to "detailed survey" as directed in the case of the Rupees 200 honorarium to Mr. A. P. Agar.

22. As in the last report, I do not send the statement of expenditure with this, but it shall follow as soon as possible.

23. I would mention in conclusion that I expect Mr. Parkes about the 22nd October, by which time the effect of the north-east monsoon on the immense accumulation of sand to the south of the groyne or surf bank will, I trust, be apparent.

No. 181-A. From Colonel W. T. F. FAREWELL, Officiating Deputy Chief Engineer, Public Works Department, to Major-General G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Fort St. George, 2nd October 1876.

I HAVE the honor to report that, during the month of September, I inspected the Harbour Works, in company with the Superintendent, once weekly; and, on one occasion at the beginning of the month, I also inspected the Ambatoor quarries with him.

2. The surf bank has advanced very much more rapidly during the month than it has lately done, and its length has been extended by 93 feet. 15,074 tons of stone were delivered, while the quality and the size of the laterite blocks has in no way deteriorated.

3. The sand accumulation, though moving slower than the surf bank has done, still follows it; the surf breaks as usual in front of the advancing pier; and, on rough days, a large quantity of stone was spread north and south of the rubble bank by the action of the heavy surf rollers; the Superintendent informs me that the soundings taken in front of the bank show that to a distance of from 150 to 200 feet stone has been washed seawards, in a line with the bank.

4. No. 1 block platform with crane railways, &c., &c., has been completed to its full length, and No. 2 platform commenced.

5. The brickwork of the engine-house has been completed; the engine bed fixed; and the fitting of the shafting, &c., begun. Four boilers have been set in their beds, and the chimney shaft is well in hand.

6. The brickwork of the concrete-mixing sheds is complete, and three more of Missent's concrete-mixers have been set up.

*Proceedings of the Madras Government, Public Works Department,
12th October 1876. No. 2,740.*

7. Including the seventeen made last month, sixty-nine concrete blocks of various sizes have now been completed.

8. The Titan crane has been erected, and the road for it to the surf bank commenced.

9. The steam hopper barges have been sent to Cocanada, to remain there during the north-east monsoon; they sailed from Madras on Sunday the 24th September.

10. The works generally show signs of considerable activity and anxiety to push them on to the utmost extent; and good progress has been made. They were inspected by His Grace the Governor on the evening of the 28th September.

11. Lieutenant Jarrad, R.N., and his Assistant, Mr. Falls, of the Indian Marine Survey, arrived during the month to survey the Madras Roads, and have made some preliminary arrangements for this purpose.

P.S.—I beg to enclose the Superintendent's Report; the soundings given in which will show the condition of the sand accumulation, and which was received too late on the evening of the 2nd instant for me to forward to you on that day.

No. 182. ORDER THEREON, 12th October 1876, No. 2,740.

CIVIL WORKS, No. 15.

ORDERED to be recorded.

2. It is observed that Mr. Parkes will be out before the next Report is due, and will doubtless in time give his opinion as to the difficulties that have been met with as the work has progressed. Orders * G.O., No. 2,612, dated 28th September 1876. have issued* approving of the arrangements at the Chinnamapett quarries noticed in paragraph 14.

PARAGRAPH 17. The details of experiments with General Morgan's Cement as applied to the construction of concrete blocks should be submitted for the information of Government.

PARAGRAPH 19. The increase of salary to the Managing Clerk sanctioned in G.O., No. 2,470, dated 15th September 1876, will have effect from 1st September.

PARAGRAPH 21. The question as to the debit of cost of the Marine Survey now being undertaken will be deferred for the present.

Ordered that the Government of India be furnished with copy of the Report with sections and plans as indicating the progress of the works up to the quarter ending 30th September.

(Here enter, No. 2,741, dated 12th October 1876.)

(True Extract.)

Colonel,

* Offg. Under Secy. to Govt., P.W.D.

To the Superintendent of Madras Harbour Works.

" Marine Department.

" Examiner of Public Works Accounts.

Exd. A. Grubert.

Spare Copies

PUBLIC WORKS DEPARTMENT,
FORT ST. GEORGE, 12th October 1876.

No. 183.

No. 2,741.

FROM

MAJOR-GENERAL G. W. WALKER, R.E.,
Secretary to the Government of Madras,
Public Works Department,

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,
Public Works Department.

CIVIL WORKS, No. 16.

SIR,—In continuation of my letter,
No. 2,542, dated 22nd September 1876,
I am directed to forward herewith copy of
Report of the Superintendent of the Madras Harbour Works with sections and plans
showing the progress of the works up to the quarter ending 30th September 1876.

I have the honor to be,

Sir,

Your most obedient servant,

Colonel,
Offg. Under Secy. to Govt., P.W.D.,
for Secretary to Government.

Exd. A. Grubert.

Spare Copies

Letter from the
Supt. Chief Engineer
Chas. B. C.

[Faint handwritten notes at the bottom of the page, possibly bleed-through from the reverse side.]

~~in der Mitte der~~

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~~1. The R. of the~~
~~1. The R. of the~~

Mr. J. M. Smith
 Secretary of the Board
 of the American
 Society for the
 Propagation of the
 Gospel
 New York

There seem hardly
anything to be

Direct to Mr. Reverend
these papers
 Mr. Larkin will

be cut before the
next Report will
be, & will add

Titan Crane to travel out upon, which road
is shown in green on the accompanying plan.
The total quantity of material tipped in the
North Surf Bank from the commencement
is 96,520 tons. The increase of length
consequent upon the tipping is 98 feet since
the 31st August, but this will be reduced
considerably by the first heavy surf that
attacks it. The length from point A
on plan to the edge of the slope at the end
was 955 feet on August 31st and it is
1048 on Sept 30th. I had hoped that by
running ahead with this portion of the
work to get out beyond the surf and into
deep water, but in spite of the fair progress
of the past month the surf line remains still
in front of the work and the last sounding
that I took (shown on the section) only
gave 9 feet of water at 30 feet from the
end. Although this is unfavourable to the
setting of blocks, I am still hoping by
some means to set some blocks at the end
before many ^{days} have past - but I can hardly
hope to set them in their proper position

15 2
Because of the broken water - In my last
report I stated that I was in hopes of being
able to use the Hopper Barges by loading them
at the Iron Pier - but I have not been able
to do this, as I could not get a railway
laid in time. The Hopper Barges were sent
away by the Master Attendant on September
24th, and are now at Cocanada.

Concrete Blocks 5. I have been carrying on the making
of Concrete Blocks by hired labour as
quickly as possible, and have generally suc-
ceeded in turning out two blocks per day -
Up to the present date there are 69 blocks
made, 52 of these having been made since the
last report. These blocks I consider to be
very satisfactory as they are very well and
truly shaped and soon set thoroughly hard.
They are composed of the same materials
as I mentioned in my last report - the
chief stone being Palawan whinstone
of which I am having about 20 tons per
day delivered here, broken small for use at
2 annas 5 per ton - I can however now
get it for less, and shall therefore change the

supplier. I should wish here to draw attention to the reason of my only having such small supplies, and of not having entered into contracts for the supply of sufficient stone for the work when in full progress - My reason is that it is, at present, impossible to dispose of large amounts, and until the block making machinery and the Hopper Barges are at work the small supply will simply suffice - I need hardly say that the machinery is being pushed ahead as quickly as possible, but the Hopper Barges are beyond reach.

7. The brickwork of the Engine House and Concrete mixing station is now nearly finished, the chief thing that remains to be done being the chimney - this is now brought up to 35 feet from the foundation. The scaffolding and centring have all been removed from the concrete mixing station. The boilers (four in number) are all fixed in position and the steam pipes connected. The bed plates and cylinders

7-3
of the Engines are also fixed and bolted down the shaft and flywheel is being placed in its bearings at this date. The shafting for working the concrete mixers and stone breakers is being put up, but this cannot be finished till the engine shaft is quite correctly in its place - which will be the case in the course of a week.

9. The concrete mixers are secured in their permanent position, and the hoppers or funnels for filling the mixers are all fixed in the brickwork in their proper places.

Concrete Block Platform 10. The concrete block platform on the north side of the yard is completed at its western end, as shown in green on the accompanying plan, and a portion of the south line of platform is commenced.

Titan & Cranes 11. I am able to report that the Titan Crane is quite finished, and I had steam up for trial on the 28th September - everything went satisfactorily, but I could not try the travelling gear as I am still in want of rails and fastenings strong enough to carry the great weight of the Titan -

1. The Madras Railway Company have been
 good enough to lend me some rails that will
 answer and when I get the fastenings I
 shall begin to travel the Titan outwards.
 2. There is a rather serious difficulty
 connected with travelling out the Titan - and
 that is the difference of level between the
 3. present top of the surf bank and the proposed
 4. Pier of Concrete Blocks as shown on the
 5. drawings. The surf bank is shown as
 being 13 feet above mean sea level and the
 6. concrete blocks as being 5.0 above the same
 7. level so that the Titan has to be got down
 8. to the low level before blocks can be set correctly.
 9. I propose to lower the end of the surf bank
 10. and to throw the upper portion of laterite
 11. forward and at both sides of the end before
 12. advancing the Titan - during this pro-
 cess the tipping of laterite must entirely
 13. stop.
 14. These quarries have been working very well
 during the past month - but the new sidings
 and loading places have not been made
 as I am still waiting for rails - However

Amalgamated
quarries

Other Sources
of Stone Supply

Chinnampett
 500

Contracts

19 4
 this has occasioned no delay, as the supply
 has been as great as could be tipped into the
 sea at present. The quality of the stone is
 good and the size of the boulders as large as
 can be obtained without more expensive transport
 at the quarry -
 The only other sources of supply of stone
 for the works, are from Palaveram and
 Sevelong, and these supply small quantities
 of excellent limestone, broken small for
 concrete - I have got nothing more from
 Chinnampett as I am awaiting the decision
 of Government as to that being a source of sup-
 ply. This I understand from a memo-
 randum No. 1405 dated 19th September will
 not be given till my plan for Transport
 sidings is resubmitted. I have ascertained
 that this is still in the hands of the Railway
 Authorities on my receiving it from them.
 I will at once resubmit it to Government
 at the same time, I feel persuaded that
 Chinnampett would be the cheapest and
 best source of supply.
 15 I have entered into a contract with

a builder for converting a godown in the Harbour
works ground into a proper store, with an
Office for the Storekeeper. At present the
Storekeeper has no office near his chief
store, and this leads to difficulties in the
matter of delivering out materials and
keeping a correct record. The alteration
will only cost Rs 250 and the advantage
will be very great.

16. During the month the ships "Clarance"
and "Syria" have landed 4822 casks of
Portland Cement, the casks from the "Syria"
had mostly burst open on the voyage, and
after a survey had been held on the damaged
casks, the Committee of survey were of univer-
sal opinion that the ship was not liable
for the damage. Other stores have been
received from the P. & O. Steamer "Qualiori".

17. I have not received any more of
General Morgan's cement, but have carried
on further experiments with the small
amount in stock. There are still nearly
2000 tons of this cement due on an out-
standing order, but I understand delay

Cement / 4822

General Morgan's
Cement.

Office Staff.

is caused by some accident or alteration in the
machinery at the factory. The result of my
further experiments is not satisfactory - and
the cement seems very variable in quality -
which I consider a most dangerous feature.
If it is agreeable to Government, I will for-
ward a list of experiments that I have made
on this cement when made into concrete.

18. The staff remains the same in number
as before, but a change has been made by
substituting another clerk in the place of
Mr. B. Monte who has left.

19. I would here draw attention to a
misunderstanding of mine in my last
report about the pay of the Managing
Clerk, Mr. E. D. Baxter. It appears that
the Examiner of Public Works Accounts,
had only recommended the slight increase
of pay (viz from Rs 30 to Rs 35 per month)
to the consideration of Government. I re-
ported it as having taken place. I should
be glad if it could be made to date back from
the 1st September - but I have no doubt that
a G.O. will shortly be issued on the subject.

20. The Marine Surveyors from Calcutta have been engaged preparing to take soundings and current observations, and making a chart to receive the same. Many circumstances have occurred to delay their starting to take soundings. First the absence of a tide gauge and then the difficulty of making a satisfactory one. Secondly, the delay in getting a suitable steam launch and getting it into working order with a proper crew. These have been the principal difficulties - but I hope that by Oct. 2^d they will have got to work.

21. The cost of this survey of the Roads, which I consider should have been made before a single stone was lifted, will form a serious item in the expenditure - it is a difficult and long undertaking. I should be glad to know if the Madras Government intend that the whole expense should be borne by the Harbour Works or if it is not possible to have the expense shared by the Marine Survey of India. A Chart of Madras Roads will be useful to all

persons interested in shipping and will have a wider circulation than if it were a plan simply connected with the Harbour. Until I know what is to be done in the matter of payments for this survey, I am paying for anything that is required out of the Harbour Works funds. - I have had to take on two lascars to look after the launch when the surveyors have done with her - and also two trustworthy men to register tidal observations - the cost of all these will be about Rs 100 per annum, which till further orders I shall put down to "Detailed Survey" as directed in the case of the Rs 200 honorarium to Mr. A. P. Agari -

Expenditure

22. As in the last report, I do not send the Statement of Expenditure with this, but it shall follow as soon as possible. I would mention in conclusion that I expect Mr. Parkis about the 22^d October by which time the effect of the North East monsoon on the immense accumulation of sand to the South of the groynes or surf bank will, I trust, be apparent. -

I have the honor to beg

to inform you that

Your most obedient servant,

F. J. Herveyford.

Superintendent

Madras Harbour Works

25

820. 21. 30 - 10 - 30
821 - 10 - 30 - 30
822 - 10 - 30 - 30
823 - 10 - 30 - 30
824 - 10 - 30 - 30
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828 - 10 - 30 - 30
829 - 10 - 30 - 30
830 - 10 - 30 - 30

P.W.D.

From - 20376

The Inspector General
Madras Harbour Works

To
The Secretary to Government
Public Works Department
Fort St George

Dated 30th September 1876

No 511

Submits Report of
Progress of the Madras
Harbour Works during
September 1876

2027-4-76-121056
 - 12-5-76 - 1197
 - 8-6-76 - 1428 & 1127
 - 15-6-76 - 1492
 - 18-7-76 - 1802
 - 15-8-76 - ~~2117~~
 - 16-8-76 - 2138
 - 6-9-76 - 2361
 - 13-9-76 - 2445
 - 26-9-76 - 2588
 15-9-76 - 2470
 Proof of Aug^r Rept.
 28-9-76 - 2612
 22-9-76 - 2542 & 2571

No 181

in-6-10-76
Despatched 3-10-76

Fort St George
22nd October 1876

From
Colonel R. F. Fennell
Offg. Dy. Chief Engineer
Major General G. R. Walker &c
Secretary to Govt. Prov

Sir - I have the honor to report
that during the month of Sep-
tember I inspected the Harbour
Works, in company with the Super-
intendent, once weekly, and on one
occasion at the beginning of the
month, I also inspected the Am-
bassador's quarries with him.

The surf bank has ad-
vanced very much more rapidly during
the month than it has lately done,
and its length has been extended
by 95 feet, 15,074 tons of stone
were delivered, while the quality and

the size of the laterite blocks has in no way deteriorated.

3 The sand accumulation, though moving slower than the surf bank has done, still follows it; the surf breaks as usual in front of the advancing pier; and, on rough days, a large quantity of stone was spread North and South of the rubble bank by the action of the heavy surf rollers; the Superintendent informs me that the soundings taken in front of the bank show that to a distance of from 150 to 200 feet stone has been washed seawards, in a line with the bank.

4 Number one block platform with crane railway etc. etc. has been completed to its full length, and Number two platform commenced.

The

5 The brick-work of the engine-house has been completed, the engine bed fixed, and the fitting of the shafting etc. begun. Four boilers have been set in their beds, and the chimney draft is well in hand.

6 The brick work of the concrete-mixing sheds is complete, and three more of Elliott's concrete-mixers have been set up.

7 Including the seventeen made last month, sixty-nine concrete blocks of various sizes have now been completed.

8 The Titan crane has now been erected, and the road for it to the surf bank commenced.

9 The steam Tugger Barges have been sent to Canada, to remain there during the North East monsoon; they sailed from Malacca

Madras on Sunday the 24th
September.

10 The works, generally, show
signs of considerable activity, and
anxiety to push them on to their
utmost extent; and good progress
has been made. They were in-
spected by His Grace the
Governor on the evening of
the 28th September.

11 Lieutenant Larnach, R. N.,
and his Assistant Mr. Falls
of the Indian Marine Survey, I
arrived during the month to survey
the Madras Roads, and have
made some preliminary arrange-
ments for this purpose.

I have the honor to be
Sir
Your most Obedt. Servt.
Wm. D. L.

Off: Dy. Chief Engd

P. S. I beg to enclose the
Superintendent's report, the
soundings given in it, which
will show the condition of the
sand accumulation; and which
was received too late on the
evening of the 2nd instant
for me to forward to you on
that day.

W. L.
3.10.70

69 27-4-76 121056.
 12-5-76 1197
 8-6-76 1428 & 1429
 15-6-76 1493
 18-7-76 1802
 15-8-76 2117
 16-8-76 2138
 6-9-76 2361
 13-9-76 2445
 26-9-76 2568

P.W.D.

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N^o 181 A.

cin. 6-10-76 Dkt 12-10-76

Recd to 3-10-76

33 11

27/10/76 Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 12th Oct 1876
 Read the following:—

the Secy, Madras H.E. Secy 5.10.76 Sept 76
 Harbour Works 3 2: 10/76
 By Mr. Secy Port.

Ordered to be recorded.

It is observed that Mr. Parkes will be out before the next Report is due, and will doubtless in time give his opinion as to the difficulties that have been met with in regard to the progress of the work and progress.

The difficulty alluded to in para 12 in respect to travelling out the Tiber has only to be realized to be overcome.

Orders have issued approving
 of the arrangements at
 the Chinnampett Curries
 noticed in para. 14.
 Para 21. 5 28 Sept.

Para 17. The details of
 experiments with General
 Morgan's Cement as ap-
 plied to the construction
 of concrete blocks should
 be submitted for the
 information of Govern-
 ment.

Para 19. The increase of salary
 to the Managing Clerk
 sanctioned in G.O. No 2570
 dated 15th Sept. 1876 will
 have effect from 1st Sept.

Para 21. The question
 as to the debit of cost
 of the Marine Survey
 now being undertaken
 will be deferred for the

present.

Ordered that the Govern-
 ment of India be fur-
 nished with copy of the
 report with sections and
 plans as indicating the
 progress of the works up
 to the quarter ending
 30th September.

H.E. Mysore 12th Oct 76

No 2741
 To the Secretary
 to the Govt of India
 Mr D

Sir,

In continuation of
 my letter No 2542 dated
 22nd September 1876, I am
 directed to forward here-
 with copy of Report of the
 Superintendent of the
 Madras Harbours Works
 with sections and plans

Capt. Francis H. Wake.
 Marine Dept.
 By Mr Clerk.

Showing the progress of
the work up to the
quarter ending 30
Sept. 1895

Wm

Settle with E. Pland
and with L. G. via
the 21/9/95

18/8/83

Govt. of Madras.
PUBLIC WORKS.

The Supr. Engineer, Harbour Works

1001

1001

1001

G.O. 12-2-1903

2740

2741

No. 151/52

Forwarding copy of
Report of the progress of
the Madras Harbour
Works with sections &
plans showing the
progress of the work
to the Engineer-in-Chief
30 Sept 1903

Madras Harbour Works

Passing orders on
the report of progress
of the ——— for
the month of September

23-10-1903

W. C. S. S.