Public Works (1897) Department.

✓ G.O., No. 2221 W

DATED 14 August 1897

[Despatch Abstract.]

Jetties at Cocanada: Observing that the S.E.'s report of April last on the work done to the — is satisfactory and encouraging and approving with remarks that officer's proposal to stop the extension of the Jetties for the present.

J.C. 14/8

Indexed 14/8

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BUILDINGS AND ROADS.
CIVIL WORKS.

Government {1897} of Madras.

PUBLIC WORKS.

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G.O., No. 2221 W., 14th August 1897.

AUGUST.

Jetties at Cocanada

Observing that the Superintending Engineer's report of April last on the work done to the — is satisfactory and encouraging, and approving with remarks that officer's proposal to stop the extension of the jetties for the present.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following papers :—

Memorandum from the Chief Engineer, Public Works Department, to the Superintending Engineer, I Circle, dated 2nd December 1896, No. 4552 C.

On the strength of urgent petitions from persons in Cocanada stating that the port was likely to become closed up altogether unless something was at once done to improve its condition, a scheme for extending the groynes was prepared and sanctioned by Government. The Presidency Port Officer has lately visited Cocanada and has now represented to Government that the proposed works are unnecessary, and that things can quite well be left as they are till such time as the port can be removed to Vakalapudi. I therefore have the honour to request that you will, as early as possible, give me information on the following points :—

First.—In your opinion can the port be left as it is without fear of the passage out to sea becoming entirely blocked within the next three years. It seems to be possible that the floods in the Gódávari may have kept the passage opened and so temporarily removed all cause of anxiety, but that there will be the same state of affairs again as existed at the time the petitions were written.

I have asked the Port Officer for his opinion on this point, and yours must be given independent of his.

Second.—It is stated that it will be quite impossible to clear the sand bank between the two proposed groynes without using a sand pump dredger costing £12,000 or about 2 lakhs of rupees. Are you of this opinion ? As far as I can judge there seems to be no reason why the bank should not be cleared by hand assisted by the dredger now belonging to the port. When the groyne has been constructed at each side of the channel, I do not see why it should be more difficult to clear the sand to 3 feet below L.W. in this case than it was in the case of the excavation of the Buckingham canal and many other canals that run into tidal water, or it would be in the case of excavating a canal to Vakalapudi which now seems to be the idea of the Presidency Port Officer. I further do not think that a sand pump dredger would be suitable for working in such shallow water.

If the sand bank cannot be cleared without two lakhs having to be spent on a dredger, the scheme for extending the groynes must fall to the ground.

Third.—What is the average time an ordinary sized cargo boat takes to make a trip to a steamer and back by the present circuitous route, and what would be the average time if the channel were made by groynes as proposed, and what are the daily working expenses of such a boat. Supposing a boat carrying 20 tons and costing Rs. 5 a day to work only makes one trip by the present route while it would be able to make two by the proposed one it is evident that in the latter case 40 tons would be carried for the same cost as 20 in the former.

Fourth.—At what stage has the groyne work lately sanctioned arrived and how long will it take to complete. I will be much obliged if you will give me a very early answer to these questions, and I think it will be well if you consult several of the merchants interested as their opinions may not be the same as that of the Port Officer.

Telegram from the Superintending Engineer, I Circle, dated Dowlaishweram 8th December 1896.

From J. C. LARMINIE, Esq., M.I.C.E., Superintending Engineer, I Circle, to the Chief Engineer, Public Works Department, dated Gopalpur, 8th January 1897, No. C./5.

In reply to your memo. No. 2 C. of the 2nd instant, I have the honour to state that I do not see how I can offer a more definite opinion regarding the clearance of a channel through the sand bar at the mouth of the Cocanada river than that already given throughout the correspondence on the subject; paragraph 4 of my letter, No. 1955 G.D., dated 17th December 1896, specifies the various references on the subject, winding up with my letter, No. C./247 of 21st October 1896, submitting the jetty estimates for sanction.

2. That the necessity for the provision of a sand pump dredger had, up to date of your memo. No. 4552 C. of 2nd December 1896, been contemplated and as I understood, tacidly admitted, appears from the following references on the subject.—paragraph 18 of your note printed with G.O., No. 2445 of 24th August 1896; clause 4, paragraph 19 of the same note, resulting in the orders passed in G.O., No. 2805 of 30th September 1896, directing me to submit an indent for a sand pump dredger and your subsequent telegram of 24th October 1896 to hasten despatch of the same.

3. From these, I inferred that all difficulties were now at an end and looked on the future efficiency of the port as quite an assured fact, while in Cocanada the apparently near realization of so long felt a want was regarded quite as a matter for congratulation.

4. With reference to paragraph 2 of your memo. under reply, I would invite a re-perusal of paragraphs 8, 9 and 10 of my report, printed with G.O., No. 2445 W. of 24th August 1896. From these three paragraphs alone it would appear that (in the opinion of the writer) a dredger was an integral part of the scheme.

5. Your own opinion of the "Wenlock" is stated in paragraph 18 of your note printed with the same Government Order.

6. With reference to your paragraph 4, I would observe that there will be ample time before the completion of the jetties, in which to procure the dredger. Stone is being deposited as quickly as possible, but it will take some time yet to complete the total supply even at the rate of 3,000 cubic yards per month (estimated quantity 28,000 cubic yards) and time must be allowed for it to settle before any attempt is made to build or section it.

7. So soon as stone has been deposited all along the line of the wall to above half tide level, I then intend making an attempt to clear the highest part of the shoal by manual labour.

8. Could a channel giving a depth of six feet at even half tide be opened out, I believe the merchants would offer no great objection to the closing of gap *A* in the south jetty. Until this is done, no particular result can be expected from the work, and it was with this object in view, that all along, I have so strenuously advocated the provision of suitable dredging plant.

From J. C. LARMINIE, Esq., M.I.C.E., Superintending Engineer, I Circle, to the Chief Engineer, Public Works Department, dated Cocanada, 15th February 1897, No. C./66.

In reference to G.O., No. 3187 W. of 7th November 1896, directing me to report on a note by Mr. J. R. Bell regarding the possibility of preventing further ingress of Gódávari silt into Cocanada Bay, I have the honour to submit the following observations, having delayed doing so, until other engagements permitted of my making an inspection of the river outlets in question.

2. Even were such a scheme practicable, at a moderate expenditure, it would be quite unnecessary, for, it has apparently escaped Mr. Bell's notice, that all the trouble at Cocanada is due, not to the advance of Gódávari mud from the south, but to the travel of sand along the beach from the north due to the strong littoral current.

3. The view expressed in paragraph 10 of Mr. Bell's note is quite contrary to observed facts. With the extension of the northern jetty, the coast line for some little distance to the north of it, has advanced owing to the accretion of sand deposited by the aforesaid littoral current. This advance has continued until it has, as described by Mr. Bell in his 10th paragraph "enfolded the mouth of the canalized river"; but with this difference, that instead of being caused by mud from the south, all the damage has been caused by the travel of sand from the north!

4. Under these circumstances it seems almost superfluous to discuss the question of the exclusion of silt any further. But as the formation of Gódávari Point, and the extensive deltaic tracts around Hope Island, are entirely due to silt deposited by the Gódávari in the course of the last fifty-five years (they were in embryo in 1842, when the survey for the Atlas sheets was made) a few remarks in this connection may not be out of place.

5. As far as I can judge from observation and the available marine surveys, the deposit of Gódávari silt has now reached its extreme northly limit and a change has * set in.

6. I would here invite a re-perusal of paragraphs 17, 18, 19 and 20 of my report printed with G.O., No. 2445 W. of 24th August 1896. Paragraphs 19 and 20 read as follows:—

> The charts show that as Point Gódávari extended northwards, so the bay to the west and south-west of it scours out. From 1875 to 1882, the change is marked, from 1882 to 1891, there is further improvement and particularly in the direction which affects the mouth of the Cocanada river, *i.e.*, the advance towards it of the one fathom contour.
>
> *Paragraph* 20.—In 1875, the nearest point of this contour was fully two miles from the river mouth. In 1891 the distance had decreased to something over a mile. The southern part of the bay, which in 1875 exposed extensive mud flats at low tide, is now a sheet of water of from 1 to 2 feet in depth.

In paragraph 23 of the above-mentioned report the trifling advance of Point Gódávari between the years 1882 to 1891 is alluded to.

7. All these considerations indicate, in my opinion, the inexpediency of undertaking a costly work to prevent what nature herself is now striving for and has already in a great measure attained.

8. The whole tendency of the Gódávari during recent years has been to reserve its former action, the principal opening being now to the south (instead of as formerly to the north into Cocanada Bay) through the channels marked A on the accompanying tracing from the Marine Survey of 1891.

9. A comparison of this with the old Atlas sheets of 1842 will show how the southern branches marked B, C, D have opened out, thereby causing the growth of the Sacramento shoal.

10. This opening out is no doubt due to the shoaling up of the northern branches at their entrance into Cocanada Bay and consequent inability to afford a free discharge to flood water and this change of régime, in itself, reduces to a minimum, the amount of silt now brought into the bay, a quantity which, in recent years, has done no appreciable harm.

11. It seems unnecessary to discuss the difficulty and expense which would be involved in the construction of an embankment like that advocated by Mr. Bell across the low-lying mud flats and a wide and deep (where the bank would cross) branch of the river. Considerable inconvenience to trade would also be caused by the closure of the Coringa river, in which the French Settlement of Yanam has vested interests.

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* In fact, has been in progress for some years.

From J. C. LARMINIE, Esq., M.I.C.E., Superintending Engineer, I Circle, to the Port Officer, Cocanada, dated 25th February 1897, No. C./54.

I have the honour to inform you that on this day I intend to begin closing the gap in the south jetty wall, through which cargo boats, &c., now pass out from Cocanada river into the bay.

2. I am aware that this procedure is somewhat opposed both to your own and the opinions of some of the merchants on the subject. But, responsible as I am for the success of a scheme on which Government have expended so much money, I can defer the closure no longer.

3. Until this gap is closed no material result can be expected from the extension of the southern jetty.

4. As you are well aware, the channel from the gap into the bay is threatened by the advance southwards of the sand shoal, so that the necessity for the provision of another exit becomes daily of greater urgency.

5. There is no other alternative but the passage across the bar, and any further delay will only accentuate the difficulty and expense of clearing it (the bar).

6. I do not anticipate that the closing of the gap will cause any very serious inconvenience to shipping operations. Even now boats have often to wait for a rise of tide before coming into the river through the gap. When it is closed, and for some little time after, at all events, arrangements must be made not to despatch boats over the bar within a certain period, before low water and after the turn of the tide. This period, probably, will be four hours before low water and two hours after turn of the tide, for boats drawing 4½ feet of water.

7. Under these circumstances, I have the honour to request you to be good enough to intimate to the boat owners generally the closure of the gap with any other instructions to them you may consider necessary. For some little time after closure of the gaps, the loading of the boats should be done with judgment.

No. C./55.

Copy forwarded to the Chief Engineer, Public Works Department, for information.

(Signed) J. C. LARMINIE,
Supg. Engineer, I Circle.

25th February 1897.

From J. C. LARMINIE, Esq., M.I.C.E., Superintending Engineer, I Circle, to the Port Officer, Cocanada, dated Camp Cocanada, 25th February 1897, No. C./77.

I have the honour to state in reply to your letter, No. 1591 of to-day, that to give up the intention of closing the gap means, to all intents and purposes, the abandonment of a scheme in which so much money has been expended. The question is purely an engineering one for which I am responsible. I must again repeat that, until the gap is closed, no real progress can be made on the bar and if we are to wait until a perfect channel, navigable at all states of the tide, is ready before the closure of the gap is started, it means postponing indefinitely the improvement of the port. If the gap cannot now be closed, dredging must cease as it is a waste of money trying it any further. As, however, the channel over the bar is not buoyed out, I shall postpone further action, until next Wednesday, to enable you to do so.

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No. C./55.

Copy forwarded to the Chief Engineer, Public Works Department, for information.

25th February 1897.

(Signed) J. C. LARMINIE,
Supg. Engineer, I Circle.

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No. C./78.

Copy forwarded to the Chief Engineer, Public Works Department, for information in continuation of this office No. C./55 of to-day, together with a copy of letter No. 1591 * of the same date, to which it is a reply.

* From the Port Officer, Cocanada.

25th February 1897. (Signed) J. C. LARMINIE,
Supg. Engineer, I Circle.

ENCLOSURE.

From G. W. WICKS, Esq., Port Officer, Cocanada, to the Superintending Engineer, I Circle, dated 25th February 1897, No. 1591.

In reply to your letter, No. C./54 of this date, and just received by me, I have the honour to request that you will suspend the work of closing the gap until your letter can be placed before a meeting of the Board which I will call as soon as possible.

2. This matter, I consider, is of such vital interest to the trade of the port that I hope you will take no immediate action to carry out your intention of closing the gap and that you will kindly stop the boats throwing in stone in the gap for the present.

From J. C. LARMINIE, Esq., M.I.C.E., Superintending Engineer, I Circle, to the Chief Engineer, Public Works Department, dated Waltair, 8th April 1897, No. 79 G.D.

With reference to your memo., No. 994 C. of 18th February 1897, I now have the honour to submit a tracing from the survey showing the exit from the Cocanada river, with the soundings and the condition of the shoal for the six months (October 1896 to March 1897), and to report as follows.

2. By the end of January, the southern jetty had been raised above high tide level, along its whole length, to the end of the 400 feet curve; the curved extension to the north jetty had also been formed, up to low tide level.

3. During February attempts were made by means of the two old bucket river dredgers from Dowlaishweram, to open a passage through the bar, which at that time consisted of a ridge of sand about 150 feet wide, situated about half way between the ends of the jetties and the red and black buoys now marked on the tracing.

4. The weather was fresh and breezy nearly every afternoon, when a choppy sea got up, and without a proper steam tug the work was carried on under considerable difficulties. All that the bucket dredgers could do was to clear out two narrow parallel channels (the dredgers worked alongside each other). At very low tides also some excavation by manual labour was carried on.

5. Meantime, since the extension of the jetties, it had become apparent that powerful tidal currents were at work to and fro across the river mouth, to facilitate and induce some portion of these to enter between the jetties, the southern jetty was extended another 100 feet beyond the termination of the curve. This had some slight effect and served to indicate what might be expected were the gap in the southern jetty closed, for through this still, the main body of the tidal flow found its ingress and egress to and from the river.

6. The dredging on the bar merely served to show what might be attained by proper appliances, and the weather having become still more unfavourable, they were sent back to Dowlaishweram, and I then determined that at all hazards the gap should be closed.

7. Several members of the Port Conservancy Board were strongly opposed to this course, being unwilling to risk a stoppage of communication with the shipping for even a brief period. However, at a meeting of the Board held on the 27th February, it was decided after some discussion that the gap might be closed as a tentative measure with bags of sand (*see* this office endorsement on the Proceedings, No. 2545 G.D., dated 4th March 1897).

8. In a subsequent meeting on 18th March 1897 when neither the President nor myself were present, it was resolved that on the slightest appearance of difficulty or delay to boats in getting over the bar, the gap should be again re-opened (presumably by the Board itself)!

9. Between the 16th and 20th March the gap was closed and since then there has been a steady improvement. As was anticipated, the powerful tidal current which hitherto passed in and out of the gap now scours up and down between the jetties, one result being the diminution of the sand accretion which had formed along the north jetty, opposite the gap, while the increased depth in the channel across the bar, between the buoys, points to its effect in this direction. Furthermore, the width of the bar has considerably decreased, not being now more than 50 or 60 feet wide, where the minimum depth at low tide as shown by the row of black figures on the tracing is $2\frac{1}{4}$ feet (actual soundings at low water give a little more).

10. Altogether, the results of closing the gap are most encouraging and as I had all along hoped for. The improved state of affairs is even admitted by the Port officer.

11. The sand bag dam across the gap may collapse at any moment; it is sinking daily as sand escapes through decay of the bags; so, keeping in view all the foregoing conditions, I have given orders to proceed at once with the filling in of stone over the bags with a view to permanently closing the gap. The old circuitous channel from the gap is deteriorating; so, under all the circumstances of the case, I think it would be folly to re-open it.

12. At the same time, it must be admitted that, occasionally, there may arise difficulties in the navigation over the bar. A strong cross current, from the north, sweeps across the opening between the jetties with the flood tide, while the reverse takes place on the ebb. With the wind fresh anywhere between north-east and south-east, a lumpy sea gets up, which, combined with the strong current, renders the passage difficult, considerably enhanced by the narrowness of the channel.

13. It has been suggested that, in accordance with the sanctioned estimate, the jetties should now be extended outwards so as to get out beyond the bar, which could then be easily dredged out. But I am quite satisfied that their present termination is as favourable as can be arranged and is particularly so in respect to the direction and set of the tidal currents on the bar. Were the jetties extended, this effect would be interfered with, while the formation of a new bar further out would inevitably result.

14. The balance of the estimate (Rs. 44,200) is provided in this year's budget. But if the foregoing view be accepted only a small sum will be required. Another point for decision is whether the jetty should be left in its present rough unsectioned condition. The estimate provides for building it to a uniform section, and the cost of doing so will be 24,527 cubic yards at annas 4 = Rs. 6,132.

15. In conclusion, I would again point out, that to maintain a really safe and satisfactory channel through the bar, a sand pump dredger is essential. The coast line north of the jetties is slowly advancing eastward—a condition most likely to tend to the eventual growth of the bar, outside the present position of the buoys and further removed from the scour of the ebb tides.

From J. C. LARMINIE, Esq., M.I.C.E., Superintending Engineer, I Circle, to the Chief Engineer, Public Works Department, dated Camp Dowlaishweram, 27th June 1897, No. C./202.

I have the honour to invite your consideration of my report, No. 79 G.D., dated 8th April 1897, on the Cocanada river jetties, and to request orders on the question of building the wall to sanctioned section.* The gap is now permanently closed wit stone and all traffic passed to and fro over the bar.

* See paragraph 14 of above letter.

Inspection Notes of J. C. LARMINIE, Esq., M.I.C.E., Superintending Engineer, I Circle, on Cocanada river jetties, dated 20th July 1897, No. C./310.

The whole of the southern extension has settled down, so that at full tide it will be nearly a foot under water.

The contractor should be instructed to at once bring down an additional 1,300 cubic yards of stone, when the work should be raised three to a width of six feet. Across the gap which has been faced with rough stone is a hollow in the middle over the sand bag core. This hollow has first to be filled in using all the small stone available, so as to close all the interstices through which the tide now flows to and fro. When the gap has thus been brought up to the general level of the rest of the work, the extra three feet of raising can then be carried out so as to bring the whole length of the wall to one uniform level. The work can be put in hand so soon as punts can be made available, the contractor doing the work.

700 yards now at site.
Required 800 × 2 × 1 = 1,600. It will be advisable to retain a small reserve of about 400 cubic yards.

The question of building the jetty to sanctioned section (6 feet top width, slopes $1\frac{1}{2}:1$) was referred to the Chief Engineer last April. It will not, however, be advisable to do anything in this direction until all settlement has ceased.

The condition of the bar has much improved, the width having decreased, so that it cannot now be more than 30 feet wide, if so much. This is due, no doubt, to the strong tidal currents to and fro across the river mouth, while the tidal current up and down between the jetties has deepened the channel and maintained and improved the channel out between the buoys. As has been reported to the Chief Engineer in this office No. 79 G.D., dated 8th April 1897, on no account should the jetties be ever extended beyond their present position, as to do so would interfere with and alter the tidal sweep across the mouth of the river.

Order—No. 2221 W., dated 14th August 1897.

His Excellency the Governor in Council observes that the Superintending Engineer's report of April last on the work done to the jetties at Cocanada is satisfactory and encouraging.

2. The Superintending Engineer's proposal to stop the extension of the jetties for the present is approved. They should, however, be neatly sectioned, the sectioning to the southern jetty being done when all settlement has ceased, as recommended in the Superintending Engineer's Inspection report of the 20th July 1897.

3. The proposal of the Gódávari District Ports Conservancy Board to purchase a dredger, is under consideration in the Marine Department.

(True Extract.)

Under Secretary to Government.

To the Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.
" Marine Department.
" Financial Department.

Exd. T. K. Narayana Aiyangar.

Cocanada jetties

No. 2221 W., dated 14th August 1897

Public Works Department.

26P

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following

Print with Enclosures

Memo from the Chief Engr. P.W.D. to the S.E. I Circle	No. 4552 C	d/ 2. 12. 96
		d/ 8. 12. 96
Telegram from the S.E. I Circle	No. —	d/ 8. 1. 97
Letter from the S.E. I Circle	No. C/5	d/ 15-2-97
— Do —	No. C/66	d/ 25-2-97
Endorst. of the S.E. I Circle	No. C/55	d/ 25-2-97
— Do —	No. C/78	d/ 8-4-97
Letter from the S.E. I Circle	No. 79 G.D.	d/ 27-6-97
— Do —	No. C/202	d/ 20-7-97
Inspection notes of the S.E. I Circle	No. C/310	

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(1) Flagged A

ASH 9.8.97

(40—4,000—2-11-95.)

4.E. 7.8.97 10.8.97

be neatly sectioned, the sectioning to the Southern jetty being done when all settlement has ceased, as recommended in the Superintending Engineer's Inspection report of the 20th July 1897. (2)

(2) Flagged B

3. The proposal of the Godavari District Ports Conservancy Board to purchase a dredger is under consideration in the Marine Department. (3)

(3) Flag C

Copy 7.8-97.

7/8/97

To
The S.E. I Circle
" Exr. P.W. Accts.
" Revenue Dept.
" Marine Dept.
" Financial Dept.

D 24/8/97

L.S.C. 1st Circle — Urgent

On the strength of urgent petitions from persons in Cocanada stating that the port was likely to become closed up altogether unless something be at once done to improve its condition & schemes for extending the groynes are proposed and sanction of Govt. The Presidency Port Officer has lately visited Cocanada & has now represented to Govt. that the present work be necessary and that others can [illegible] well be left as they are till such time as the port can be removed to Vakalapudi. I therefore have the honor to request that you will be good enough to furnish Govt. with information on the following points.

1st In your opinion can the port be left as it is without fear of the passage out to the sea becoming entirely blocked within the next 3 years. It seems to be possible that the floods in the Godavary may have kept the passage open &

a temporary measure the chance of removing
but that there will be the same state of
affairs again as that existed at the time
the petition was written.

I have asked the Port officer for his opinion
on this point, & have [illegible] to [illegible]
[illegible] of his.

2nd It is stated that it will be quite sufficient
to clear the sand bank between the two
portions [illegible] without using a steam dredger
dredger costing Rs 12000 a [illegible] I [illegible] [illegible]
Are you of this opinion? as far as I can judge
there seems to be no reason why the banks
should not be cleared by hand assistance
of the dredger now belonging to the Port
when the dredger has been constructed at
[illegible] [illegible] of the channel I do not see why
it should be more efficient to clear the sand
the 9th [illegible] [illegible] in this case there is no
in the case of the [illegible] of the Buckingham
Canal & [illegible] other canals that run into
tidal water, or in case it were decided to
[illegible] a canal to [illegible] which has been
[illegible] the care of the Presidency Port Officer

I further do not think that a sand pump
dredger would be suitable for working in such
shallow water.

If the sand bank cannot be cleared without
a dredger being to be expensive & a dredger the
scheme of extending the dredger must take
to the [illegible].

3rd What ~~[illegible]~~ [illegible] is the average time
an ordinary large [illegible] boat takes to
make a trip to a distance & back of
the present [illegible] route, and what
would be the average time if the [illegible]
[illegible] of dredger is proposed, and what are
the daily working expenses of such a boat.
Supposing a boat carrying 20 tons and costing
Rs 5 a day to work only makes one trip
of the present route which it would be
able to make two of the proposed one it is
evident that in the latter case 40 tons
would be carried for the same cost as 20
in the former.

4th At what stage has the dredger work
lately sanctioned [illegible] and how
long will it take to complete

[illegible] 7 | Deliberately [illegible].

C No 6403

I will be much obliged if you
will give me a very early answer to
this question & I think it will be
better if you consult several of the
Merchants interested & their opinion
may [illegible] be the same as that of the
Port officer. ~~[illegible]~~

2/12/[illegible]

No. 2221 W, dated 11th August 1897

P. W. DEPARTMENT.

READ the following :—

His Excellency The Governor

The Hon Sir Henry Bliss K.C.I.E.

FOR ORDERS.

Owing to the deterioration of the Port of Cocanada, caused by the formation of shoals at the mouth of the harbour, obstructing the passage of boats to and from the shipping, Mr. J. C. Larminie, Superintending Engineer 2nd Class, was, in Proceedings of the Madras Government, No. 1039 of 21st March 1896, deputed to proceed to Cocanada to "interview the Port Conservancy Board, examine thoroughly into the conditions, and advise the Government as to what he thinks should be done." In accordance with this order Mr. Larminie went to Cocanada, arriving there on the morning of 31st March 1896 and remaining there till the night of 2nd April. In his report, printed with G.O. No. 2445 W of 24th August 1896 he stated that; though he had many opportunities

H.S.

1. Mr. Larminie's report is satisfactory and encouraging.

2. The ending, for the present at any rate, of the jetties, at their present stage should be approved.

3. The jetties should, as recommended, be sanctioned [illegible].

"Flagged B" in bottom file

4. The gap in the south jetty should, as recommended, be solidly closed.

See below H.S.

5. The loan for the dredger, as recommended, should be sanctioned.

6. The report on the Vakalapudi scheme should be awaited. This scheme may be forced upon us, by the possible eventual failure of Mr. Larminie's scheme. But, the information, so far as it goes, does not incline me to favour it.

This matter will be taken up in the Marine Dept.
R.S.
6 Aug 97

7. Finally, the improvement of Cocanada Harbour should be diligently pushed.

Flagged G
in bottom file

H.S. 15/7/97

H.E. 17

C No 6403

of familiarizing himself with Cocanada and it's bay from 1870 to 1882, he could not remember so serious a block across the mouth of the river as that which existed on the occasion of his visit under reference: and he attributed the state of affairs to the extension of the northern training-groyne in advance of the southern one. So long as the two groynes were of equal length, ebb-tide scour, aided by dredging, kept a fairly direct channel open; but the northern groyne having been extended some 1800 feet in advance of the southern groyne caused this effect to be lost, owing to there being no opposing force to the accumulation of sand round the end of the north wall, or to the encroachment of sand from the south along the line which a southern extension would have closed. He therefore recommended that the southern groyne should be extended to the same length as the northern one, leaving an opening during construction at a point marked A in the plan, so as to allow boats to pass in and out of the channel,

FOR ORDERS.

It would have been better to circulate the Marine Dept papers about the dredger herewith — they should now be sent to H.L. [illegible]. He will see that, even when the kind of dredger required is settled, there will be great difficulty about providing funds. I can't myself see where they are to come from, at present.

HS
16/7/97

I have read the above Note by the Hon. Sir H. Bliss.

A.S.A.
9.8.97.

Await the papers in the Marine Dept in regard to the loan for the dredger. They are going to the Chief Secretary & the Hon. Member.

13/7/97

[illegible] 22-7-97

17 July 97

This plan does not seem to be in the file; but it is unnecessary, the position of the gap being shown in the chart placed in the [illegible]

and that new and improved dredging-plant should be purchased for the port.

2. During his sojourn at Cocanada, Mr. Larminie inspected the coast-line as far as Vakalapudi Lighthouse to the north, and he also rode along the line which a new canal, if excavated from the Cocanada River to the lighthouse, would follow. This he did in connection with 3 proposals, as follow, which had been made from time to time with the object of improving the communication with the shipping viz:—

(i). To extend the training-groynes in a north-easterly direction far enough to secure a depth of 6 or 7 feet of water, at their termination, at low tide.

(ii). To excavate a new line of canal, about 5 miles long, taking off from the river a little to the west of the old Cocanada Lighthouse and extending to near the Vakalapudi Lighthouse, opposite to which the present anchorage lies, and continuing the canal by groynes into 7 feet of water.

(iii). To construct a screw-pile pier at Vakalapudi, and to connect the same with Cocanada by a line of rail.

He forwarded a memorandum

regarding these three alternatives of the Chairman of the Godavari Ports Conservancy Board, but understood that there were "insuperable objections to the alternative of a pier," as no ordinary pier would suffice for the trade of the port and as break of bulk would ensue from the existence of storage-godowns in Cocanada: while as regards the suggestion of a canal to Vakalapudi he wrote, "the cost of excavating a canal to a depth of even 6 feet below low-tide level and large enough to accommodate the boats in use, through the soil prevailing, would be excessive, and, further, the difficulties to be expected in keeping the canal-mouth open, in a situation so exposed to the North-East monsoon, would be very great." But apart from monsoon considerations he was of opinion that groynes constructed at Vakalapudi would inevitably cause the same difficulty there as they now do at Cocanada, and that therefore no good would come of shifting the mouth from the latter place to the former.

3. On this report the Chief Engineer, P.W.D. wrote a note which will be found printed together with it and the G.O. of 24th August 1896, referred to

above. In this note he made certain suggestions, and these the Government decided to adopt, and the following orders were passed – vide the same G.O. –:–

(i) To extend the southern groyne, at once, in accordance with an existing sanctioned estimate of Rs 14,000, leaving a gap at position marked A on plan.

Indicated on chart.

(ii) To submit, as soon as possible, estimates for extending both groynes to the same distance, the northern groyne by 1000 feet and the southern one by about 2800 feet so as to bring the latter even with the former, and also for

~~(iii) To~~ removing the sand-bank marked B on plan.

Marked on chart.

It was also decided, in the same order, to call on the Port Conservancy Board in the Marine Department for an expression of opinion on the alternative plan of a pier at Vakalapudi and a line of rail thence to Cocanada. But it may be mentioned that, previous to the issue of this order, information had, as stated by the Chief Engineer in his note, been received from Mr Larminie, as Supdg. Engineer II circle, by letter dated 21st April 1896, that the Board desired to postpone giving an opinion till it had an opportunity of

Vide P.S. in Chief Engineer's note printed with G.O. No 2445 W of 24-8-96 referred to above

C No 6403

consulting several gentlemen of experience then resident in England. But from G.O. No. 776 Marine dated 10th November 1896 it would appear that the Board was apparently averse from giving an opinion at all.

"Flagged" F in bottom file.

4. In accordance with G.O. No. 2445 dated 24th August 1896, the Superintending Engineer — Mr. Larminie — submitted estimates aggregating to Rs. 74,000, and these were sanctioned in G.O. No. 3357 dated 23rd November 1896, and they are as undermentioned, namely:—

"Flagged" W in bottom file but one

(a) Extending the southern and northern jetties at Cocanada by 2300 and 200 feet, respectively, and clearing a 50 feet channel through the shoal at the river mouth to a depth of 3 feet below low-tide level	Rs. 51,000
(b) Additional extension of the jetties at Cocanada by 800 feet each, a work to be left for future consideration after further experience has been gained	" 23,400
Total	" 74,000

It will be observed that the training-groynes are now called jetties, such being their proper designation, as stated by Mr. Larminie.

5. It may be here mentioned

C No 6403

that Mr J.R. Bell, late Consulting Engineer to the Government of India for State Railways, at the invitation of Mr Kipping a resident partner of Messrs Hall, Wilson and Co and a leading member of the Cocanada Port Trust, wrote a scientific note, on the subject of improving the port, for which he received the thanks of the Madras Government in G.O. No 3187W of 7th November 1896, the upshot of the note being to recommend the scheme for a canal to Vakalapudi coupled with the construction of embankments across the low mud flats and a branch of the Godavari near Coringa. This note was subjected to criticism by Mr Larminie in his letter No 2181 dated 15th Feby 1897, while the same officer had, in his letter No 1955 G.O. dated 17th December 1896, previously stated that he had discussed the question with Mr McNab of the firm of Hall, Wilson & Co whom he found to be entirely opposed to any scheme which would involve shipping at Vakalapudi.

"Flagged" V in second file from top.

"Flagged" C in second file from top.

6. Meanwhile the sanctioned work proceeded; and on 23rd Feby 1897 Mr Larminie

informed the Port Officer of his intention to immediately close the gap, already referred to, representing that, till the gap was closed, no material result would be effected from the extension of the southern jetty, for, the channel, from the gap into the Bay, being threatened by the advance southwards of the sand-shoal, the necessity for another entrance was increasing in urgency, while a passage across the bar was the only alternative. The Superintending Engineer's object was, evidently, to concentrate between the training-walls the tidal ebb and flow, which, were daily being wasted through the gap, and thus scour out the bar, as well as stop the increase of sand inside the channel along the north jetty. But the Port Officer, in reply, requested that the work of closing the gap might be suspended until the Superintending Engineer's letter could be placed before a meeting of the Board. However Mr Larminie would only agree to postpone the work till the following Wednesday, that is for six days.

7. On the 27th Feby, or two

days after Mr. Larminie had
intimated his intention of
closing the gap, the Godavari
District Ports' Conservancy
Board held a meeting at
Cocanada to consider that
question, and passed the
following resolution, one member
out of five, (Mr. Kipping)
dissenting:—

"The Board request that Mr.
Larminie will postpone closing
the gap to the 16th proximo and
then close it only with sand in
bags, so that it can be
very easily and very quickly
reopened in the event of the
experiment of ~~obtaining~~ opening
a passage between the
groynes proving a failure
in the absence of a sufficiently
capable dredger. The Board
further request that Mr.
Larminie will keep the
dredgers going from now
until it is proved clearly
either that they and closing
the gap can keep a sufficient
passage open through the
groynes or cannot do so."

Document "flagged" in box file

In para 9 of his letter
796.D. of 8th April 1897 Mr.
Larminie reports that the
gap was closed between

Vide first document in box file.

16th and 20th March with
sand-bags, and that since
that time there has been a
steady improvement, the powerful
current, which had hitherto
passed in and out of the gap,
using its force between the
jetties and thus diminishing
the accretion of sand which
had formed along the north
jetty opposite the gap, and
also cutting a passage through
the bar — in February 150 feet
wide but — now no more than
50 or 60 feet wide, with a
minimum depth of 2¼ feet
as shown by the row of black
figures in the chart. This
state of affairs, the improvement
of which is admitted by the
Port Officer, Mr. Larminie
considers most encouraging,
while he reports, in the same
letter, having given orders to
close the gap with stone.

8. As regards the work
done it is stated that by
the end of January the
Southern jetty had been
raised above high-tide

level along it's whole length to the end of the 400 feet curve – i.e to 2300 feet on the chart, and that the curved ~~entrance~~ extension to the northern jetty – i.e from 2000 to 2200 feet – had been formed up to low-tide level. During February the southern extension was further increased by another 100 feet beyond the termination of the curve: and the Superintending Engineer does not consider it necessary to prolong either jetty any more, being "quite satisfied that their present termination is as favourable as can be arranged, and ~~is~~ particularly so in respect to the direction and set of the tidal currents on the bar." "Were the jetties extended," Mr Larminie continues, "this effect would be interfered with, while the formation of a new bar, further out, would inevitably result." If, instead of extending the jetties until they get beyond the present site of the bar, we accept this

recommendation, there will be a large saving on the estimates, for the Superintending Engineer reports a balance of Rs 44,200 on this year's budget and says that only a small sum will be required in addition to an estimated figure of Rs 6192 which might be utilised in building the southern jetty to uniform section instead of leaving it in its present rough unsectioned condition. This work is, no doubt, necessary while it also seems desirable to raise above high-tide level such unraised portions of the jetties as may now exist: but perhaps, that is how Mr Larminie proposes to spend the "small sum" above mentioned. It is therefore recommended that the work be stopped at it's present terminus and that the proposal made by the Superintending Engineer in para 14 of his letter No 796.D. of April 8th 1897 be approved.

9. We now come to the

safe and satisfactory

important question of dredging. Mr. Larminie has, all through the correspondence, maintained that efficient dredging plant should be recognized as an integral part of the scheme; and in para 15 of his last letter — that of 8th April 1897 — he, reiterating an expression of his opinion on that subject says, "I would again point out that, to maintain a really safe and satisfactory channel through the bar, a sand-pump dredger is essential. The coast line north of the jetties is slowly advancing Eastward, a condition most likely to tend to the eventual growth of the bar outside the position of the buoys and further removed from the scour of the Ebb tides." And in para 12 he points out how difficulties may occasionally arise in the navigation of the bar: and it is considered that he has made out a case for the necessity of an efficient dredger. During February he states, attempts were made by means of the

two bucket dredgers from Dowlaishwaram, to open out a passage through the bar which was then 150 feet wide, but, being unsuited to this sort of work, all the dredgers could do, by working side by side, was to clear two narrow parallel channels, when the unfavourable state of the weather necessitated their return to Dowlaishwaram. But this dredging on the bar served to shew what might be attained with proper appliances. And it now remains to be ~~seen~~ considered whether the prosperity of the port is not such as to justify the incurring of expenditure requisite for the purchase of proper appliances.

"Flagged" G in bottom file

In para 4 of G.O. No. 2445 W dated 24th August 1896 the imports and exports of Cocanada are stated to have amounted in 1894-95 to Rupees 44,76,534 and Rs. 1,59,17,689 respectively. The latter sum is correct; but the former, including

Safe and Satisfactory Cha

Rs 3,28,000 on account of Treasure should be Rs ~~44,76,534~~ CHBB 48,04,534. For the year 1895-96 there was a considerable falling off in imports and a slight decrease (comparatively) in the exports; for the figures were Rupees 33,60,069 and Rs 154,12,881 respectively. Moreover, a reference to the accompanying statement of Merchandise and Treasure imported and exported at Cocanada will shew that there has been a steady decrease in the exports during the last five years: but it is possible that this being decrease may be due to the insufficient state of the harbour: moreover the value of both imports and exports is still enormous compared with that of the neighbouring port, Vizagapatam, as shewn in the same statement which draws a comparison

between the two ports for the five years 1891-92 to 1895-96.

10. An efficient sand-pump dredger would be likely to cost a couple of lakhs, but it would be difficult to estimate the amount of duty it would be required to do to keep the bar open. The channel, formed by the jetties, as taken to scale, is 250 feet broad, and it might be considered necessary to continue a channel, of the same breadth through the bar, 60 feet across, while the depth to be excavated, making allowance for shoaling, might be 6 feet. Reducing these dimensions to yards, we get 83 × 20 × 2 = 3320 cubic yards, which, at an assumed rate of 8 annas per cubic yard, would cost Rs 1660. The question is how many of such dredgings, or their equivalent, would suffice? Perhaps two or three per annum might do so: but in any case it is apparent

C No. 6403

17 ~~15~~

that the cost of dredging and the interest on capital sunk in a dredger would be extremely small compared with the imports and exports, and apart from the fact that unless a dredger be bought, all work done to the jetties will have been wasted – it is clear that the total expense of improving the port of Cocanada will be trifling compared with what would be entailed by adopting either of the Vakalapudi schemes, while it is considered that mercantile interests will be served equally well if not better, ~~while~~ and thus all anxiety in regard to the stability of Cocanada as a port may be dispelled. The purchase of a sand-pump dredger is therefore strongly recommended.

CHBS
18-6-97

The Godavari Ports Conservancy Board have applied for a loan from Govt. of two lakhs of rupees for the purchase of a suitable dredger to keep open the channel between the existing groynes. This application is now being considered in the Marine dept. It is strongly recommended that the Board be permitted to purchase a dredger for the port.

30/6/97

C No 6403

Total value of Merchandise & Treasure, exclusive of Govt. Stores & Treasure, imported and exported into & from Cocanada & Vizagapatam from 1891-92 to 1895-96.

	Imports					Exports				
	1891-92 Rs	1892-93 Rs	1893-94 Rs	1894-95 Rs	1895-96 Rs	1891-92 Rs	1892-93 Rs	1893-94 Rs	1894-95 Rs	1895-96 Rs.
Cocanada.										
Coasting Trade — Merchandise — Country	9,27,375	10,94,056	8,78,677	6,93,731	8,65,520	69,95,233	79,44,692	61,10,447	75,42,382	84,24,643
Coasting Trade — Merchandise — Foreign	21,08,195	22,63,635	26,11,824	28,09,219	21,98,842	2,705	1,122	2,815	1,708	12,976
Total	30,35,570	33,57,691	34,90,501	35,02,950	30,64,362	69,97,938	79,45,814	61,13,262	75,44,090	84,37,619
Treasure	11,24,389	38,23,750	60,500	3,28,000	30,000	....	5,~~6~~00,000	6,18,000	....	24,000
Total	41,59,959	71,81,441	35,51,001	38,30,950	30,94,362	69,97,938	84,45,814	67,31,262	75,44,090	84,61,61
Foreign Trade — Merchandise — Country / Foreign	6,99,057	1,78,191	2,16,454	9,73,584	2,65,707	66,56,327	81,30,418	93,45,822	83,73,599	69,51,262
Grand Total	48,59,016	73,59,632	37,67,455	48,04,534	33,60,069	136,54,265	165,76,232	160,77,084	159,17,689	154,12,881
Vizagapatam										
Coasting Trade — Merchandise — Country	9,93,867	10,20,448	6,05,695	3,94,116	5,48,995	6,25,604	5,12,154	5,46,295	4,38,338	3,90,048
Coasting Trade — Merchandise — Foreign	5,51,574	5,04,140	5,59,246	4,59,[illegible]31	3,95,740	22,209	21,758	14,185	7,321	5,562
Total	15,45,441	15,24,588	11,64,941	8,53,347	9,44,735	6,47,813	5,33,912	5,60,480	4,45,659	3,95,610
Treasure	....	....	2,00,000	....	....	2,000	....	....	6,000	79,000
Total	15,45,441	15,24,588	13,64,941	8,53,347	9,44,735	6,49,813	5,33,912	5,60,480	4,51,659	4,74,610
Foreign Trade — Merchandise, Country & Foreign	2,45,057	2,12,510	61,998	6,25,435	32,785	19,70,417	12,61,123	11,17,036	12,63,786	25,10,091
Grand Total	17,90,498	17,37,098	14,26,939	14,78,782	9,77,520	26,20,230	17,95,035	16,77,516	17,15,445	29,84,701

Note

These figures are taken from the statements printed on page (2) & pages (420) & (421) of the Annual Volume of the Sea-borne Trade & Navigation of the Madras Presidency for 1895-96. [illegible] 11/1/57

Safe and Satisfactory Ch

C No 6403

Public Works (1897) Department.

CURRENT No. 8053
24

Order

From J C Lammie Esqr M.I.C.E.
Supdg Engr II Circle

No. C/310

Dated 20. 7. 97.
Received 26. 7. 97
Enclosures Orig. 13. 8. 97
Spare copies

SUBJECT.

Inspection Notes on Cocanada River jetties — submits his

L/23

C.No 6403

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

2510

No. C/310

15/18 July/97

Inspection Notes of J. C. Larminie Esqr. [illegible] Supt. Engineer 1st Circle on Cocanada River Jetties dated 20/7/97

The whole of the Southern extension has settled down, so that at full tide, it will be nearly a foot under water.

The Contractor should be instructed to, at once bring down an additional 800 cubic yards of stone, when the work should be raised three to a width of six feet across the gap which has been faced with rough stone is a hollow in the middle over the sand bag core. This hollow has first to be filled in using all the small stone available so as to close all the interstices, through which the tide now flows to and fro. When the gap has thus been brought up to the general level of the rest of the work, the extra three feet of raising can then be carried out so as to bring the whole length of the wall to one uniform level. The work can be put in hand so soon as funds can be made available, the Contractor doing the work.

700 yards now at site. Required 800×2×1 = 1600 It will be advisable to retain a small reserve of about 400 cubic yards.

The question of building the jetty to sanctioned section, (6' top width slopes 1½:1) was referred to the Chief Engr. last April. It will not however be advisable to do anything in this direction until all settlement has ceased.

The condition of the bar has much improved the width having decreased so that it cannot now be more than 30 feet wide if so much. This is due no doubt to the strong tidal currents to and fro across the River mouth, while the tidal current up and down between the jetties has deepened the Channel and maintained and improved the Channel out between the Buoys. ~~as~~ has been reported to the Chief Engineer in this office No 79 B / 20.4.97 on no account, should the Jetties be ever extended beyond their present position, as to do so, would interfere with and alter the tidal sweep across the mouth of the River.

J C[illegible]
Supdg Engr 1st Circle
27/6/97

Desp'd 22.7.97

To
The Chief Engineer
Pr. Depart

Public Works (1897) Department.

CURRENT No. 6403

Order

From J C[illegible] Esqr M.I.C.E.
Supdg Engr 1st Circle

No. C / 202

Dated 27 June 1897
Received 1-7-97
Enclosures nil
Spare copies

SUBJECT.

Cocanada River Jetties — Request early orders on the question of building the wall to section sanctioned as the matters are in an improved state by the permanent closing of the gap —

WC

Await return of the papers in circulation. 8/7/97 WS

HC / papers in cir [illegible] 7-7-97

LS 256

C. No 6403

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

No. C/202 23P

FROM

J. C. Larminie Esqr M. I. C. E.
SUPERINTENDING ENGINEER.

FIRST CIRCLE.

Enclosures.

TO

THE CHIEF ENGINEER
PUBLIC WORKS DEPARTMENT.

~~WALTAIR~~, Camp Dowlaishwaram 27. 6 1897.
Despd 28. 6. 97.

SIR,

× C.N. 3831 Sent to W.S. 26.4.97

× See para 14 of above letter

Sent in C.E. on 1.7.97.

I have the honour to invite your consideration of my report No: 79 G.D.×, 8/4/97 on the Cocanada River jetties and to request orders on the question of building the wall to sanctioned section×. The Gap is now permanently closed with stone and all traffic passed to and fro over the bar.

I have the honour to be,
Sir,
Your most obedt Servant.

J. C. Larminie
Superintending Engr 1st Circle

W.S. 27.6 28/6

through the bar.

S. E. I. / 6 500—29-2-96.

FROM

SUPERINTENDING ENGINEER,
FIRST CIRCLE.

TO

THE CHIEF ENGINEER

PUBLIC WORKS DEPARTMENT.

DATED
DESPATCHED
RECEIVED } 189 .

No.

ENCLOSURES.

SUBJECT.

Public Works (1897) Department.

CURRENT No. 3831

16

Order

From J. C. Larminie Esq
Supdg Engineer 1st C.
To The Chief Engineer P.W.D.
No. 79 G.D.

Dated 8-4-97
Received 15-4-97
Enclosures 1 ~~[illegible]~~
Spare copies

SUBJECT.

Cocanada River — Submits a tracing from the survey showing the exit from the — with the soundings and the condition of shoal for the 6 months October to March 1897 with remarks and states that a sand pump dredger is essential to maintain a really safe and satisfactory Channel through the bar.

W/ For orders on 26-4-97

O.L.S. 25

FROM

TO

BACK PAPERS.

G.O.	No.	Department.	Date.
	1811C	Pw.	30-3-97
	1299C	„	8-3-97
	994C	„	18-2-97
	104E	„	13-2-97
	72E	„	3-2-97
	3568C	„	13-10-96
	2445w	„	24-8-96
	844w	„	7-3-96
	362D	„	12-6-95
	3867C	„	2-12-94
	242C	„	19-1-94
	3260w	„	15-12-93
	4115C	„	2-12-93
	3566C	„	1-11-93
	2759w	„	27-10-93
	2696w	„	24-10-93
	2520w	„	4-10-93
	2313w	„	8-9-93
	1128C	„	9-3-92
	989C	„	3-3-93
	774C	„	20-2-93
	391D	„	14-9-92
	2432w	„	31-8-92
	2262w	„	16-8-92
	1306w	„	25-4-92
	848w	„	14-3-88
	2365w	„	2-9-87
	3275w	„	10-12-86
	2382w	„	18-9-86
	509D	„	9-8-86
	508D	„	9-8-86
	381D	„	12-7-86
	[illegible]	„	[illegible]
	[illegible]	„	[illegible]

FURTHER PAPERS.

G.O.	No.	Department.	Date.
	2941w	Pwd	8-12-85
	2786w	„	21-11-85
	1823C	„	12-11-85
	2622w	„	5-11-85
	2313w	„	6-10-85
	2119w	„	10-9-85
	1375C	„	13-8-85
	1304w	„	5-6-85
	1302w	„	5-6-85
	1330w	„	8-6-85
	113E	„	13-5-85
	722w	„	23-3-85
	2599w	„	23-10-84
	2977w	„	20-10-83
	2576w	„	14-9-83
	433w	„	8-2-83
	2392w	„	15-9-82

No: 79 G.D.

From

J. C. Larminie Esquire, M.I.C.E.
Superintending Engineer
First Circle

To,

The Chief Engineer
Public Works Department
Madras.

Enclo. 1 tracing
(Sent by parcel post)

Station: Waltair 8th April 1897

Sir,

With reference to your memo No: 994C of 18-2-97, I now have the honor to submit a tracing from the Survey showing the exit from the Cocanada River, with the soundings and the Condition of the shoal for the six months October 1896 to March 1897 and to report as follows:—

2. By the end of January, the Southern Jetty had been raised above High Tide Level, along its whole length, to the end of the 400 feet Curve, the Curved extension to the north Jetty had also been formed, up to low tide

3. During February attempts were made by means of the two old bucket river Dredgers from Dowlaishweram, to open a passage through the bar which at that time consisted of a ridge of sand about 150 wide situated about half way between the ends of the jetties and the red and black buoys now marked on the tracing.

4. The weather was fresh and breezy nearly every afternoon, when a choppy sea got up and without a proper steam tug, the work was carried on under considerable difficulties. All that the bucket Dredgers could do was to clear out two narrow parallel channels (the Dredgers worked alongside each other). At very low tides also some excavation by manual labor was carried on.

5. Meantime, since the extension of the jetties, it had become apparent that powerful tidal currents were at work to and fro across the river mouth. to facilitate and induce some portion of these to enter between the jetties, the Southern jetty was extended another

N. C

19P

100 feet beyond the termination of the curve. This had some slight effect and served to indicate what might be expected were the gap in the Southern jetty closed, for through this still, the main body of the tidal flow found its ingress & egress to and from the river.

6. The Dredging on the bar merely served to show what might be attained by proper appliances and the weather having become still more unfavourable, they were sent back to Dowlaishweram and I then determined that at all hazards the gap should be closed.

7. Several members of the Port Conservancy Board were strongly opposed to this course being unwilling to risk a stoppage of communication with the shipping. ~~However~~, for even a brief period; however at a meeting of the Board held on the 27th February it was decided after some discussion that the gap might be closed as a tentative measure with bags of sand

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100 ft

No: C/66

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&c

No: C/61

(See this Office endorsement on the Proceedings No: 2545 C.D. dated 4.3.97). × N. 1811 C.8 [illegible] 97

8. In a subsequent meeting on 18 3/97 when neither the President nor myself ~~was~~ were present, it was resolved that on the slightest appearance of difficulty or delay to boats in getting over the bar, the gap should be again reopened! (presumably by the Board itself).

9. Between the 16th and 20th March the gap was closed and since then there has been a steady improvement. As was anticipated, the powerful tidal current which hitherto passed in and out of the gap now scours up and down between the jetties, one result being the diminution of the sand accretion which had formed along the north jetty, opposite the gap, while the increased depth in the channel across the bar, between the buoys, points to its effect in this direction. Furthermore the width of the bar has considerably decreased not being now more than 50 or 60 feet wide where the minimum

depth

depth at low tide as shown by the row of black figures on the tracing is 2¼ ft. (actual soundings at low water give a little more.)

10. Altogether, the results of closing the gap are most encouraging and as I had all along hoped for. The improved state of affairs is even admitted by the Port officer.

11. The sand bag Dam across the gap may collapse at any moment; It is sinking daily as sand escapes through decay of the bags; So, keeping in view all the foregoing conditions, I have given orders to proceed at once with the filling in of stone over the bags with a view to permanently closing the gap. The old circuitous channel from the gap is deteriorating, So, under all the circumstances of the case, I think, it would be folly to reopen it.

12. At the same time, it must be admitted that occasionally, there may arise difficulties in the navigation over the bar. A St

No. C/61

Cross current, from the north, sweeps across the opening between the jetties with the flood tide while the reverse takes place on the ebb. With the wind fresh anywhere between North-East & South-East a lumpy sea gets up which combined with the strong current renders the passage difficult considerably enhanced by the narrowness of the channel.

13. It has been suggested, that in accordance with the sanctioned Estimate the jetties should now be extended outwards so as to get out beyond the bar, which could then be easily dredged out. But I am quite satisfied that their present termination is as favourable as can be arranged and is particularly so in respect to the direction and set of the tidal currents on the bar. Were the jetties extended, this effect would be interfered with, while the formation of a new bar further out would inevitably result.

14. The balance of the estimate Rs 44200 is provided in this year's Budget. But if the foregoing view be accep only a small sum will be required. Another point for decision is whether the jetty should be left in its present rough unsectioned condition. The Estimate provides for building it to a uniform section and the cost of doing so will be 24527 cubic yards at anna Four = Rs 6132

15. In conclusion, I would again point out, that to maintain a really safe and satisfactory channel through the bar a sand pump dredger is essential. The coast line north of the jetties is slowly advancing eastward, a condition most likely to tend to the ~~essential~~ eventual growth of the bar, outside the present position of the buoys and further removed from the scour of the ebb tides.

I have the honour to be,
Sir,
Your most obedt Servt.

J. C. La
Superinte

No: C/6

Public Works (1897) Department.

13

CURRENT No. 2152

Order

Vide Cur 2153

From J.C. Lemmie Esqr. M.I.C.E.
Supdg Engineer
1st Circle

No. C/78

Dated 25. February 1897.
Received 1-3-97
Enclosures one
Spare copies

SUBJECT.

Closing the gap at Cocanada Bay. — Forwards Copy of his letter to Port officer at Cocanada explaining the necessity of ——

No. C/6

Public Works (1897) Department.

CURRENT No. 13 2152

Order

Vide Cur 2153

From J.C. Larminie Esqr. M.I.C.E.
Supdg Engineer
1st Circle

No. C/78

Dated 25. February 1897.
Received 1-3-97
Enclosures one
Spare copies

SUBJECT.

Closing the gap at Cocanada Bay. — Forwards Copy of his letter to Port officer at Cocanada explaining the necessity of ——

No: C/66

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

No: 1591. urgent. Port office Cocanada 25/2/97

1487

From G.W. Wicks Esqr.
Port officer, Cocanada

To J.C. Larminie Esqr. M.I.C.E.
Supdg Engineer 1st Circle.

Sir,

In reply to your letter No: C/54 of this date and just received by me, I have the honour to request that you will suspend the work of closing the gap until your letter can be placed before a meeting of the Board which I will call as soon as possible.

2. This matter, I consider, is of such vital interest to the trade of the Port that I hope you will take no immediate action to carry out your intention of closing the gap and that you will kindly stop the boats throwing in stone in the gap for the present.

I have etc
(Sd) W. Wicks.
Port officer.

'True copy'
Off. C

No: C/66

No: C/77 Camp Cocanada D 25/2/97.

~~15~~ 18 P

From

J.C. Larminie Esqr M.I.C.E.
Supg Engineer 1st Circle.

To

The Port officer
Cocanada.

Sir,

I have the honor to state in reply to your letter No: 1591 of To-day, that to give up the intention of closing the gap means to all intents and purposes the abandonment of a scheme in which so much money has been expended. The question is purely an Engineering one for which I am responsible. I must again repeat that until the gap is closed, no real progress can be made on the bar and if we are to wait until a perfect Channel, navigable at all states of the tide, is ready, before the Closure of the gap is started, it means post-poning indefinitely the improvement of the Port. If the gap cannot now be closed, dredging must cease as it is a waste of money trying it any further. As, however, the ch [illegible]

R.W. E.1/2152/97

at bar, I shall postpone further action, until next Wednesday to enable you to do so.

I have etc

(Sd): J C Larminie

Suptg Engr 1st Circle

No. C/78

Dated 25 / 2-97.
Despd 25 / 2-97.

Enc: 1.

Copy forwarded to the Chief Engr. P. W. Department for information in continuation of this office No: C/55 of to-day together with a Copy of letter No: 1591* of the same date to which it is a reply.

* From the Port officer Cocanada

J C Larminie
Suptg Engineer 1st Circle
15/1

No. C/1

Public Works (1897) Department.

CURRENT No. 2153
11

vide Cu 2152

Order

From J C Larminie Esqr M.I.C.E.
Superintending Engineer
First Circle

No. C/55.

Dated 25th February 1897
Received 1-3-97
Enclosures
Spare copies

SUBJECT.

Closing the gap in the South Jetty wall at Cocanada — Forwards Copy of his letter to the Port officer, Cocanada intimating the date on which he intends to begin —

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

N. C

S. E. I. / 5 500—29-2-96.

No. C/54 120

From

J. C. Lamminie Esq M. I. C. E.
Superintending Engineer,
First Circle.

Enclosures.

To

The Port officer
Cocanada

~~Waltair,~~ Camp ~~Dowlaishweram~~ Cocanada 25th 2 ~~8x~~ 1897.

Sir,

I have the honour to inform you that on the next day ~~inst~~, I intend to begin closing the gap in the South jetty wall, through which cargo boats etc now pass out from Cocanada River into the Bay.

2. I am aware that this procedure is somewhat opposed both to your own and the opinions of some of the merchants, on the subject. But, responsible as I am for the success of a scheme on which Government have expended so much money, I can defer the closure no longer.

3. Until this gap is closed no material result can be expected from the extension of the Southern Jetty.

4. As you are well aware, the channel from the gap into the Bay is threatened by the advance southwards of the Sand Shoal, so that the necessity for the provision of another exit be-

5. There is no other alternative but the passage across the bar and any further delay will only accentuate the difficulty and expense of Clearing it (the [illegible] bar)

6. I do not anticipate that the Closing of the gap will cause any very serious inconvenience to shipping operations. Even now boats have often to wait for a rise of tide before Coming into the River through the gap. When it is Closed and for some little time after, at all events, arrangements must be made not to despatch boats over the bar within a certain period, before low water and after the turn of the tide. This period probably will be four hours before Low water & two hours after turn of the tide, for boats drawing $4\frac{1}{2}$ feet of water.

7. Under these circumstances, I have the honour to request you to be good enough to intimate to the Boat owners generally the Closure of the gap with any other instructions to them you may consider necessary. For some little time after Closure of the gap the lodging of the boats should be done with management

I have the honor to be etc etc

Sd J C Larminie

Supdg Engineer 1st Circle

No. C/55

Copy forwarded to the Chief Engineer, P.W.D. for information

J C Larminie

Supt. [illegible] Circle

[illegible] 25 2·1897.

No: C/66

Public Works (1897) Department.

CURRENT No. 2181

3187 W 7 11 96

7

Order

From J C Larminie Esqr. MICE
Supdg Engr 1st Circle

No. C/66

Dated 15 February 1897.

Received Dowl. 24th 3 97

Enclosures 1 Tracing.

Spare copies

SUBJECT.

Cocanada Bay — Submits a report on a note by Mr J R Bell regarding the possibility of preventing further ingress of Godavari silt into —

No: C/66

From

J. C. Larminie Esquire M.I.C.E.
Superintending Engineer 1st Circle

To

The Chief Engineer
Public Works Department.

Enc: 1 Tracing

Camp ~~Dowlaishweram~~ Cocanada D 15 2/97
Despd 24 2/97

Sir,

In reference to G.O. No: 3187W of 7th November 1896 directing me to report on a note by Mr. J. R. Bell regarding the possibility of preventing further ingress of Godavary silt into Cocanada Bay I have the honor to submit the following observations, having delayed doing so, until other engagements permitted of my making an inspection of the River outlets in question.

2. Even were such a scheme practicable, at a moderate expenditure, it would be quite unnecessary, for, it has apparently

apparently escaped Mr. Bell's notice, that all the trouble at Cocanada is due not to the advance of Godavary mud from the South, but to the travel of sand along the beach from the North due to the strong littoral current.

3. The view expressed in para 10 of Mr. Bell's note is quite contrary to observed facts. With the extension of the Northern Jetty, the Coast line for some little distance to the north of it, has advanced owing to the accretion of sand deposited by the aforesaid littoral current. This advance has continued until it has, as described by Mr. Bell in his 10th para "enfolded the mouth of the canalized river"; but with this difference that instead of being caused by mud from the South, all the damage has been caused by the travel of sand from the north!

4. Under these circumstances it seems almost superfluous to discuss the question of the exclusion of silt any further. But as the formation of Godavary Point and the extensive Deltaic

tracts

tracts around Hope Island, are entirely due to silt deposited by the Godavary in the course of the last fifty five years (they were in embryo in 1842 when the survey for the Atlas sheets was made) a few remarks in this connection may not be out of place.

5. As far as I can judge from observation and the available Marine Surveys, the deposit of Godavary silt has now reached its extreme northly limit and a change has set× in

× In fact, has been in progress for some years.

6. I would here invite a re-perusal of paras 17, 18, 19 & 20 of my report printed with G.O. No. 2445 W of 24.8.96. Paras 19 and 20 read as follows:—

" The charts show that as Point
" Godavary extended Northwards,
" so the Bay to the west and South-
" -west of it, scoured out. From
" 1875 to 1882, the change is
" marked, from 1882 to 1891, there

is

" is further improvement and par-
-ticularly in the direction which
" affects the mouth of the Coca-
"-nada River, i.e. the advance
" towards it of the one fathom
" Contour"

Para 20" In 1875, the nearest point of
"this Contour was fully two miles
"from the river mouth. In 1891, the
"distance had decreased to
"something over a mile. The Southern
"part of the Bay which in 1875 ex-
"-posed extensive mud flats at
"low tide, is now a sheet of water
" of from 1 to 2 feet in depth". In
Para 23 of the above mentioned report the trifling advance of Point Godavary between the years 1882 to 1891 is alluded to.

7. All these considerations indicate, in my opinion, the inexpediency of undertaking a costly work to prevent what nature herself is now striving for and has already in a great

measure

measure attained.

8. The whole tendency of the Godavary during recent years has been to reverse it's former action, the principal opening being now to the South (instead of as formerly to the north into Cocanada Bay) through the Channels marked A on the accompanying tracing from the Marine Survey of 1891.

9. A Comparison of this wi the old Atlas sheets of 1842, will show how the southern branches marked B. C. D have opened out thereby causing the growth of the Sacramento Shoal.

10. This opening out is no doubt due to the shoaling up of the northern branches at their entrance into Cocanada Bay and consequent inability to afford a free discharge to flood water and this change

of

of regime, in itself reduces to a minimum, the amount of silt now brought into the Bay, a quantity which, in recent years has done no appreciable harm.

11. It seems unnecessary to discuss the difficulty and expense which would be involved in the construction of an embankment like that advocated by Mr Bell across the low lying mud flats and a wide & deep (where the bank would cross) branch of the River. Considerable inconvenience to trade would also be caused by the closure of the Coringa River, in which the French Settlement of Yanam has vested interests.

I have the honor to be
Sir,
Your Most obedt Servt

J. C. Laminie
Superintending Engineer
1st Circle

CS
17-2-97.

24/2/97

Public Works (1897) Department.

CURRENT No. 390

4

Order

From J. C. Laminie Esqr. M. I. C. E.
Superintending Engineer
1st Circle

No. C/5

Dated 8. January 1897
Received 13.1.97
Enclosures nil
Spare copies

SUBJECT.

The clearance of a Channel through the Sand bar at the mouth of the Cocanada River — informs that in his opinion a Sand Pump Dredger is the integral part of the scheme of —

CN 1925/5

15 Jan 97

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

No: $\frac{C}{5}$.

5 P

From

J.C. Larminie Esquire M.I.C.E.
Superintending Engineer 1st Circle

To

The Chief Engineer
Public Works Department

Camp Gopaulpore Dated 8 Jany 97
Despd 8.

Sir,

In reply to your memo No: 2C of the 2nd Instant, I have the honor to state that I do not see how I can offer a more definite opinion regarding the clearance of a channel through the sand bar at the mouth of the Cocanada River than that already given throughout the Correspondence on the subject; para 4 of my letter No: $\overset{\times\, GO}{\frac{1955}{17.12.96}}$ specifies the various references on the subject, winding up with my letter No: $\frac{{}^{\otimes}C}{247}$ of $21\frac{10}{96}$, submitting the Jetty estimates for sanction.

× N. 2 C of 2.1.97

⊗ Go. N. 3357 W 23.11.96

2. That the necessity for the provision of a sand pump Dredger had, up to date of your memo no: 4552 C of $2\frac{12}{96}$, been contemplated and as I understood tacidly admitted, appears from the following references

eferences on the subject. Para 18 of your note printed with G.O. no. 2445 of 24 8/96; clause 4 para 19 of the same note, resulting in the orders passed in G.O. no. 2805 of 30 9/96 directing me to submit an Indent for a sand Pump Dredger and your Subsequent telegram of 24 10/96 to hasten despatch of the same.

Vide 3018 W 26 10/96 with A L 0.251

3. From these, I inferred that all difficulties were now at an end and looked on the future efficiency of the Port as quite an assured fact, while in Cocanada the apparently near realization of so long felt a want was regarded quite as a matter for Congratulation.

4. With reference to para 2 of Your Memo under reply, I would invite a perusal of paras 8, 9 and 10 of my report, printed with G.O no. 2445 W of 24 8/96. From these three paras alone, it would appear that (in the opinion of the writer) a dredger was an integral part of the Scheme.

5. Your own opinion of the "WEnlock" is stated in para 18 of your note printed with the same G.O

6. With reference to your para 4, I would observe that there will be any time before the Completion of the Jetties, in which to procure the Dredger. Stone is being deposited as quickly as possible, but it will take some time yet to complete the total supply even at the rate of 3000 cubic yards per month, (Estimated quantity 28,000 cubic yards.) and time must be allowed for it to settle before any attempt is made to build or section it.

7. So soon as stone has been deposited all along the line of the wall to above half tide level, I then intend making an attempt to clear the highest part of the shoal by manual labor.

8. Could a channel giving a depth of six feet at even half tide be opened out, I believe the merchants would offer no great objection to the closing of gap at in the South jetty. Until this is done no particular result can be expected from the work and it was with this object in view, that all along, I have so strenuously advocated the provision of suitable dredging plant.

I have the honor to be
Sir
Your Most obedt Servt

Superintending Engr