M.R.O. 14—13,000—27-9-24

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No. 2682 Press Mis.

223-224

Dated 13 — 11 — 1867.

Not to be folded or roughly handled

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Proceedings of the Madras Government, Revenue Department,
13th November 1867.

No. 223. Read the following Proceedings of the Madras Government in the Public Works Department :—

Referring, for consideration, the proposal of the Superintending Engineer, 6th Division, relative to an advance from Local Funds for the canal from Negapatam to Vedarniem to be repaid in 1868-69 from the Imperial Budget of that year. } (Here enter 8th November 1867, No. 3,471.)

No. 224. ORDER THEREON, 13th November 1867, No. 2,632.

Separate Revenue, No. 16.
Salt.

Referred to the Board of Revenue for early report, after communication with the Collector, as to the proposed advance from Local Funds.

(True Extract.)

(Signed) W. HUDLESTON,
Secretary to Government.

To the Board of Revenue, with Proceedings Public Works Department, No. 3,471.

Exd. S. T. Augustin.

Read the following :—

No. 179. From the Superintending Engineer, 6th Division, to the Secretary to Government, Department Public Works, dated Tanjore, 15th October 1867, No. 1,050 :—

1. I have the honor to inform you that the canal from Negapatam to Vedarnium was opened for traffic last week, the excavation having been completed to the depth and according to the section provided for in the original estimate of Rupees 64,000. Some of the masonry works and portions of the catch-drains are still unfinished, but their completion will not interfere with the navigation in the canal.

G. O. No. 3,101, 19th October, 1865.

2. Immediately on resuming charge of the Division in July, I perused the Range Officer's Reports upon the work executed, and on finding that nothing had been done to the portions of the canal* from the Salt pans to the Adapaur, and† from the Velliyaur to the head of the Ramanaden channel, I directed that they should be cleared; and owing to the heavy rain which has fallen near the coast, and to the difficulty in procuring labor at this season of the year, great difficulty has been experienced in carrying out the work. The Tahsildar of Negapatam afforded most material assistance in procuring labor for the junction canal, and without his aid the canal could not possibly have been opened this season.

* L. to M.
† E. to F.
Vide Plan sent in September 1865, Letter No. 960.

3. Early in August I made a most careful examination of the canal, and I found that while the excavation provided for in the original estimate had been completed with a few trifling exceptions, (and these were completed by my return later in the month,) the junction canal was silted up nearly to the level of low water mark, and the canal south of the Adapaur was silted from $1\frac{1}{2}$ feet to $2\frac{1}{2}$ feet. Both these portions of canal terminated in a *cul-de-sac*, the former will no longer do so. The silting of the latter is due rather to the washing in of the sides of the canal than to the deposit of silt brought down in suspension by the waters of the Adapaur, which it meets about three-quarters of a mile from the mouth of the river.

Rupees 64,000.
W. to Y.

E. to F.

M.	F.	Yds.
1	5	100

L. to M.

M.	F.	Yds.
3	4	44

4. It is clear that the completion of the rest of the canal, while the condition of the two portions adverted to above was as described, would not render navigation possible, and hence the necessity for the immediate completion of those portions, to say nothing of the desirability of having the whole line open before the north-east monsoon set in, in order that we might observe the effects of the monsoon, and might be able to judge what further improvement might be required early in 1868 after the canal with its present width had been tried.

5. From my observations of the various portions of the canal, I have come to the conclusion that the slope of two to one given to the sides of the artificial connecting links is insufficient; the slopes of two to one to the sides in the upper portion

of the Ramanaden channel will also probably prove to be insufficient, especially if the canal is not widened.

6. As far as could be judged from the portions of canal excavated in 1863-64, slopes will have to be given to the sides of the canal as follows:—

From Cuddavyaur to Velliyaur	6,250 yards,	4 to 1
In Junction Canal	2,960 „	3 to 1
In Canal, south of Adapaur ...	6,160 „	6 to 1

and, in my opinion, the breadth of the canal at bottom should be widened from 10 to 20 feet, and from the enclosed memorandum it will be observed that the approximate cost of these alterations will be Rupees 41,250, of which Rupees 12,500 are available from the balance of the original estimate, and a further sum of Rupees 28,750 will be required.

7. Estimates for these works will not be prepared till the effects of the north-east monsoon can be observed, but in order that the canal may be as little liable to be filled as possible by the falling in of the side slopes, I have directed that the upper portions of the side slopes, where the cutting is deepest and the soil is worst, shall be at once provided with what appears to be the natural slope.

8. The value of work carried out up to date, as far as it can be estimated, is Rupees 53,208, this includes the sums expended upon clearing the Junction* canal and that† from Topterray to Vedarnium, neither of which found a place in the original estimate. It also includes approximately the value of work executed by the Tahsildar of Tritrapundi who, though repeatedly asked to submit a list of the coolies he employed, has not done so up to date. This list has been called for because the Tahsildar is not satisfied with the rate at which the work in the Negapatam talook has been paid for, and which I regard as ample; but some allowance should be made for coolies who were assembled in May, and who after working for a few days were dispersed by a heavy fall of rain.

* Rupees 1,413.
† „ 2,328.

9. The value of work remaining to complete the original project, with such modifications as have been subsequently made, is Rupees 4,702, leaving a balance of Rupees 12,500, which will more than cover the rectification of the slopes which I have accordingly directed shall be undertaken at once, and I have appointed a Maistry on Rupees 25 per mensem to superintend the works on the canal and to remove shoals, &c., as they may form, his salary and that of any fixed establishment which may be found necessary will be charged to the estimate in progress during the current year, but for the permanent establishment required next year a sum of Rupees 10,000 has been provided in the Budget of 1868-69. It is not possible to furnish details of the probable charges in 1868-69 at present, and I shall be in a position to do so only after the effects of the north-east monsoon have been observed.

Expenditure in 1866-67...	Rs.	15,719 5 11	
Allotment in Budget 1867-68	„	30,000 0 0	
Do. in G. O. No. 2,894 of 11th September ...	„	1,370 11 9	
		47,090 1 8	

10. The value of work executed up to date is, as observed above, Rupees 53,208, this exceeds the allotment for the work by Rupees 6,117-14-4, and if further funds cannot be provided for the work,

Proceedings of the Madras Government, Public Works Department,
8th November 1867.

it is proposed to borrow any balance which may be required from Local Funds, and the sum borrowed may be repaid in 1868-69, provision being made for it in the Budget for that year. The Collector has recommended* this arrangement, and if approved by Government I would suggest that Rupees 23,319-14-4, or the balance of the original estimate, should at once be placed at my disposal from Local Funds.

* No. 216, 11th July 1867.

Estimate	...Rupees	70,410 0 0	
Allotted	.. „	47,090 1 8	
		23,319 14 4	

11. I regret to report that on the occurrence of the first flood in the Chendranuddi, on the 8th ultimo, the syphon sluices for the Keelapadugai and Karapadugai channels burst; these sluices were not used last season, and the alterations sanctioned in G. O. No. 1,051, 20th April 1865, still left a considerable upward thrust unbalanced. The head of water was somewhat under-estimated by Colonel Greenaway at 10 feet, in high floods it will be 12½ feet. The section of the work forwarded by the Range Officer appears to be inaccurate, and on receiving his reply I shall be able to report more in detail on the subject.

12. These tunnels cannot be altered, as the syphon sluice for the Chendranuddi has been altered. I would not propose to re-build them, but would supply the lands dependent upon them by building a small dam across the Chendranuddi, east of the canal, by which the Karapadugai and Keelapadugai lands may be commanded, this will render the construction of a tunnel under the road necessary, and also the raising of the calingulah lately built for the passage of the surplus waters of the Chendranuddi. The details of these works will be considered, and the estimates prepared as soon as some levels can be taken, but the cost of the masonry works required may be set down roughly at Rupees 1,750. Temporary arrangements have been made for the supply of the Karapadugai and Keelapadugai lands during the current year.

G. O. No. 2,736, 20th August 1866.

* the

13. I will now make a few brief observations on the report embodied in G. O. No. 1,846. Paragraphs 1, 2, and 3 require no comment, as they merely contain information which had previously been laid before Government. The difference of level in the surface of tidal water at one and a half and three miles from the sea in the Velliyaur and Cuddaviyaur would not be more than 3 inches, and the waters of these streams will therefore meet somewhat nearer the Velliyaur extremity of the canal, than they would do were the canal to connect the streams at points equi-distant from the sea; during the occurrence of inland floods the difference of level will probably be less, for the floods in the Velliyaur are higher than in the Cuddaviyaur.

20th June 1867.

Paragraph 4.

14. With regard to the drainage stream adverted to in paragraph 4 and in the postscript, I have to remark that the channel was formerly connected with the Velliyaur by the Velliyaur Calagum, and the drainage of the land was affected rather by its meeting with the Velliyaur waters than by the advantage supposed to be

gained by the connection of a small channel between the Velliyaur Calagum and the Cuddaviyaur just above its mouth, practically the drainage will not be affected by the canals receiving it.

15. The cut below which it is proposed to take the canal is A. B., which was the original line proposed for the canal, and which was rejected for reasons stated in letter No. 960, taking the canal east of that cut would be taking it for a considerable distance through pure sand, or through a soft soil much mixed with salt, the natural slope of which is about 6 to 1.

G. O. No. 3,101, 19th October 1865.

16. Had it been possible to avoid the surplus without otherwise injuring the canal, this would have been done. It must not be forgotten that this surplus is merely a drainage stream from irrigated lands, and not a branch from a main irrigating channel, and comparatively little deposit is brought down by such streams, as the greater bulk of deposit is retained, and the water runs from off the fields comparatively clear.

17. There is no doubt that the diversion of the Coopien Voikal into the Paupan Voikal will prevent some silt from finding its way into the canal, and it was intended to divert this channel into the Paupan Voikal, and to place a dam across the latter just above its junction with the Ramanaden channel to irrigate the large tract of country to the west of the canal, but this forms a part of an irrigation project, and has no direct connection with the canal works, and certain lines of levels must be taken before the project can be matured. The formation of this dam will obviate the necessity of deepening the Paupan Voikal: the Kodichoottiyaur is merely a continuation of the Paupan Voikal, the name changes where the Cheekilian Voikal joins it about three miles above the point at which it falls into the Adapaur, the stream is a broad one, and required but little clearing, and it would be well to allow nature to rectify the small additional slope which we have given the lower three miles than to clear the Cheekilian Voikal for a considerable distance above its junction with the canal; it is probable, moreover, that much of the deposit will be carried down to the Adapaur in suspension, but it was to admit of clearing in such places till nature had rectified the slope, that I stated that an annual outlay of Rupees 10,000 would probably be required to maintain the canal, and that the sum might eventually be somewhat reduced. The drainage into the canal on the eastern side is very small, and provision has been made for its entering the canal by a sluice on a high level: the deposit brought down into the canal through it will be very trifling indeed.

Paragraph 5.

Paragraph 6.

18. With regard to the formation of reservoirs for the purpose of scouring the canal, I would observe that the idea is by no means a novel one in this district. It was proposed by the Committee, appointed by Government in June 1860, to improve the river at Negapatam by forming a reservoir on the low ground south-west of the port; here the reservoir would have been within quarter of a mile of the sea, and the full benefit of the 1½ or 2 feet* rise of tide would have been obtained. This would not be the case with regard to reservoirs formed some distance from the coast, and at the site pointed out to me, as one proposed by Colonel O'Connell for a reservoir, the difference of high and low water as a maximum is only 9 inches, and this is only three miles above the point of junction with the Adapaur at Cullimode. Any reservoirs formed along the artificial portions of the canal would be similarly unfavorably situated.

G. O. No. 1,167.

Paragraph 21.

* Spring tides.

19. On a coast on which the rise and fall of tide is so small as from 1½ to 2 feet, the formation of a larger tidal basin, by widening existing channels, would probably be far more effective than the formation of reservoirs; and, in the case in point, would answer the double purpose of increasing the tidal basin and of rendering the canal available for larger boats than can now ply upon it.

20. With a rise of tide of only 1½ or 2 feet, it appears to me that the condition of the Adapaur is due rather to the effect of the large volume of water brought down during the north-east monsoon, or when the rivers are in flood, than to the action of the tidal waters, and any deductions drawn from the condition of the Adapaur are inapplicable to a small stream like the canal, even were the data more accurate than in the case in point. I do not think it necessary, therefore, to follow Colonel O'Connell through his calculations, the more so as it will shortly be possible to judge with accuracy what the canal is likely to require, and what head we are likely to be able to obtain at any point between the Velliyaur and Adapaur, should it be found necessary eventually to form a reservoir for the scour of the canal between those rivers.

21. The only point at which I think a reservoir may perhaps be required is at Vedarnium, where the canal forms a *cul-de-sac*, here the rise and fall of tide varies from 1¼ feet to 1¾ feet, and the reservoir will be only four miles from the coast, and the canal enters the Adapaur only about three-quarters of a mile from the river's mouth.

22. For the eventual improvement of the canal, north of the Velliyaur, I have it in contemplation to divert the Velliyaur, or at least a portion of its waters, through the portion of the canal which now connects the Velliyaur and Cuddaviyaur straight cut. If the north-east monsoon is a heavy one, it is quite possible that this portion of the canal may be very considerably enlarged, as the original straight cut of the Cuddaviyaur has been, and if so, the diversion of the waters of the Velliyaur through the canal will not only improve the canal, but will also improve the Cuddaviyaur mouth at Negapatam; that Colonel Lawford purposed thus to connect the Velliyaur and Cuddaviyaur is clear from paragraph 13 of his Report, embodied in G. O. No. 1,019 of 16th May 1860, and it was also recommended in the Committee's Report adverted to above.

Paragraph 25.

23. Though in the enclosed memorandum an item of Rupees 5,750 is entered for the construction of a bridge across the canal between the Velliyaur and Cuddaviyaur, I think it would be well to postpone the construction of a permanent bridge till the question regarding the diversion of the Velliyaur can be decided upon, and in the meantime a temporary wooden bridge might be constructed to

admit of the work-people and cattle passing to the lands on the east of the canal from the village, the communication from which, either to the village lands or to the main road, is cut off by the canal, which during the monsoon or at high water would not be fordable to women and children.

No. 36.

24. Mr. Overseer Donaghue's services were required to superintend the excavation of the junction canal, and he has not therefore been employed on the survey and levels proposed by Colonel O'Connell. In connection with the Karapadugai supply project, adverted to in paragraph 17, some levels must be taken, and though Mr. Donaghue's services are not available, I will endeavour to procure the services of a competent person, and request that a sum of Rupees 288 may be placed at my disposal for the purpose in lieu of the establishment sanctioned in G. O. No. 2,177, dated 20th July.

No. 180. ORDER THEREON, 8th November 1867, No. 3,471.

CIVIL WORKS, No. 21.

1. The Government are glad to learn from this report that the canal from Negapatam to Vedarniem has been opened for traffic.

2. It is observed that the value of work executed up to date is Rs. 53,208, and that a sum of Rupees 4,702 being required to complete the works provided for in the sanctioned estimates of Rupees 70,410, there is a balance of Rupees 12,500.

		RS.
Estimates		70,410
Value of work done ...	Rs. 53,208	
Do. remaining to be done ,,	4,702	
		57,910
Balance ...		12,500

3. From his observation of the various portions of the canal, Captain Oakes is of opinion that the slope of 2 to 1 given to the sides of the artificial connecting links is insufficient. He proposes to allow a slope of 4 to 1 for the portion from the Cuddavyaur to the Velliyaur, of 3 to 1 for the Junction Canal, and of 6 to 1 for the canal south of the Adapaur; and he further recommends that the bottom width of the canal should be increased from 10 to 20 feet. He computes the cost of these works approximately at Rupees 41,250, which includes Rupees 1,750 for certain masonry works which it is proposed to build owing to the bursting of the syphon sluices for the Keelapadugai and Karapadugai channels, and Rupees 5,750 for a bridge across the canal between the Velliyaur and Cuddavyaur.

4. To meet the cost of these works, a sum of Rupees 12,500 is available, as shown above, from the original estimate for the project, and as that amount will more than suffice to cover the cost of rectifying the slopes, Captain Oakes has ordered the work to be proceeded with, more especially as it is desirable to prevent, as much as possible, the canal being filled by the washing in of the sides.

5. As regards the funds required for the work during the current year, Captain Oakes, with the concurrence of the Collector, proposes that the amount* should be advanced from Local Funds and repaid in 1868-69, from provision to be made for it in the Imperial Budget of 1868-69. This question will be considered in the Revenue Department.

		A.	P.	RS.
Estimate				70,410
Expenditure in 1866-67	15,719	5	11	
Allotment in Budget of 1867-68	30,000	0	0	
Do. in G. O. No 2,804 of 11th Sept., after deducting Rs. 160 diverted in G. O. No. 3,320 of 25th October 1867.	1,210	11	9	
				46,930
				23,480

6. Deducting Rupees 12,500 from the approximate estimate of Rs. 41,250 referred to above, the probable cost of the works provided for in that estimate will be Rupees 28,750, which the Government sanction for entry in the Budget of 1868-69. Detailed estimates for these works should be prepared and submitted in due course, and particulars of the charges for establishments alluded to in paragraph 9 should also be furnished as soon as the Superintending Engineer may be in a position to give them.

7. The failure of the syphon sluices for the Keelapadugai and Karapadugai channels is believed to be owing to the head of water having been under-estimated. The Government will expect to receive a report more in detail upon this subject and upon the future arrangements for the supply of the lands under those channels.

8. The Government agree with the Superintending Engineer in his observations regarding the reservoirs which Colonel O'Connell, when in temporary charge of the division, proposed to form for securing the scouring of the bed of the canal, and they leave it to Captain Oakes to determine the measures which may appear best adapted to effect that object.

9. The proposal in paragraph 23 is approved.

10. Captain Oakes will be requested to furnish particulars of the sum of Rupees 288 which in paragraph 24 he asks to be placed at his disposal.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 6th Division.
,, Revenue Department.
,, Controller of Public Works Accounts.
,, Accountant General.

Exd. S. T. Augustin.

Revenue 1867 & Rest.
Irrigation &c. Canals
No. 3085.

Proceedings of the
Govt. of Bombay.

Dated 8th
Received 12th } 3 hours
1867.

No. 3475.

From the Secretary
to Govt.

No. 3338.
of 7 Dec. 67

Referring for consideration
the proposal of the Supt.
Engineer, 4th Division, re-
lative to an advance from
Local Funds for the Canal
from Nagapatam to Vedar-
niam to be repaid in 1868/69
from the Imperial Bud-
get of that year.

No. 2082. 18th Nov.
With order

No. 222 of 224