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MADRAS RECORD OFFICE

Government of Madras

Public works. DEPARTMENT

G.O. No.	664-65(D)	Press
~~B.P. No.~~		~~Mis.~~
2825 284		
Dated	12-3-1844	~~195~~

Not to be folded or roughly handled

Read the following papers :—

No. 83A.

No. 282. *Note by the Chief Engineer for Irrigation.*

At the time of the approval of the completion estimates for the Eastern Delta of the Godavery, the Bank Canal estimate was ordered to be revised, and subsequently, when I visited the delta, the arrangements to be carried out were determined. Afterwards Major Oakes, when Acting Chief Engineer for Irrigation, discussed the subject with Lieut.-Colonel Fischer, and came to the conclusion that in certain respects the latter officer's propositions were preferable to mine, first, with respect to the diversion of the line of navigation in the upper part from the canal to the weir channel, and, secondly, as regards the connection of this line of navigation with the Takee Drain, *via* the Ingeram Canal, rather than directly with the Coringa River, which latter arrangement I had considered to be the proper one.

G. O., No. 2,335, dated 28th September 1870.

G. O., 18th April 1871, No. 1,077, memorandum, paragraph 20.

G. O. 26th July 1872, No. 1,786. Note paragraphs 32 to 36.

2nd to 5th miles.

2. With his letter No. 1,168 of the 10th March 1873, the District Engineer submitted a revised project for this canal. As pointed out at the time the estimate submitted in 1870 provided for improvements down to the 30th mile only, and the estimates of that year and those of 1873 to the same point are as follow :—

	1870.	1873.
	Rs.	Rs.
Earthworks	1,17,790	1,07,800
Lock at 9th mile	20,640	17,500
Do. Sluice	9,160	...
Do. Weir	...	5,800
Do. 16th mile	20,520	18,000
Do. Weir	4,620	3,900
Do. at 22nd mile, Kula	23,600	...
Do. Weir	4,360	...
Do. at 21st mile	...	22,000
Do. Weir	...	4,600
Weir at head of Dungaru Drain	2,260	2,700
15 miles of Minor Channels	6,600	7,500
6 Distribution Sluices	3,000	...
8 Do. do.	...	5,600
Total...	2,14,900	1,96,000

To improve the canal beyond the 30th mile, and extend the navigation down to the end, the District Engineer also estimated for the following works :—

	Rs.
Lock at 30th mile	19,200
Surplus Weir at 36½ mile	3,200
Altering Yanam Calingulah	1,000
Earthworks	10,700
Total...	34,100

Rupees 6,220 for land compensation require to be added.

Thus making the total of the revised estimates Rupees 2,30,100.

3. As the works already sanctioned for the delta were at the time fully sufficient to occupy both the superintendence and the labour available, the detailed consideration of the estimates was postponed until my visit to the delta towards the end of the year, and I then went through them, and discussed the arrangements with the District Engineer and the Range Officer.

4. With regard to the proposals for the upper part of this canal, I may remark that further inquiry has not convinced me that any material advantage will result from the adoption of the calingulah channel for the line of navigation, but, on the other hand, there is no sufficient objection to it to make it worthwhile to say more about it, beyond explaining that Major Oakes assumed that the inconvenience which had been experienced from the silting of the present line had been provided against by arranging for the maintenance of the same velocity in this as in the calingulah channel, and that consequently this principal objection to keeping the navigation on the original line would have been avoided. I found that the new line had not been surveyed, and as, on going over the ground, it was evident that at least near the village of Kadiyapalunka the calingulah channel would not do for an important line of navigation, the District Engineer was asked to have a survey made, and upon it have been shown two suggested cuts in yellow dotted lines, the one for conducting the canal back into the old line at about a mile above the present Kadiyapalunka lock, and the other for a straight cut opposite the village. Neither of these lines as laid out would do, the lower ends of the cuts not entering the channels below in a proper direction. As the Bank Canal in the neighbourhood of the upper cut is at a sufficient distance from the river, I propose to make the junction here on a proper curve, and the District Engineer will be requested to make a detailed estimate for the arrangement shown, he having as yet only reported that an addition of Rupees 5,000 to his estimates will be needed for either of the cuts he has shown, and work cannot be carried out without ascertaining exactly what has to be done. Again, the head of the Bank Canal above the limits of this survey has to be properly laid out, and the survey must consequently be extended in that direction, the centre line marked, and the cross-sections taken or revised. It is so much easier to do things of this sort completely in the first instance, that it is to be regretted that this part of the estimate should have been submitted in an imperfect shape.

5. On examining the longitudinal section a small, but not unimportant, error in the level of the bed and water surface at the off-take from the main canal was discovered, and this has now been rectified. The abolition of the Kadiyapalunka lock, and the substitution of a lock at 9 miles, or at about the same distance from the head-sluice* on this canal as is the first lock on the Cocanada Canal, will certainly be an improvement, and will tend to facilitate the proper regulation of the water supply. Down to this first lock the bottom width of canal will be 95 feet, the depth 8 feet, and the surface fall 3·6 inches a mile. The velocity will be 1·57 feet a second, or 128 yards in excess of 1 mile an hour. Beyond this, to the head of the Coringa canal, the same depth and surface fall are retained, and the bottom width

* Of Main Canal.

Discharge 1,316 78 cubic feet a second.

will be reduced to 83 feet, which will give a discharge of 1,185·6 cubic feet a second, that required being 1,182, cubic feet. Below this point to the Cowlaishweram lock, in the 16th mile, the surface fall remains the same, but the bottom width is reduced to 35·5 feet, and the depth to 7 feet, the resulting discharge being 450·73 cubic feet a second, against 442 cubic feet the calculated requirements.

6. The arrangements of this part of the Bank Canal have had to be made to suit the Coringa Canal, the first lock on which latter is at a short distance below its head, and is to be retained; it being of much importance that the 9th mile lock on the Bank Canal and its weir should be completed as soon as possible, in order that the sanctioned works in connection with the Coringa Canal may be constructed at their proper levels, and that surplus may be passed into the Takee Drain, I have authorized the District Engineer to collect materials for these works in anticipation of the sanction of the estimates, as these, if work is to be carried out this season, must be transported by boats before the canals are closed, and I would recommend that the construction of this lock, as also of the 16th mile lock, should be sanctioned at once, so that the navigation, so far on the Bank Canal, and by the Coringa Canal, may be made available at an early date.

7. Before passing on to the lower reaches of the Bank Canal a few remarks on the masonry works of the first two reaches are necessary.

Those of the first reach are the 9th mile lock and its weir. Much inconvenience having been experienced from the want of sufficient headway under the tail bay bridges of some of the recently constructed locks, and nothing more than small accommodation bridges being needed for the locks on the Bank Canal, light girder bridges have been substituted for arches, and the headway has been increased from the minimum of 9½ feet, prescribed in the Circular as per margin, to 12 feet. The only alterations needed in the plan of the lock as submitted are, the substitution of rack and pinion gearing or levers for the screw gearing of the culvert gates, and a diminution of the thickness of the bridge abutments above the level of the lock side walls. Screws, as was long since pointed out, are too slow, and are therefore inappropriate; and where, contrary to instructions, they have been recently fitted to locks, they will have to be removed. The approaches to these bridges need not generally be flatter than 1 in 6.

No. 14.

The actual discharge over the weir required for irrigation is 1,182 cubic feet a second, but in order to allow for water which may hereafter be carried across to Coringa Island 84 cubic feet a second have been added, and the lock weir has been designed to pass 1,266 cubic feet a second, with the water in the two reaches at the normal level of 33·5 and 30·5 respectively.

In the second reach the masonry works are the lock at the 16th mile and its weir. The screw gearing of the lock culvert gates should be superseded by rack and pinion gearing or levers, and the bridge abutments should be altered to save useless masonry.

The discharge at the lock weir will be 426 cubic feet a second, and for this the two bays of 10 feet each of the design will suffice, the crest being placed at 3·5 feet below full supply level in the upper reach. By mistake the crest of the cushion wall has been shown at 19 5 instead of 18·5, its proper level.

8. Provision has been made for a surplus weir into the Takee Drain in connection with the Alamur Lock Weir on the Coringa Canal, and this will usually

			Rs.
Distribution	Earthwork		7,500
	Masonry...		5,600
			2,20,700
Land compensation omitted by District Engineer... ...		6,220	
Add for improving the head and the present Calingulah Channel		6,280	
			12,500
		Total...	2,33,200

16. It should be mentioned that, in laying out the canal, consideration should be given to the state of the river, so as to avoid the probability of any part of the line being endangered by erosions, which elsewhere have led to the not infrequent transference of bank canals to positions more inland. The lower end of the canal should also be arranged so as to enable the short extension to the Coringa River to be carried out without difficulty, should that hereafter be deemed advisable. This extension could, if necessary, be aligned clear of French territory, but it is probable that no objection would be made by the French Authorities to the canal being taken close to Yanam, as advantage would doubtless accrue to the town from having water communication with all parts of the delta brought near to it.

17. The Budget grant for the Eastern Delta will suffice to provide funds for the locks and lock weirs, which I have suggested should be constructed at once, as also for as much of the earthwork in the upper miles as can be carried out before the close of the current year.

18. It will be observed that the amount, Rupees 2,33,200, of the estimate now submitted is slightly in excess of the sum, Rupees 2,25,000, named in paragraph 24 of my Note of the 6th August 1870, as the probable cost of the required improvements to this canal.

G. O., 28th September 1870, No. 2,335.

FORT ST. GEORGE, 27*th January* 1874. (Signed) J. MULLINS, Lieut.-Colonel, R.E., *Chief Engineer for Irrigation.*

No. 282A. From Lieutenant-Colonel J. F. FISCHER, R.E., District Engineer, Godavery, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation and Joint Secretary to Government, Public Works Department, dated Dowlaishweram, 10th March 1873, No. 1,168.

WITH reference to G. O. of the 26th July 1872, No. 1,786, paragraph 3, I have the honour to forward, for your consideration, the revised projects for the Bank Canal and the Ingeram Canal in the Eastern Delta of this district with estimates, etc., amounting in the aggregate to Rupees 2,91,940.

One List, attached.

Proceedings of the Madras Government, Public Works Department, 12th March 1874.

2. For the Bank Canal the original project as reviewed in G. O. of the 28th September 1870, No. 2,335, provided for the following works :—

	Rs.
Earthworks	1,17,790
Lock at the 9th mile	20,640
Head Sluice do.	9,160
Lock at Cowlaishweram, 16th mile	20,520
Weir at do. do.	4,620
Lock at Kula, 22nd mile	23,690
Weir at do. do.	4,360
Weir at head of Dungaru Drain	2,260
Weir at 30th mile of Canal	2,260
Fifteen miles of Minor Channels	6,600
Six Distribution Sluices	3,000
Total...	2,14,900

The revised design, as now submitted for the same work to the 30th mile, is as follows :—

	Rs.
Earthwork	1,07,800
Lock at the 9th mile	17,500
Calingulah	5,800
Lock at the 16th mile	18,600
Calingulah do.	3,900
Lock at the 21st mile	22,000
Calingulah at the 21st mile	4,600
Calingulah near the head of the Dungaru Drain	2,700
Fifteen miles of Minor Channels	7,500
Eight Head Sluices, etc.	5,600
Total...	1,96,000

by these arrangements a saving of Rupees 18,900 has been effected; this is due partly to the dimensions of the locks having decreased, as ordered, from 110×18 to 105×15, to a calingulah having been substituted for head sluice at the 9th mile, and chiefly to the earthworks having been diminished by carrying a greater depth of water in the canals, a judicious proposal of Captain Mead's; there is an increase of cost for minor channels, sluices, etc., etc., for which detailed estimates will have to be submitted hereafter, and I regret to say the rates of work are rising here at the same time that the quarries are being fast worked out or getting more expensive to work.

3. With the savings thus made, I directed the Executive Engineer to prepare designs for extending the navigation to the 38th mile, the cost of which is only Rupees 34,100, as detailed below :—

	Rs.
Lock at 30th mile	19,200
Calingulah at 36½ mile	3,200
Altering Yanam Calingulah	1,000
Earthworks, etc.	10,700
Total...	34,100

the total then for this canal is Rupees 2,30,100 against Rupees 2,14,900 formerly asked for for from Loan Funds, but to this cost has to be added Rupees 15,000 which it would have been necessary to provide from Repairs Agricultural to complete the lower portion; the project, then, as now revised at a trifling less cost provides for extending the navigation some 8 miles in a very complete form.

4. The original estimate for the Ingeram Canal in G. O., 28th September 1870, No. 2,335, was as follows:—

	Rs.
Earthwork	12,850
Lock at 30th mile	19,420
Weir at do.	2,620
Tidal Lock	27,140
Weir at do.	3,360
Escape near Ventoor	2,210
Minor Channels and Sluices	11,000
Total ..	78,600

the project now submitted amounts to Rupees 61,840, and comprises the following items:—

	Rs.
Earthwork	12,730
Tidal Lock at 33rd mile	30,450
Weir at do. do.	4,160
Fifteen Head Sluices, etc.	10,500
Ten miles of Minor Channels	4,000
Total...	61,840

the lock at the 30th mile having been retained as proposed with its weir, but to the above has to be added the cost of the Ventoor Calingulah, sanctioned in G. O. of the 24th January 1872, No. 220, at a cost of Rupees 2,533, the old work which it had been proposed to retain and improve having given way altogether, the total cost for this canal is then Rupees 64,373.

5. These canals provide for irrigating the same extent of land as given in Appendix No. I. in G. O. of the 28th September 1870, No. 2,335; the masonry works provide for conveying 12,000 cubic yards of water hereafter if necessary to the Coringa Island, but this is not provided for in the earthworks of the canals at present, nor is it advisable to do so until the works of this delta are far more complete and water can be given to out-lying portion if ever required.

6. I have found no reason to modify the extent of lands we are likely to irrigate from the areas formerly given, as remarked by Government in paragraph 4 of the above Government Order, the differences between the Revenue Officers and ourselves was only 6,461 acres for the whole of this delta, and these were distributed over all the canals; no further information has been sent in by the Revenue Authorities, but I beg to submit a statement exhibiting the cultivation under the Eastern Delta Canals for five years, from Fasli 1277 to Fasli 1281 (1868 to 1872) taken from the Irrigation Registers, which have been compared with the Revenue Accounts showing

Proceedings of the Madras Government, Public Works Department, 12th March 1874.

an increase of cultivation of 18,889 acres since Fasli 1277 when it was actually decreasing; in 1870 when the completion project was submitted, we expected to increase the area of cultivation by 65,163 acres if the works were completed; already the increase is 18,889 acres, or more than one-fourth of the expected increase or more than 25 per cent. of this area, with the works very far from being completed; some doubts were expressed by the Executive Engineer, Mr. Sage, formerly in charge of this range, as to the extent of land likely to be taken up under the Bank Canal, but as one-third of the actual increase nearly belongs to this canal, I am much averse to diminishing the supply of water to it, and have provided for it fully and extended the means of communication to its extremity.

7. It is very advisable to abandon the old lock at Cuddapulunka as soon as possible as recommended by the Acting Chief Engineer for Irrigation; the work is an old kutcha one, which originally cost some Rupees 8,000, and it has had to be propped up in the tail bay, it costs Rupees 3,000 a year nearly to keep the channel to it clear of silt, and the levels of it and the adjacent weir are so high the flow of water to the canals below is much impeded except when there is a large supply in the river, and these levels do not agree with the new ones on the Cocanada canal at its first lock and weir at Madapad; the estimate for the weir at the 30th mile of the Bank Canal near the head of the Dungaru Drain is required to pass the water into the last reach which is provided with a surplus weir at 36½ mile into the river and also by a weir near Yanam; with a weir at the 17th mile, consisting of two bays 15 feet each, and over which it is possible to pass nearly four feet in depth of water with the means of controlling the supply to this reach by the weir at the 16th mile and diverting any water to the Coringa and Ingeram Canals; where there are good means of surplusing, I have not considered it necessary to provide any more surplusing means as originally designed near the 30th mile into the Dungaru Drain; the weir at the 16th mile has only two bays of 10 feet each to supply the lower reach by, whilst the surplus at the 17th mile is 30 feet in length and can take a greater depth of water on it, so that no dangerous quantity ought to be able to reach the weir at the 21st mile which has a discharging capacity nearly equal to the supplying weir.

8. The locks are all of the 2nd class 105×15, and planned according to the design approved of in your letter of the 31st October 1872, No. 243, with some slight modifications to reduce the cost; the thickness of the chamber walls has been increased on the recommendation of the Inspector-General of Irrigation, the arches over the tail bays have been arranged according to Circular No. 14, dated 28th May 1869, except in the case of the tidal lock, where a sufficient height cannot be provided just at high water of tides; the locks generally will fill in less than three minutes by the culverts provided in either side. Sluices have been taken out of the gates altogether.

9. The design for the weirs is the one we have found to answer very well here; the cushion wall is far removed from the effects of the over-fall, at the same time of sufficient height to prevent the direct import of this on the stone apron, with a fair supply in the lower channel; there is no second over-fall on them as you observed in the weir on the Mundapetta Canal.

10. The canals have been calculated according to duBuat's formula, and will have a velocity of little more than a mile an hour with a depth generally of 7 feet. Where the water surface spreads over the lunkas, it will be as well in carrying out the work to construct a tow-path between the slope of the canal and the existing bank to facilitate the passage of the boats; and in the last reach of the canal the spoil will have to be disposed so as to make the banks far more efficiently than as now exists.

11. A copy of the water distribution statement, submitted with the original project, is herewith sent to facilitate references, as well as a copy of the original sketch map of the locality with the locks as proposed to be placed marked thereon.

No. 282B. From Lieutenant-Colonel J. F. FISCHER, R.E., District Engineer, Godavery, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, dated Dowlaishweram, 2nd December 1873, No. 2,650.

I HAVE the honour to forward the re-revised plans, estimates, etc., for the Bank Canal in the Eastern Delta of this district, as ordered by you during your late inspection.

2. I have already informed you in a letter of the 1st instant, No. 2,607, that in order to save further loss of revenue to the State and property to the ryots holding lands under this canal I have directed the Executive Engineer to collect and prepare materials for the works at Moolastanum and Cowlaishweram.

3. I do not attach the slightest importance to the assertions made by the Executive Engineer formerly in charge of this range, and who prepared this project, that the ryots under this canal are not likely to take the water for irrigation; a glance at the cross sections as existing will show they have never been properly supplied at any time, and the increase of cultivation already reported, by attention to ordinary repairs alone, shows the people are not backward in using the water, as there are upwards of 40,000 acres of land available for cultivation and irrigation under this canal, and by far the larger area is in the vicinity of the coast with easy means of access to the larger markets. I trust that no further obstructions will be thrown in the way, and so delay the State and the district obtaining the benefits which ought to have been realized easily years ago.

4 Plans of Locks.
5 Do. of Calingulahs.
1 Do. of Girder Bridge.
1 Do. of Anchor irons.
3 Do. of Lock Gates.
2 Do. of Shutters of lock, culverts, and calingulahs.
1 Sketch Map of Eastern Delta Range.
1 Book of Cross Sections.
1 Sheet of Longitudinal Section.
1 Abstract Estimate with separate estimate of gates and shutters, etc., Rs. 2,20,700.
1 Specification of Locks and Calingulahs.
1 Statement of water distribution.
1 Do. showing sections, falls, and velocities.
1 Do. do. areas of present and proposed canal section.
1 Statement of water discharge.

Communications. REVISED. *New Work.*

EASTERN DELTA.

ABSTRACT ESTIMATE.

Taluq, Ramachendrapoor—District, Godavery.

WORKS.—*Improving Canal and constructing Lock and Calingulah in the Bank Canal.*

Quantity or Number.	Description of Work.	Rate.	Per Item.	Amount.	Total.
		RS. A. P.		RS. A. P.	RS.
	Canal.				
688,711	C. yds., earthwork	0 1 6	C. yds.	64,566 10 6	
499,862½	,, do.	0 1 0	,,	31,241 6 6	
				95,808 1 0	
	Contingencies	.....	.....	4,791 15 0	100,600
	Lock at 9th mile near Moolastanum.				
469⅔	C. yds. of concrete	2 12 0	C. yds.	1,291 9 4	
1,382⅔	,, rough-stone-in-chunam ...	3 10 0	,,	5,012 9 1	
103⅞	,, cut-stone do. ...	16 0 0	,,	1,660 7 1	
58½	,, do do. ...	12 0 0	,,	702 0 0	
7½	,, Cyclopean stone do. ...	9 0 0	,,	67 8 0	
65⅓	,, brick do. arch work ...	6 0 0	,,	390 10 8	
51½	Squares, dressing faces and pointing	10 0 0	Squares.	515 0 0	
9⅓	,, plastering two coats of chunam	3 12 0	,,	34 8 0	
27	C. ft., teakwood, wrought and put up	3 0 0	C. ft.	81 0 0	
63	lbs., wrought iron	0 3 9	lbs.	14 12 3	
222⅛	C. yds. of rough-stone, hand packed, dry	2 0 0	C yds.	444 3 6	
	Gates as per separate estimate ..	.....	,,	1,870 0 0	
2	Shutters do. ...	152 0 0	Each.	304 0 0	
2	Do.	170 0 0	,,	340 0 0	
	Baling	.....	,,	2,000 0 0	
	Centrings	.....	,,	75 0 0	
	Excavating foundations and filling in	.....	,,	1,000 0 0	
				15,803 3 11	
	Contingencies	.....	.....	1,596 12 1	
				17,400 0 0	
	Iron Girder bridge as per separate estimate	.....	.....	800 0 0	18,200
	Lock weir, 9th mile near Moolastanum.				
268½	C. yds. of concrete	2 12 0	C. yds.	738 6 0	
567	,, rough-stone-in-chunam ...	3 10 0	,,	2,055 6 0	
41⅔	,, brick in do. arch work ...	6 0 0	,,	250 0 0	
40⅚	,, cut-stone in do. ...	12 0 0	,,	490 10 8	
54⅝	,, do. do. ...	16 0 0	,,	878 3 7	
44	Squares, dressing faces and pointing	10 0 0	Squares.	440 0 0	
7½	,, plastering two coats of chuman	3 12 0	,,	27 0 0	

WORKS.—*Improving Canal and constructing Lock and Calingulah, etc.*—(Continued.)

Quantity or Number.	Description of Work.	Rate.	Per Item.	Amount.	Total.
	Lock weir at 16th mile near Cowlaishweram.—(Concluded.)	RS. A. P.		RS. A. P.	RS.
113¼	C. yds, rough-stone, hand packed, dry	2 2 0	C. yds.	241 3 0	
	,, gravelling	1 0 0	,,	7 0 0	
7	Gravelling	182 0 0	Each.	364 0 0	
2	Shutters as per separate estimate	.....	,,	550 0 0	
	Baling	.....	,,	25 0 0	
	Centrings				
	Excavating foundations and filling in	.....	,,	350 0 0	
	Contingencies	.....	.....	398 3 8	
					4,400
	Lock at 21st mile near Koolla.				
779	C. yds. of concrete	3 1 0	C. yds.	2,385 11 0	
1,769½	,, rough-stone-in-chunam ...	4 2 0	,,	7,297 9 4	
67 19/37	,, brick do., arch work ...	6 0 0	,,	404 3 6	
108½	,, cut-stone do. ...	16 0 0	,,	1,733 5 4	
56⅝	,, do. do. ...	12 0 0	,,	678 10 8	
10⅔	,, Cyclopean stone-in-chunam	9 0 0	,,	96 0 0	
56½	Squares, dressing faces and pointing	12 0 0	Squares.	678 0 0	
9¼	,, plastering two coats of chunam	3 12 0	,,	34 8 0	
27	C. ft., teakwood, wrought and put up...	3 0 0	C. ft.	81 0 0	
63	lbs., wrought iron	0 3 9	lbs.	14 12 3	
258	C. yds., rough stone, hand packed, dry	2 4 0	C. yds.	580 8 0	
	Gates as per separate estimate...	.....	,,	2,006 0 0	
2	Shutters do. ...	152 0 0	Each.	304 0 0	
2	Do. do. ...	170 0 0	.....	340 0 0	
	Centrings	.....	.....	75 0 0	
	Baling	.....	.....	2,200 0 0	
	Excavating foundations and filling in	.....	.....	1,200 0 0	
	Contingencies	.....	.....	2,020 11 11	
	Iron Girder bridge as per separate estimate	....	....	860 0 0	
					22,930
	Lock weir at 21st mile near Koolla.				
113⅜	C. yds. of concrete work ...	3 1 0	C. yds.	348 12 7	
376	,, rough stone-in-chunam ...	4 2 0	,,	1,551 0 0	
16⅛	,, brick-in-chunam arch work	6 0 0	,,	96 10 8	
21 11/16	,, cut-stone do. ...	16 0 0	,,	342 8 3	
16 5/16	,, do. do. ...	12 0 0	,,	199 1 9	
21 1/16	Squares, dressing faces and pointing	12 0 0	Squares.	256 12 9	
2½	,, plastering two coats of chunam	3 12 0	,,	9 6 0	
118½	C. yds., rough stone, hand packed, dry	2 4 0	C. yds.	266 10 0	
5⅜	,, gravelling	1 0 0	,,	5 10 8	
	Baling	.....	,,	500 0 0	
	Centrings	.....	,,	30 0 0	

WORKS.—*Improving Canal and constructing Lock and Calingulah, etc.*—(Continued)

Quantity or Number.	Description of Work.	Rate.	Per Item.	Amount.	Total.
	Lock weir, 9th mile near Moolastanum.—(Concluded.)	RS. A. P.		RS. A. P.	RS.
273	C. yds, rough-stone, hand packed, dry	2 0 0	C. yds.	546 0 0	
16½	,, gravelling	1 0 0	,,	16 1 9	
	Centrings	.....	,,	50 0 0	
6	Shutters as per separate estimate.	200 0 0	Each.	1,200 0 0	
	Baling	.....	,,	700 0 0	
	Excavating foundations and filling in	.....	.....	500 0 0	
	Contingencies	.....	.....	7,891 12 0 808 4 0	
					8,700
	Lock at 16th mile near Cowlaishweram.				
691	C. yds. of concrete	2 15 0	C. yds.	2,029 13 0	
1,295½	,, of rough-stone-in-chunam	3 14 0	,,	5,019 6 8	
101 5/9	,, of cut-stone do. ...	16 0 0	,,	1,624 14 3	
57⅛	,, do. do. ...	12 0 0	,,	685 5 4	
6 2/3	,, Cyclopean stone do. ...	9 0 0	,,	60 0 0	
64 5/9	,, brick do. arches ...	6 0 0	,,	386 10 8	
48 1/16	Squares, dressing faces and pointing	11 0 0	Squares.	529 1 7	
9¼	,, plastering two coats of chunam	3 12 0	,,	34 8 0	
27	C. ft., teakwood, wrought and put up...	3 0 0	C. ft.	81 0 0	
63	lbs., wrought iron	0 3 9	lbs.	14 12 3	
222½	C. yds. of rough-stone, hand packed, dry	2 2 0	C yds.	471 15 9	
	Gates as per separate estimate...	.....	,,	1,814 0 0	
2	Shutters do. ...	152 0 0	Each.	304 0 0	
2	Do. do. ...	168 0 0	,,	336 0 0	
	Centring	.....	,,	75 0 0	
	Baling	.....	,,	2,500 0 0	
	Excavating foundations and filling in	.....	,,	1,500 0 0	
	Contingencies	.....	.....	17,496 7 6 1,803 8 6	
	Iron Girder bridge as per separate estimate	.....	,,	19,300 0 0 800 0 0	
					20,100
	Lock weir at 16th mile near Cowlaishweram.				
114	C. yds. of concrete	2 15 0	C. yds.	334 14 0	
320½	,, rough-stone-in-chunam ...	3 14 0	,,	1,241 4 8	
14	,, brick do. arches ...	6 0 0	,,	84 0 0	
23¼	,, cut-stone do. ...	16 0 0	,,	370 10 8	
16⅔	,, do. do. ...	12 0 0	,,	200 0 0	
20½	Squares, dressing faces and pointing	11 0 0	Squares.	225 8 0	
2¼	,, plastering two coats of chunam	3 12 0	,,	8 4 0	

Statement showing the cultivation made in No. 1. or Eastern Delta Range, Godavery, from Fasli 1277 to 1281, taken from the Executive Engineer's Registers.

Names of Canal.	Actual Irrigation in Fasli					Difference of cultivation between each Fasli.										
	1277.	1278.	1279.	1280.	1281.	Total.	Increase.					Decrease.				
							1278.	1279.	1280.	1281.	Total.	1278.	1279.	1280.	1281.	Total.
Cocanada	36,735	36,336	37,699	38,556	38,192	187,518	...	1,363	857	...	2,220	399	...	...	364	763
Mundapetta	22,573	25,065	24,557	25,211	28,802	126,208	2,492	...	654	3,591	6,737	...	508	...	...	508
Coringa	23,930	21,446	23,504	24,149	24,947	117,996	...	2,058	645	798	3,501	2,504	...	...	...	2,504
Yanam Bank	7,651	6,882	7,228	8,633	12,161	42,560	...	346	1,410	3,523	5,279	769	...	...	...	769
Ingeram	12,479	12,787	13,249	13,435	13,693	65,643	308	462	186	258	1,214	...	...	...	...	...
Samulcotta (including Junction Canal) ...	21,944	20,491	22,146	24,045	26,426	115,052	...	1,655	1,899	2,381	5,935	1,453	...	...	...	1,453
	125,332	123,007	128,383	134,034	144,221	654,977	2,800	5,884	5,651	10,551	24,886	5,125	508	...	364	5,997
Deduct decrease...	...	...	...	...	...	...	5,125	508	...	364	5,997	...	...	...	...	...
Net increase...	...	...	...	...	...	...	2,325	5,376	5,651	10,187	18,889	...	...	...	...	...

(Signed) H. R. MEAD, Captain, R.E.,
Executive Engineer, Godavery District.

Dowlaishweram,
2nd January 1873.

Proceedings of the Madras Government, Public Works Department, 12th March 1874.

No. 283. ORDER THEREON, 12th March 1874, No. 664.

IRRIGATION, No. 27.

HIS EXCELLENCY the Governor in Council is pleased to approve of the estimate, amounting to Rupees 2,33,200, for the completion of the Bank canal in the Eastern Delta of the Godavery, and it will be forwarded for the sanction of the Government of India.

2. It is observed that this estimate is in substitution of one for Rs. 2,14,900 which was submitted by Lieutenant-Colonel Fischer in 1870, but which it was deemed requisite to revise. It is now intended to make the canal navigable throughout, but at present it is not proposed either to connect it with the Coringa river near Yanam by a tidal lock or to carry out the alternative arrangement by which a junction of the Ingeram canal with the Takee drain was to be effected. The Chief Engineer for Irrigation points out that a few years hence the arrangements which circumstances may show to be necessary will be more easily determinable, and there being no immediate necessity for a decision, the Government have no objection to leave this point to be settled hereafter, but it must be noticed that about 80,000 Rupees will probably be needed to make this canal a through line of navigation, should that arrangement be hereafter deemed to be necessary or desirable, and that, though unconnected with the present estimate, a nearly similar amount would be required to connect the Ingeram canal with the Takee drain.

3. Under the circumstances represented, the commencement of the 9th and 16th mile locks and lock-weirs, as also of the earthwork above the former lock is authorized, in anticipation of the sanction of the estimate by the Government of India; the estimate is a part of the Eastern Delta improvements, the general scope of which has been long since approved, and, as it is reported that the Budget grant for this delta will suffice for the Bank canal expenditure of the current year, a portion of the amount* can at once be made available for the work to be undertaken.

* 2 Lakhs.

(Here enter No. 665, dated 12th March 1874.)

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the District Engineer, Godavery.
" Officiating Controller of Public Works Accounts.
" Chief Engineer for Irrigation.

Exd. E. C. Shunker.
Spare Copies

PUBLIC WORKS DEPARTMENT,
FORT ST. GEORGE, 12*th March* 1874.

No. 284. No. 665.

From

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

To

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

IRRIGATION, No. 28.

SIR,—I am directed to transmit, for the sanction of the Government of India, an estimate, amounting to Rupees 2,33,200, for the completion of the Bank canal in the Eastern Delta of the Godavery; and in doing so I am to remark that when the Eastern Delta estimates which were sanctioned in the letter as per margin for execution from Loan Funds were submitted, one for this canal, amounting to Rupees 2,14,900, was ordered by this Government to be revised; and it was at that time stated by the Chief Engineer for Irrigation that its probable amount would be two and a quarter lakhs, a sum which has now been somewhat exceeded, while hereafter should it be deemed desirable to make the canal a through line of navigation, a further outlay of about 30,000 Rupees for a tidal lock, etc., will be required.

No. 103-I., dated 27th March 1871.

2. The bearing of anticipated returns upon the expenditure, including the Bank canal proposed to be made in this delta, has already been fully gone into in the papers which were transmitted with Colonel Orr's letter of 28th September 1870, No. 2,336, and it appears to be unnecessary therefore to do more here than remark that the District Engineer is sanguine that the anticipated extension of irrigation under the Bank canal will be realized, while from the statement of cultivation, dated 2nd January 1873, forming one of the papers printed in Proceedings, Madras Government, No. 064, dated 12th March 1874, a copy of which I am instructed to forward, it will be seen that the irrigated area had steadily increased in this section of the delta in the five years up to 1871-72, and that under the Bank canal this increase had been very considerable.

3. Seeing that sanctioned works on the Coringa canal have been postponed pending the final determination of the arrangements of the Bank canal, from which the former takes off, it has been considered advisable to anticipate the sanction of the Government of India by authorizing the immediate commencement of the upper two locks and lock-weirs, and of the earthworks of the first reach, so that advantage may be taken of the present working season, and I am to solicit the approval of His Excellency the Governor-General in Council to this proceeding.

The Budget grant of two lakhs for the current year, on account of the Eastern Delta improvements generally, will suffice for the work to be done on the Bank canal.

I have the honour to be,

Sir,

Your most obedient servant,

Colonel, R.E,

Secretary to Government.

Ed. E. C. Shanker.

Spare Copies

MEMORANDUM.

Requested for reference the under-mentioned papers

All the original Enclosures submitted with the Chief Engr's letter No. 83A dated 27 January 1874 referred to in Sl No. 664. 912 Branch 74

Office of the Chief Engr. for Irrigation, P. W. Department, 11—4— 1874

Head Clerk.

To

The Registrar of the Orders

No 83A

(Note by the Chief Engineer for Irrigation.

Enclosures 15.

At the time of the approval of the completion estimates for the Eastern Delta of the Godavery, the Ramla Canal &c &c. it was ordered to be revised, and subsequently, when I visited the Delta, the arrangements to be carried out were determined. Afterwards Major Oakes when acting Chief Engineer for Irrigation discussed the subject with Lieutt. Colonel Fisher, and came to the conclusion that in certain respects the latter Officer's propositions were preferable to mine, first with respect to the diversion of the line of navigation in the upper part from the Canal to the weir channel, and secondly as regards the connection of this line of navigation with the Takeer drain via the Ingeram Canal, rather than directly

G.O. No. 2335 28th Sept. 1870.

G.O. 1st April 1871. No. 1077 Insert para 20

G.O. 26th July 1872. No. 1786. Note pages 32 to 36.

2½ to 5th Miles.

directly with the Coringa river, which, latter arrangement I had considered to be the proper one.-

2 With his letter Dt. 1168 of the 10th March 1873 the District Engineer submitted a revised project for this Canal. As pointed out at the time the estimate submitted in 1870 provided for improvements down to the 30th Mile only, and the estimates of that year and those of 1873 to the same point are as follows.

		1870-	1873
Earth works	Rupees	117,790	107,800
Lock at 9th Mile	"	20,640	17,500
Lock Sluice	"	2,160	-- " --
do Weir	"	-- " --	5,500
Lock 16th Mile	"	20,520	18,600
do weir	"	4,620	3,700
Lock at 22nd Mile, Tidal	"	23,670	-- " --
do weir	"	4,360	"
Lock at 21st Mile	"	"	22,000
do weir	"	"	4,600
Weir at head of Divergent drainage	"	2,260	2,200
15 miles of Minor Channels	"	6,600	7,500
6 Distribution Sluices	"	3,000	-- " --
8 do	"	-- " --	3,600

To improve the canal beyond the 30th Mile, and extend the navigation down to the end, the District Engineer also estimated for the following works.

Lock at 30th Mile	19,200
Surplus weir at 36½ "	3,200
Altering Yanam Calingula	1,000
Earth works	10,700.
	34,100

Rupees 6220 for land Compensation required to be added.-

Thus making the total of the revised Estimates Rupees 2,30,100

3 As the works already sanctioned for the Delta were at the time fully sufficient to occupy both the superintendence and the labor available, the detailed consideration of the estimates was postponed until my visit to the Delta towards the end of the year, and I then went through them, and discussed the arrangements with the District Engineer and the Range Officer.-

4 With regard to the proposals for the upper part of this canal, I may remark that further enquiry has

has not convinced me that any material advantage will result from the adop=tion of the Calingulah Channel for the line of navigation, but on the other hand there is no sufficient objection to it to make it worth while to say more about it, beyond explain=ing that Major Oakes assumed that the inconvenience which had been experienced from the silting of the present line had been provided a=gainst by arranging for the mainte=nance of the same velocity in this as in the Calingulah Channel, and that consequently this principal ob=jection to keeping the navigation on the original line would have been avoided. I found that the new line had not been surveyed, and as, on going over the ground, it was evident that at least near the village of Hadiyapalunka the Calingulah channel would not do for an important line of navigation, the

the District Engineer was asked to have a Survey made, and upon it have been shown two suggested cuts in yellow dotted lines, the one for conducting the canal back into the old line at about a mile above the present Hadiyapalunka lock, and the other for a straight cut opposite the village. Neither of these lines as laid out would do, the lower ends of the cuts not entering the channels below ~~in~~ a proper direction. As the Bank Canal in the neigh=bourhood of the upper cut is at a sufficient distance from the river, I propose to make the junction here on a proper curve, and the District Engineer will be requested to make a detailed estimate for the arrange=ment shown, he having as yet only reported that an addition of Rupees 5000 to his estimates will be needed for either of the cuts he has shown

shown, and work cannot be carried out without ascertaining exactly what has to be done. Again the head of the Bank Canal above the limits of this Survey has to be properly laid out, and the Survey must consequently be extended in that direction, the centre line marked, and the cross sections taken or revised. It is so much easier to do things of this sort completely in the first instance, that it is to be regretted that this part of the estimate should have been submitted in an imperfect shape.-

5 On examining the longitudinal section a small, but not unimportant, error in the level of the bed and water surface at the offtake from the main canal was discovered; and this has now been rectified. The abolition of the Kadiyapadumkal lock, and the substitution of a

× of main Canal

Discharge 1346·78 C.Ft.a Second.-

lock at 9 miles or at about the same distance from the head sluice on this Canal as is the first lock on the Cocanada Canal will certainly be an improvement, and will tend to facilitate the proper regulation of the water supply.- Down to this 1st. lock the bottom width of canal will be 95 feet, the depth 8 feet and the surface fall 3.6 inches a mile.- The velocity will be 1.57 feet a second or 128 yards in excess of 1 mile an hour.- Beyond this to the head of the Coringa Canal the same depth and surface fall are retained, and the bottom width will be reduced to 83 feet which will give a discharge of 1185.6 C.ft. a second, that required being 1182 C.ft.- Below this point to the Kowlaiswaram Lock in the 16th. mile the surface fall remains

the

same, but the bottom width is reduced to 35·5 feet, and the depth to 7 feet, the resulting discharge being 450·73 C. feet a second, against 442 C. feet the calculated requirements.-

6 The arrangements of this part of the Bank Canal have had to be made to suit the Coringa Canal, the first lock on which latter is at a short distance below its head, and is to be retained; it being of much importance that the 9th Mile lock on the Bank Canal and its weir should be completed as soon as possible, in order that the sanctioned works in connection with the Coringa Canal may be constructed at their proper levels, and that surplus may be passed into the Takee drain, I have authorized the District Engineer to collect materials for these works in anticipation of the sanction of the estimates, as these, if work is to be carried out this season, must be transported by boats before the canals are closed, and I would recommend that the construction of this lock, as also of the 16th Mile lock should be sanctioned at once, so that the navigation, so far on the Bank Canal, and by the Coringa Canal, may be made available at an early date.-

7 Before passing on to the lower reaches of the Bank Canal a few remarks on the masonry works of the first 2 reaches are necessary.-

Those of the 1st reach are-

the 9th Mile lock and its weir.

Much inconvenience having been experienced from the want of sufficient head way under the tail bay bridges of some of the recently constructed locks, and nothing more than small accommodation bridges being needed for the locks on the bank canal, light girder bridges have been substituted for arches, and the headway has been increased from the minimum

of

of 9½ feet prescribed in the circular as per margin to 12 feet. The only alterations needed in the plan of the lock as submitted are the substitution of rack and pinion gearing or levers for the screw gearing of the culvert gates, and a diminution of the thickness of the bridge abutments above the level of the lock side walls. Screws, as was long since pointed out, are too slow, and are therefore inappropriate; and where, contrary to instructions, they have been recently fitted to locks, they will have to be removed. The approaches to these bridges need not generally be flatter than 1 in 6.—

× No. 14.

The actual discharge over the weir required for irrigation is 1152 C. ft. a second, but in order to allow for water which may hereafter be carried across to Coringa island 84 C ft. a second have been added, and the lock weir has been designed to pass 1266 C. ft. a second with the water in the two reaches at the

normal level of 33·5 and 30·5 respectively.—

In the 2nd reach the masonry works are the lock at the 16th Mile and its weir.— The screw gearing of the lock culvert gates should be superseded by rack and pinion gearing or levers, and the bridge abutments should be altered to save useless masonry.—

The discharge at the lock weir will be 426 C. ft. a second, and for this the 2 bays of 10 feet each of the design will suffice, the crest being placed at 3·5 feet below full supply level in the upper reach. By mistake the crest of the cushion wall has been shown at 19·5 instead of 18·5, its proper level.—

8 Provision has been made for a surplus weir into the Takee drain in connection with the Alamur lock weir on the Coringa Canal, and this will usually allow of all surplus water being got rid of. Below the Kowlaishwaram lock there is however

a

a surplus weir[x] in the 17th Mile of 2 bays of 15 feet, which should be converted into 3 bays of about 10 feet each, and be fitted with proper shutters. Its crest also may be raised from 21·25 to 22·75, and it will then suffice, when necessary, to discharge all the water passing the 16th Mile lock weir.—

[x] Condia Calinga-Lah.

9 On examining the arrangements of the next reach, viz. from the 16th to the beginning of the 22nd Mile, it was found that, owing to the actual cross sections being considerably larger than the calculated area of the water-way, the discharge with the fall allowed would be much greater than was intended, or with a fixed discharge the depth would not be maintained. Consequently as one of the alternatives presented, the District Engineer has reduced the surface fall from 0.3 to 0.208 feet a mile, and with this alteration the reach may be expected to carry its supply as intended.—

10 The masonry works at the lower end of the 3rd reach are a lock and lock-weir. With regard to the lock the observations made on the upper locks apply to this also. The weir is to have two bays of 10 feet each, and the discharge to be passed including the provision for Coringa Island will be about 398 C ft. a second, which will be obtained with a depth of 3.36 feet on the crest.—

11 The 4th reach from the 22nd to the 30th Mile will carry a depth of 6 feet of water, with a surface fall of 0.315 feet a mile, the corresponding velocity being 1.316 feet a second. The arrangements have been considerably modified to render the reach efficient, and to ensure a close approximation between the calculated and actual surface fall. Here and elsewhere it is intended to confine the water to its proper cross section. The width at water surface will be 48 feet, which will make it a good canal for navigation

navigation. In the 23rd Mile there is the Raja Calingulah, having its crest at 12·12 and the water surface being 16·61, it will be necessary to raise the crest to 13·61. It is unfortunate that these old surplus works are for the most part at the upper instead of near the lower ends of the reaches, but, wherever they are substantial and serviceable, it will be best to make use of them.—

12 At the 30th Mile it is intended to build a lock and a lock-weir. Modifications in the details of the valve gear wells of the former, as for the upper locks, are needed. The weir has been designed with one bay of 10 feet, the required discharge being 195 C. feet a second, and the requisite depth of water on the crest 3·3 feet.—

13 The 5th and last reach is from the 30th to the 38th Mile. The required discharge for irrigation being only 105 C. feet a second, the depth of water will be reduced to 5½ feet, the bottom width to 24 feet, which will give a surface width of 40½ feet, as little as is convenient for navigation, and the surface fall will be 0·1 foot a mile.—

14 At 36½ Miles the District Engineer proposes to place a surplus weir to discharge into the river, and the estimate for this amounting to Rupees 3,030 may be allowed to stand, but, as there are two existing surplus works in this neighbourhood, regarding which nothing has been said, before the new work is built it will be well to see whether all that is necessary may not be secured by adapting the larger of these to the revised arrangements.—

15 The estimates make no provision for a tail (tidal) lock, and the junction of the Injeram Canal with the Takee drain is only indirectly connected with the Bank Canal, and would be in part of the Injeram canal estimate. My own opinion is strongly adverse to

to the idea of considering the junction of the Injeram canal with the Takee drain as in any respect a substitute for locking down into the Coringa river from the lower end of the Bank Canal. I would refer to the sketch map in illustration. There it will be seen that, from the head of the Coringa Canal to Yanam is 25 miles and that from any Kotapilly or Kota, at midway, produce would have to be carried about 13 miles to the Coringa river while to reach the coast the other way the detour would be 12 miles to the Coringa Canal, 9 miles to the Injeram Canal, 10 miles along the latter and about the same distance down the by no means good navigation of the Takee drain, or altogether 41 miles. Moreover why this produce should go by the Injeram Canal at all is not clear for it is an

inferior

inferior line to the Coringa Canal and also longer. Moreover the figures given in para 34 of Major Oakes' Note to show the relative cost of Lieut. Colonel Fishers and my proposals are far from correct. The estimate now submitted shows that the canal made navigable down to the end, but without the tidal lock will cost not Rupees 2,56,300 but 2,20,700. On the other hand instead of Rupees 30,500 for connecting the Takee drain with the Injeram Canal, the actual estimated cost is Rupees (61,840 less the present sanction Rupees 28,050) 33,790 so that the comparison requires correction to the extent of about 40,000 Rupees. However, with reference to the diverse opinions which have been expressed on the necessity for making this Canal a through navigation, and

taking

3,03,800
Deduct — 32,500
15,000
47,500
2,56,300

taking into consideration the circumstance that an immediate decision need not be arrived at, as some few years will elapse before the work now provided for can be completed, I propose to leave it to be settled hereafter, when cultivation has been extended, and navigation developed, whether a tidal lock should be given to the Bank Canal and whether also a similar work should be constructed at the lower end of the Injiram Canal.

15 The estimate, as revised, consists of the following items.

Earth works	(Rupees	100,600
Lock, 9th Mile	"	18,200
—"— Weir—do.	"	8700
Lock, 16th Mile	"	20,100
—"— Weir—do.	"	4400
Lock, 21st Mile	"	22,930
—"— Weir—do	"	4670
Lock, 30½ Mile	"	20,600
—"— Weir—do	"	3200
Surplus Weir, 36½ Miles	"	3200
Altering Yanam Surplus Weir	"	1000
		207,600

Distribution

207,600

Distribution { Earth work — Rupees 7500
Masonry — " 5600

Rupees — 220,700

Land Compensation omitted by District Engineer — 6220

Total for improving the head and the present Calingum Lock Channel — 6280

12,500

Total Rupees — 233,200

15 It should be mentioned that in leaving out the Canal consideration should be given to the state of the river, so as to avoid the probability of any part of the line being endangered by erosions, which elsewhere have led to the not infrequent transference of Bank canals to positions more inland. The lower end of the Canal should also be arranged so as to enable the short extension to the Coringa river to be carried out without difficulty, should that hereafter be deemed advisable. This extension could if necessary be aligned clear of

of French Territory, but it is probable that no objection would be made by the French Authorities to the Canal being taken close to Yanaon, as advantage would doubtless accrue to the Town from having water communication with all parts of the Delta brought near to it.

17 The Budget grant for the Eastern Delta will suffice to provide funds for the locks and lock-weirs, which I have suggested should be constructed at once, as also for as much of the earth work in the upper miles as can be carried out before the close of the current year.

18 It will be observed that the amount Rupees 2,33,200 of the estimate now submitted is slightly in excess of the sum Rupees 2,25,000 named in para 24 of my note of the 6th August 1870 as the probable cost of the required improvements to this canal.

Fort Saint George
2nd January 1874

Lieut Colonel
Chief Engineer for Irrigation.

To
The Secretary to Government
Public Works Department.

G.O. 28th September 1870-N. 2335

Comp'd C. R.

P. W. 1874. Department.

No. 731.

No. 83. A

From,
The Chief Engineer for
Irrigation

To
The Secretary to
Government
P. W. D.

Dated 27th January
Disp^d February 1874.
Received — d. —

Enclosures. 45

†Given to Chief Engr's office
on Mem^o 11-2-74

Note on the Estimate
for the completion of
the Bank Canal in
the Eastern Delta of
the Godavery.

No. 282.

Rec^d 13.2.74.
Cir^d Feby 1874 No. 135

26

64 Mrd.

Proceedings of the Madras Govt.
Read the following:-

From the Chief Engr. for Irrigation. } H.E. No. 83 A dated 27th Jan^y 74.

His Excellency the Governor in Council is pleased to approve of the estimate, amounting to Rs 2,33,200 for the completion of the Bank Canal in the Eastern Delta of the Godavery, and it will be forwarded for the sanction of the Government of India.

2. It is observed that this Estimate is in substitution of one for Rs 2,14,900 which was

MR 12/2.

Ind 14/2

submitted by Lieutenant Col. Fischer in 1870, but which it was deemed requisite to revise. It is now intended to make the Canal navigable throughout, but at present it is not proposed either to connect it with the Coringa river near Jaggampudy a tidal lock or to carry out the alternative arrangement by which a junction of the Injeram Canal with the Tatipudi drain was to be effected. The Chief Engineer for Irrigation points out that a few years hence the arrangements which circumstances may show to be necessary will be

more easily determinable and there being no immediate necessity for a decision the Government have no objection to leave this point to be settled hereafter, but it must be noticed that about 30,000 Rupees will probably be needed to make this Canal a through line of navigation, should that arrangement be hereafter deemed to be necessary or desirable and that, though unconnected with the present estimate, a nearly similar amount would be required to connect the Injeram Canal with the Tatipudi drain.

If the Govt. Lord Thurlow decide on this point and accept Col. Mullins's proposals — even at the moderate additional cost — the difference of distance — 32 miles — 2 lock summer of navigation decidedly on this side

3. Under the circumstances represented the commencement of the 9th and 16th Spill locks and lockweirs, as also of the earthwork above the former lock is authorized, in anticipation of the sanction of the estimate by the Govt. of India: the estimate is a part of the Eastern Delta improvements, the general scope of which has been long since approved, and as it is reported that the Budget grant for this Delta will suffice for the Bank Canal expenditure of the current year a portion of the amount can at once be made

× 2 lacs

available for the work of the undertaking.

To
The District Engineer
Godavery

- Asst. Engr. Accts.
- Chief Engr. for Irrign.

Dated 29/3/74

From
The Secy. to the Govt. of India, P.W.D.

Sir,

I am directed to transmit for the sanction of the Govt. of India an estimate amounting to Rs 2,33,200 for the completion of the Bank Canal in the Eastern Delta of the Godavery; and in doing so I am to remark that when the Eastern Delta estimates, which were sanctioned in the letter as per × margin for execution from Loans

× No. 108 I. dated 27th March 1871

funds were submitted, one for this Canal, amounting to Rs 2,14,000 was ordered by this Govt. this revised, and it was at that time stated by the Chief for Irrigation that the probable amount would be 2½ Lacs, a sum which has now been somewhat exceeded, while hereafter should it be deemed desirable to make the Canal on through line of navigation a further outlay of about 30,000 Rupees for a tidal lock will be required.

2. The bearing of anticipated returns upon the expenditure, including the Bank Canal proposed to be made in this Delta, has already been fully gone into in the papers which were transmitted with Govt. Opⁿ's letter of 28th September 1870, No. 2536, and it appears to be unnecessary therefore to do more here than remark that the District Engineer is sanguine that the anticipated extension of irrigation under the Bank Canal will be realized, while from the statement of cultivation dated 2nd January 1873 forming one of the papers printed in P.W.D. No. dated a copy of which I am instructed to forward, it will be seen that the irrigated

area had steadily increased in this section of the Delta in the 5 years up to 1871-72, and that under the Bank Canal this increase had been very considerable.

3. Seeing that sanctioned works on the Coringa Canal have been postponed pending the final determination of the arrangements of the Bank Canal, from which the former takes off, it has been considered advisable to anticipate the sanction of the Govt. of India by authorizing the immediate commencement of the upper two locks and lockweirs,

and of the northern of the Point Pedro, on which advantage may be taken of the present working season, and to solicit the approval of His Excellency the Governor General in Council to this proceeding. The Budget grant of 2 Lacs for the current year, on account of the Eastern Delta improvements generally, will suffice for these works, besides those on the Bank Canal.

Desp. with 25 copies of the previous number. 19/3/74

Ly. 7/1/74

987.384

C. No. 731.

Govt. of India.

PUBLIC WORKS.

To The Dist. Engineer
Godavery
The Secretary to the
Govt. of the

Dated

Recd.

Encl 45-
-15-Plans.

G. O 12th March 1874, No. 664666.

Nos. 282-283 & 284

Godavery Delta.

Estimate of Rs. 283209 for the Completion of the Bank Canal in the Eastern Delta of the Godavery Approved and the Commencement of Portions of the work authorized in Anticipation of the Sanction of the Estimate by the Govt. of India.

In reading