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MADRAS RECORD OFFICE.

Government of Madras.

Revenue **DEPARTMENT.**

G.O. No. 1560	Press ~~Mis.~~
58-69	
Dated 2 & 3 June 1869	

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Proceedings of the Madras Government, Revenue Department, 2nd June 1869.

No. 68. Read the following Proceedings of the Madras Government in the Public Works Department :—

Sanctioning estimate of Rupees 6,065 for enlarging the Vyloor Tank, in the South Arcot District. } (Here enter 27th May 1869, No. 1,733.)

No. 69. ORDER THEREON, 2nd June 1869, No. 1,560.

Irrigation, No. 2. COMMUNICATED to the Board of Revenue.

(True Extract.)

(Signed) H. WELLESLEY,
Acting Under-Secretary to Government.

To the Board of Revenue, with Proceedings Public Works Department, No. 1,733.

Exd. E. C. Shunker.

No. 611. Read the following Endorsement of the Acting Chief Engineer for Irrigation, dated Fort St. George, 10th May 1869, No. 196 :—

Read the following letter from the Superintending Engineer, 5th Division, to the Chief Engineer for Irrigation, dated Cuddalore, 10th April 1869, No. 8 :—

I HAVE the honour to forward, for the sanction of Government, an estimate of Rupees 5,680, accompanied by plans and specification, for enlarging the Vyloor tank in the Virdachellum talook of South Arcot.

2 Plans.
1 Abstract Estimate.
1 Specification.
1 Statement of Land.
1 Report.

2. It is proposed to extend the bank of the present tank in such a way as to intercept a large quantity of water that now runs to waste into the river. That there is a large quantity of water to dispose of in ordinary seasons is proved by its having been found necessary, four years ago, to greatly increase the water way of the bridge on the Oolundoorpet road.

3. From the Tahsildar's report it appears that there are 402 cawnies of land now lying waste, which might be irrigated; but, in calculating the return from the work, it is supposed that only 250 cawnies will be brought under wet calculation. The increased assessment will be nearly 1,000 Rupees, or seventeen per cent. on the outlay.

4. The plans and estimate have been approved of by the Collector of the district.

From R. E. NORFOR, Esq., Executive Engineer, No. 4 Range, South Arcot, to the Superintending Engineer, 5th Division, dated Periacoorchy, 22nd December 1868, No. 785.

I HAVE the honour to submit for sanction, if approved, the accompanying estimate, together with survey, sections, and plan, for the improvement of the Vyloor tank in the Virdachellum talook, situated about three miles north of Virdachellum, on the road to Oolundoorpet.

1 Survey and Sections.
1 Plan of Calingulah.
1 Estimate.
1 Specification Report.
1 Revenue Statement.

2. The present tank is a very small one, having under it an Ayacut area of seventy-eight cawnies, and yielding a revenue of Rupees 625-8-0; but a reference to the records of past years will show that a large per-centage of this revenue is absorbed in maintaining the tank in an efficient state, repairing breaches, &c. This is in consequence of the excessive supply of water the tank receives in a fairly average season. The surplus water is unable to escape over the calingulah at the north-east end of the bund, as the large oday immediately to the north of it is also at the time full and overflowing its bank, backing up against the calingulah. All this water now runs waste into the Manimuthanuddy river, which it is proposed to utilize by extending the bank to the rising ground about a mile westward, shown by the red dotted line in the survey, thus forming a reservoir for the irrigation of a portion of a large* tract of country lying waste below the line of the proposed new bund. When the improvements have been effected, the tank will be capable of retaining 938,666 cubic yards of water in excess to what it can *now* hold. This quantity, at two cubic yards per hour per acre, is sufficient for 163 acres during the whole season of 120 days; but as it will, during an ordinary monsoon, be filled at least four or five times, I think I shall be under the mark in taking 250 acres as the probable increased area that will be irrigated. The Revenue Statement accompanying this report shows an area of 402 cawnies or 536 acres *available*, and of course as much of this will be brought under cultivation as there may be sufficient water for. All will depend upon the season being favorable or otherwise. That there is always an immense

*402 Cawnies.

quantity of water running waste here is certain. I cannot, however, accurately state what the volume of water is that passes yearly through the culvert to the north of the old calingulah, but I am confident there is an ample supply. The drainage area from which the tank receives its supply may be assumed at four square miles; and supposing fifty inches to be the rain-fall during an average season of 120 days, the quantity of water that will be available, after allowing for absorption and evaporation, may be put down at 12,000,000 cubic yards, (more than ample for the irrigation of 250 acres.)

3. A seventy feet surplus calingulah is proposed to be built at the west end of the new bund. It is designed to discharge 55,756,800 cubic feet in twenty-four hours, at a depth of two feet, *i. e.*, assuming the drainage area at four square miles, and supposing the heaviest fall of rain to be six inches in twenty-four hours, at a time when the tank is full, by Formula $l = \frac{D}{3.5\sqrt{d}}$, the length of calingulah to discharge 55,756,800 cubic feet of water in twenty-four hours, at a depth of two feet, is 65·1, but I have made it seventy feet to make it safer.

4. Three irrigation sluices are to be built according to the Standard plan, at the sites denoted in the survey. The bund is designed to be six feet wide on top, with side slopes one-and-a-half to one, and the high water mark four-and-a-half feet below the top of the bund. The nature of the soil is black cotton. The old portion of the bund has just been thoroughly well repaired, and is very strong and durable.

5. The cost of effecting the improvements suggested will be as follows :—

Earthwork, new bank	Rs.	4,054
1 Calingulah	,,	1,015
3 Sluices	,,	611
Total	Rs.	5,680

6. The increase revenue expected, as per accompanying Revenue Statement, on 250 acres for water cess alone, will be Rupees 937-8-0, or 17·40 per cent. on the outlay. As this return appears to be fairly remunerative, I beg to recommend the scheme for your consideration and submission to Government for sanction.

Memorandum from the Acting Chief Engineer for Irrigation, to the Superintending Engineer, 5th Division, dated Fort St. George, 21st April 1869, No. 182.

THE undersigned has the honour, with reference to the letter No. 8 of the 10th instant, from the Superintending Engineer, 5th Division, forwarding an estimate with the accompaniments as per margin, for enlarging the Vyloor tank in the South Arcot District, to request his consideration of the following remarks :—

2 Plans.
1 Abstract Estimate.
1 Specification.
1 Statement of Land.
1 Report.

First.—The Executive Engineer assumes the area of the drainage basin to be four square miles, and supposes the rain-fall to be fifty inches. Can either of these hypotheses be supported by reliable evidence? It may be remarked that a rain-fall of fifty inches in 120 days is a very rare occurrence at Madras.

Second.—Fifty inches of rain-fall over four square miles give a total, in round numbers, of 16⅔ millions of cubic yards. After allowing for evaporation and absorption Mr. Norfor thinks twelve millions would be available for the supply of the tank. Would not four-and-a-half to six millions, according to the character of the rain-fall, be a safer approximation even for monsoon discharges?

Proceedings of the Madras Government, Public Works Department, 27th May 1869.

Third.—The Executive Engineer provides a surplus calingulah seventy feet long between the wing walls, on the supposition that a length of sixty-five feet, with a depth going over of two feet, would suffice. The upright stones, however, appear to take up fourteen feet of the length, besides reducing the co-efficient of discharge. It is further assumed that six inches of rain-fall (? rain-fall drainage) in twenty-four hours may be taken as the maximum, but it is thought that this would not be a really safe maximum, for 8¼ inches of rain have been known to fall in a little over five hours at Madras. An extreme rain-fall would probably not exceed twelve inches in fifteen hours, and the corresponding drainage, as nearly all after the first two hours would run off, might be taken to be nine inches or three-fifths of an inch per hour. Half an inch per hour is a very usual allowance for bridges in this part of India. Then, were the crest of the escape lowered one foot, and the maximum depth going over thereby increased to three feet, the length of crest required* would be ninety feet, and 90 + 18 for the upright stones, would give 108 feet as the proper length between the wings. But for the probable increase of expense in providing a stronger apron there would be no objection to keeping the crest at the level shown in the plan, or even raising it.

* This is on the supposition that the escape would not be drowned, which it would be to a depth of somewhat less than 2½ feet, though it is hardly necessary to revise the length on this account.

Fourth.—It would be well to provide an outer dry rubble apron twelve to fifteen feet wide, as the soil is stated to be black cotton. This apron should be carried along the face of the rear wing returns. It might be an advantage also to place three or four inches of concrete under the rubble masonry apron, if the soil be as indifferent as black cotton soil usually is.

Fifth.—Lastly, it is observed that there is no provision for revetment in the estimate. Is not a revetment necessary? It would be a heavy item, but nevertheless, if needed for the efficiency and security of the tank, and if likely to decrease the cost of maintenance, it might be well to give it.

2. A rough calculation of the cost of the alterations above suggested has been made by the undersigned, but the Superintending Engineer is requested to use his own judgment as regards their adoption :—

Mr. Norfor's Estimate	Rs.	5,680
Additional required for escape wier	,,	505
Probable cost of revetment, cubic yards 7,871, at 1 Rupee	,,	7,871
	Rs.	14,056

The expected increase of revenue being Rupees 937-8-0, the project without a revetment would return fifteen per cent. on the outlay, and with a revetment under seven per cent.

3. As far as can be ascertained from the Executive Engineer's report, there can be little doubt of a sufficiency of water, for the moderate acreage* intended to be irrigated being available in fairly good monsoons, if the area of the drainage basin has been correctly stated. If that be verified, even with the expense of a revetment,

* Acres 250.

the tank would give a reasonable return for the outlay, if the people of Vyloor and neighbouring villages are willing and able to take up the additional area.

(Signed) J. MULLINS, Major, R. E.,
Acting Chief Engineer for Irrigation.

From the Superintending Engineer, 5th Division, to the Chief Engineer for Irrigation, dated Cuddalore, 3rd May 1869, No. 32.

2 Plans.
1 Abstract Estimate.
1 Specification.
1 Revenue Statement.
1 Report.

With reference to your Memorandum, No. 182, of the 21st April, I have the honour to inform you that the fifty inches, assumed by the Executive Engineer as the rain-fall in 120 days, was taken from a register kept by him at Porto-Novo, when making experiments to ascertain the quantity of water required for rice cultivation.

2. As regards the area of the drainage basin, he states that one side is bounded by the Oolundoorpett road, the length of which was easily ascertained, and that he walked over and measured the other three sides. The features of the country being so clearly marked, he had no difficulty in forming a correct idea of the actual drainage basin.

3. Taking the smaller quantity of water that you consider will be available for the supply of the tank, there will still be ample for the 250 acres intended to be irrigated.

4. The space taken up by the dam stones was not considered by the Executive Engineer when calculating the length of calingulah, and the extra length recommended (at a cost of Rupees 385) will be an improvement, and add to the security of the tank.

5. The suggestion to provide an extra rough stone apron for the calingulah and revetment for the tank bank cannot be adopted, as there is no rough stone to be had in that part of the district; and, with the exception of the Veeranum tank, there is not a tank in the range that has a revetment, and the Veeranum tank bank is very imperfectly protected. The small quantity of rubble masonry in the estimate will be obtained from the quarry now being worked, to obtain squared stones for the apron of the Mehmatoor anicut.

6. Many calingulahs of the pattern proposed to be adopted have been built in the range, and have stood very well. The soil, though called black cotton, is by no means of the worst description.

These papers refer to a proposed enlargement of the Vyloor tank, in the South Arcot District, at a cost originally estimated at Rupees 5,680, but raised to Rupees 6,065 to provide for lengthening the surplus escape from 70 to 108 feet. The tank is at present a very small one, the acreage under it being but 103 acres. It is shown by the Revenue Statement that there are 402 cawnies or 536 acres of Punjah and Punjah waste which, if irrigated, would yield an additional revenue of Rupees 2,469. There is not likely to be water enough for all this land however, and the value of the project has been calculated on the supposition that 250

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acres additional will be irrigated, or that the enlarged tank will be able to water 353 acres. The area of the drainage basin of the tank is reported to be four square miles, and at 8,000 cubic yards per acre the actual drainage into the tank should be equal to 8½ inches nearly from the whole area, or about one-fifth of the annual rain-fall. The total quantity of water required for 353 acres on the above supposition would be 2,824,000 cubic yards, and the tank will, on enlargement, hold only 938,666 cubic yards, in addition to its present capacity, which is not stated, but which is shown by the Revenue Statement to be sufficient for an area of 101 acres. Supposing, therefore, the tank to fill but once, it will be capable of irrigating 117 acres additional, and this area will give an increase of revenue of about Rupees 468, or seven per cent. on the amount of the estimate, and this extent of cultivation will be secured by a drainage into the tank of a little more than one-eighth of the probable average annual rain-fall. On the other hand, should the tank receive a succession of supplies, as may not unreasonably be expected, the return on the outlay would approximate to 17½ per cent. Under these circumstances, the estimate is recommended for the sanction of Government.

Fort St. George,
10*th May* 1869.

(Signed) J. MULLINS, Major, R. E.,
Acting Chief Engineer for Irrigation.

No. 612. Order thereon, 27th May 1869, No. 1,733.

IRRIGATION, No. 33.

The Government sanction the estimate of Rupees 6,065 for enlarging the Vyloor tank in the Virdachellum talook of the South Arcot District, from the Reserve in the current year's Budget under "Agricultural."

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 5th Division.
,, Controller of Public Works Accounts.
,, Accountant-General.
,, Revenue Department.
,, Chief Engineer for Irrigation.

Exd. S. T. Augustin

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