

(1) Number of pages_____

(2) Date of repair_____

(3) Initials of the Referencer_____

MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	2526	Press
B.P. No.		Mis.
225-236		
Dated	16-10	1958/3

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
16th October 1873.*

Read the following papers:—

No. 235. From Captain J. PENNYCUICK, R.E., District Engineer, North Arcot, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, dated Vellore, 21st July 1873, No. 1,362.

I HAVE the honour to forward an estimate, amounting to Rupees 3,200, for the repairs to the Thalangy Tank.

1 Estimate.

2. This tank as you are aware is situated close to the Madras Railway, and its breaching last year carried away a large portion of the railway embankment.

3. The drainage area of the tank is about six square miles, a good deal of which is hilly and subject to a rapid run off of water.

4. The estimate provides for raising and strengthening the bund and revetment as well as for repairing the breaches, and for lengthening the sluices to the extent rendered necessary by the raising of the bund.

5. It is also proposed to lengthen the calingulah by 80 feet, making the total length 200 feet.

6. This will be provided for separately as a Minor New Work.

7. It would be better if the estimate had been accompanied by sections and a plan of the proposed additions to the sluices, but the Range Officer has so much work on hand that I have not cared to insist on the preparation of these; as it is there has been a good deal of delay in the submission of the estimate.

8. Under ordinary circumstances, I should have hesitated to propose an expenditure which will bring the cost of repairs up to twelve years' revenue in fourteen years, and I think the raising of the bund is a mistake, but as the greater part of the work has been done on emergency, we have no option but to complete it.

9. Steps will be taken to preserve this tank from injury by the breaching of the tanks above it.

10. I have not been able to inspect the work since the date when I visited it in company with yourself, but intend to take an early opportunity of doing so.

No. 459-A.

MEMORANDUM.

THE undersigned has the honour to inform the District Engineer, North Arcot, in acknowledging the receipt of his letter, No. 1,362, of the 21st instant, enclosing an estimate, amounting to

One Note.

Rupees 3,200, for the repair of the Thalangy Tank, that he much regrets being unable to recommend this estimate for the sanction of Government for the following reasons:—

1st.—The rates for earthwork appear to be excessive. The undersigned cannot say what the average distance of the pits from the bund is, but this distance was certainly small, and it is remembered that they were cut without much regard for the interests of the owners of the fields from which the soil was taken.

2nd.—The rates for old and new stone revetment are apparently excessive; 6 Annas for the former and 4 Annas in addition to the cost of the stone for the latter would seem to be sufficient. Work, such as backing to the revetment, should be separately provided for, and it may be remarked that the specification seems to indicate that the Range Officer does not know how a backing should be executed, and at any rate no one could do this properly from the specification. Five minutes will suffice to put a section of

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16th October 1873.*

the bund on section paper, so as to show how the revetment and its backing are to be constructed, and this should be done.

3rd.—It is judged from the District Engineer's letter that the bund has been raised to a greater height than was necessary, and if so the quantity in excess of 4½ to 5 feet above full tank level should be reported. To prepare a proper estimate for this tank would perhaps have cost 20 or 30 Rupees, and it seems probable that a far larger amount has been wasted through the rough way in which the requirements of the tank were calculated.

4th.—On the other hand, the rate for brickwork in the sluice extensions appears to be low for the superior kind of work which is alone admissible in such situations.

5th.—The specification is very insufficient; it does not show either directly or indirectly to what height above the waste weir crest or above full tank level the bund is to be brought, neither is the intended level of the top of the revetment mentioned. The latter need not be higher than 6 inches above maximum water level, or 2½ feet above full tank level.

2. It is not understood what is meant by the earth for the breaches having to be shifted one-hundred yards.

3. The percentage of sundries and superintendence about three-fourths, and this is manifestly insufficient.

(Signed) J. MULLINS, Lieut.-Colonel, R.E.,

Chief Engineer for Irrigation.

28th July 1873.

From Captain J. PENNYCUIK, R.E., District Engineer, North Arcot, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, dated Camp at Amoor, 30th August 1873, No. 1,768.

I HAVE the honour to retransmit the estimate for repairs to the Thalangy Tank, returned with your Memorandum, No. 459-A., of the 28th ultimo, with a plan and sections.

1 Estimate.
1 Plan.
1 Specification.

2. It is undeniable that "to prepare a proper estimate would have cost perhaps 20

or 30 Rupees" (that is to say, 20 or 30 Rupees worth of the time of an Officer or Overseer), "and it seems probable that a far larger amount has been wasted through the rough way in which the requirements of the tank were calculated." But then 20 or 30 Rupees in the only form in which it would be of use is about ten times what could be spared for the purpose.

3. I quite admit, and I shall probably have to make the same admission pretty often, that the estimate is rough and incomplete, but it is hopeless to expect at present anything like systematic or complete work. We have to live from hand to mouth, and scramble through our work as best we can.

4. The subject is one on which I wish to say as little as possible, because it is difficult to discuss it without touching on points which had better be left alone. Certain arrangements for executing the work which this department is supposed to do have been made, and whatever individual officers may think of the wisdom of those arrangements, it is their duty to do their best to carry them out, and not to waste time in representations which are not likely to lead to any practical result. But you will probably agree with me that, as a general principle, if three men are put to do the work of five on the pay of two, the work is not likely to be very well done.

5. With regard to the rates entered in the estimate, at the time the breaches were closed, the greater part of the ground behind the tank was under water, and earth could only be obtained from one place, the average distance of which from the breaches (three in number) as actually measured was over two hundred yards. The Range Officer reports that the distance of 100 yards mentioned in the specification was only a rough guess. Pits have since been dug along the whole length of the bund, but the earth for the breaches was obtained as stated.

6. The rate for the remainder of the earthwork is not excessive considering the nature of the soil, and the fact that the railway pay very much higher rates.

*Proceedings of the Madras Government, Public Works Department,
16th October 1873.*

7. The rate for stonework I do not think excessive; that for the brickwork of the sluices was entered wrongly by a clerical error, which has been corrected.

8. The use of the word backing in the specification is misleading; "support" or "bed" should have been used; there is no separate backing.

9. The height of the bund is not so great as I had supposed from casual inspection, being only 4 feet, and that of the revetment 9 inches, above high water mark.

10. The specification is incomplete, certainly; but it may be observed that a good deal of confusion exists as to the meaning of this word specification. In English practice, where works are handed over bodily to contractors, a specification is an important and elaborate document, intended not only to guide the contractor, but to bind him, and is therefore made as complete and exhaustive as possible; in this country, even when works are executed by what is called contract, a considerable direct control is exercised by the members of the department, and the elaborate specifications of English practice would be useless; the only person who could be benefited by them would be a maistry who would probably find them more confusing than useful. The so-called specifications attached to our estimates are really nothing but brief descriptions of the work to be done, and are intended, not so much for the guidance of the people who have to carry out the work, as for the information of the superior officers who have to pass the estimates; the attempts frequently made at imitating the English style of specification generally end in the production of a hybrid document, having the lengthiness of the one form and the roughness of the other.

11. It may be admitted however, that the specification attached to the estimate was incomplete from any point of view. A fresh one has been prepared by the Range Officer which is enclosed, though it rather bears out the view which I have just expressed.

12. The expression "Sundries and Superintendence" was wrong. Petty superintendence is included in the rates for work, and the amount allowed for sundries is enough for such petty contingencies as a work of this kind requires.

13. I have this morning inspected the work, which is being well and satisfactorily executed,

No. 623.

No. 235A.

Note by the Chief Engineer for Irrigation.

THE submission of an estimate for the repair of the Thalangy Tank was delayed in the first instance by press of work, and afterwards by the necessity of a reference to the District Engineer for further information. Some of the work was done on emergency and a great deal of the earthwork had been carried out before I visited the tank with Captain Pennycuik in May last. This is one of the tanks which caused damage to the Madras

G. O., No. 13, dated 6th January 1873.

Railway.

2. Under the explanations furnished by the District Engineer, the estimate is recommended for sanction. The average revenue of the tank is only Rupees 352, but the work provided for is not in excess of that required for the safety of the tank, and, as a consequence, of the railway.

3. I am not altogether satisfied that the explanations of the rates are sufficient. So far as railway rates affect the price of labour, or in other words the daily hire of a cooly, their influence on Public Works rates may be at once admitted, but railway rates themselves are no guide to what should be allowed for departmental work, because the former provide for profits to contractors and many grades of sub-contractors, and the same system is not, or should not be, followed on Public Works. The justification for it in the case of the railways is that a very large quantity of work has to be done in a very short time, and this can be accomplished only by the help of many men whose interest it is to obtain labour. Public Works rates should approximate rather to the cost of the work to the lowest grade of

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16th October 1873.*

sub-contractor on the railways than to that to the railway, and the difference is believed to be very great. I am quite willing to admit such an increase of rates, above those of fifteen or twenty years ago, as may be supported by the difference between the cooly hire and cart hire, etc., then and now, but anything beyond this requires to be very carefully accounted for.

4. With regard to the way in which estimates are prepared, it seems clear that if in a case like this, in which the sanction of Government was necessary, the requirements of the tank were confessedly determined in a very rough manner, and no proper directions as to the work to be done and as to the relation to be maintained between full tank level, maximum water level, and the top of the bund, were drawn up, estimates to be sanctioned locally are not likely to receive more attention, and the funds provided for the maintenance of irrigation works cannot be judiciously laid out. The District Engineer says that he cannot do the work properly with the inadequate establishment available, and I quite agree with him that the establishment cannot do all the work required in an efficient manner; but, after providing for emergent work, which sometimes must be done without much regard to economy, Captain Pennycuik should require all ordinary work to be carefully estimated for and carefully carried out, and the number of works to be taken up should be strictly limited to that which can be so dealt with.

FORT ST. GEORGE,
11th September 1873.

(Signed) J. MULLINS, Lieut.-Colonel, R.E.,
Chief Engineer for Irrigation.

No. 236.

ORDER THEREON, 16th October 1873, No. 2,526.

IRRIGATION, No. 20.

THE Government sanction the estimate, amounting to Rupees 3,300, for the repair of the Thalungy Tank in the

North Arcot District, but they must observe that very far from sufficient care was bestowed upon its preparation, and that it is requisite that, while all that is necessary to render tanks secure and efficient should be ascertained and estimated for, it is essential that the examination of their condition and wants should be so made as to ensure that neither too much nor too little work is provided for, but that they are put in order at the minimum outlay which will suffice for the end to be attained.

2. The special attention of the District Engineer is called to paragraph 3 of the Note by the Chief Engineer for Irrigation on the subject of rates, and with regard to the work to be done by the establishments at his disposal, he will take care that the number of works taken up at once is restricted to that which can be properly estimated for to begin with, and thereafter efficiently carried out.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the District Engineer, North Arcot.

„ Officiating Controller of Public Works Accounts, with Abstract Estimate.

„ Chief Engineer for Irrigation.

Exd. W. H. French.

• Spare Copies.

*17/10/73. North Arcot
District Engineers Office
Camp Amoor 30th August 1873.*

*From
The District Engineer
North Arcot
To
The Chief Engineer
For Irrigation
Madras*

*Enclosures 3
1 Estimate
1 Plan
1 Specification.*

*I have the honor to retrans-
mit the estimate for repairs to the
Thalungy Tank, returned with your
Memo N^o 459 A of the 28th Ultimo,
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2. It is undeniable that to prepare a
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requirements of the Tank were calculated.
But then twenty or thirty Rupees
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in the only form in which it would be of use, is about ten times what could be spared for the purpose.

3. I quite admit, and I shall probably have to make the same admission pretty often, that the estimate is rough and incomplete, but it is hopeless to expect at present anything like systematic or complete work. We have to live from hand to mouth and scramble through our work as best we can.

4. The subject is one on which I wish to say as little as possible, because it is difficult to discuss it without touching on points which had better be left alone. Certain arrangements for executing the work which this department is supposed to do have been made, and whatever individual officers may think of the wisdom of those arrangements, it is their duty to do them best, to carry them out, and not to waste time in representations which are not likely to lead to any practical

cal result. But you will probably agree with me that as a general principle if three men are put to do the work of five on the pay of two, the work is not likely to be very well done.

5. With regard to the rates entered in the estimate, at the time the breaches were closed the greater part of the ground behind the tank was under water, and earth could only be obtained from one place, the average distance of which from the breaches (three in number) as actually measured was over two hundred yards. The Range officer reports that the distance of 100 yards mentioned in the specification was only a rough guess. Pits have since been dug along the whole length of the bund, but the earth for the breaches was obtained as stated.

6. The rate for the remainder of the earthwork is not excessive considering the nature of the soil, and the fact that the railway pay very much higher rates.

7. The rate for stonework I do not think excessive; that for the brickwork of the sluices was entered wrongly by a clerical error

error, which has been corrected.

8. The use of the words *backing* in the specification is misleading; "support" or "bed" should have been used, there is no separate *backing*.

9. The height of the bund is not correct as I had supposed from casual inspection being only four feet, and that of the revetment nine inches above high water mark.

10. The specification is incomplete, certainly; but it may be observed that a good deal of confusion exists as to the meaning of this word *specification*.

In English practice, where works are handed over bodily to contractors, a specification is an important and elaborate document, intended not only to guide the contractor, but to bind him, and is therefore made as complete and exhaustive as possible; in this country, even when works are executed by what is called contract, a considerable direct control is exercised by the members of the department, and the elaborate specifications of English practice would be useless; the only person who could be benefited by

them would be a maistry, who would probably find them more confusing than useful. The so-called specifications attached to our estimates are really nothing but brief descriptions of the work to be done, and are intended, not so much for the guidance of the people who have to carry out the work, as for the information of the superior officers who have to pass the estimates; the attempts frequently made at imitating the English style of specification generally end in the production of a hybrid document, having the lengthiness of the one form and the roughness of the other.

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13. I have this morning inspected
the work, which is being well and satis-
factorily executed.

I have the honor to be

Sir

Your most obedient servant.

Benjamin Captain R.E.

District Engineer of North West

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13.
The
Jac

should be counted and at any rate no one
could do this properly from the specification.
Five minutes will suffice to put a section of the
brick on section paper, so as to show how the
rest must fit backing and to be constructed,
and this should be done

- 3rd - It is judged from the District Engineer's letter
that the masonry work has been raised to a
greater height than was intended, and if so
the quantity in excess of 4 1/2 to 5 feet above
full tank level should be reported. To prepare
a proper estimate for this tank would probably
have cost 20 or 30 Rupees and it seems probable
that a far larger amount has been worked
through the masonry, in which the requirements
of the tank were calculated. And
4th - On the other hand, the rate for brickwork in the
three extensions appears to be low for the superior
kind of work which is alone admissible in such
situations.
5th - The specification is very insufficient: it does
not show either directly or indirectly to what
height above the water level crest or above full tank
level the brick is to be brought, neither is the
intended level of the top of the masonry mentioned.
The latter must not be higher than 6 inches above
max^m W.L. or 2 feet above F.T.L.

2. It is not understood what is meant
by the earth for the bricks having to
be shifted 100 yards.
3. - The percentage of cement in
Submersion is about 3/4 and this
is manifestly insufficient

by 27/7/73

Refers corrected
See Reg No 1

a. w.
13. From @ E North Street
Sh.
Ja

1154
1154
W 459 H

For
The District
Engineer of
North Street

Dated 28th July
Dispt 5th August 1873

Enc. 1

P.W. 5071/73-

States that his
letter of Rs. 3200 for
repair of Talingy
Tank cannot be
submitted for Govt
sanction in the
absence of full
information regarding
rates ~~and~~ for

Papers connected

Q. N. 1154 - 21 July/73
Q. N. 15 - 6 Jan'y/73
Q. N. 11 - 8
Q. N. 218 - 14 Feb/73
Q. N. 123 - 26
Q. N. 292 - 12 May/73

Specification of the work to be carried out at the
Shalinghy Tank

Amount of estimate Rs. 3300

The breaches are first to be closed, this
should be carried out as follows. The water
having been baled out of the deep portion, that
should be solidly filled in with good earth
thrown in in layers, and well rammed, ^{until} that
it is flush with the original ground, after
which the raising of the new portions of the
bund should be carried out in the usual manner.

The old ~~stone~~ revetment is to be taken
down the old bund cut down to the correct
slope - $1\frac{1}{2}$ to 1. A trench $1\frac{1}{2}$ feet cut along
its inner toe for the footing of the revetment
and the revetment rebuilt with the stones
closely laid, the interstices filled in, and a
backing, bringing the whole thickness up to $1\frac{1}{2}$
feet - with small stones or fells, is to be firmly
constructed. The height of the revetment
will be 9' above high waterline.

The

The old bund is to be raised to $4\frac{1}{2}$ feet above high water level, is to be of 2nd class section with slopes of $1\frac{1}{2}$ to 1. Section showing the top breadth, height and ^{slopes} to be obtained prior to the earth being thrown on the bund. The earth is to be well rammed, and the portions of the bund where the soil is bad are to be turfed. —

The turf is to be of good quality, laid with edges over lapping, well watered and beaten down. —

The wing walls of the waste weirs are to be raised 2 feet, and the faces of the new work plastered with 2 coats. The south sluice is to be lengthened in rear 12 feet, floor, side walls, arch, and Cistern, and the north sluice is to be lengthened 24 feet in like manner. The mortar used is the good, and the bricks the best procurable. —

The bund on the north flank of the north east Calingulak is to be rammed, an excavation $1\frac{1}{2}$ feet below crest of body is to be opened out and ^a flush pavement of loose stone

stone laid with a protecting wall of loose stone at northern end to prevent erosion. The stones are to be closely packed, with the spaces between well filled in. —

Pegs are to be made, and timber purchased for forming sections. —

On completion of the work all rubbish is to be removed. —

No. 108 Wallyah Nau Office } J. H. Fisher Sub Engineer
Cameripaut 14 August 1873 } Wallyah Nau Office

John Perry - I Captain R. C.
District Engineer North West.

Camp Amoot
30 Aug 73.

No. 1362.

North Arcot,

DISTRICT ENGINEER'S OFFICE

Vellore 21 July 1875.

From

The DISTRICT ENGINEER,

NORTH ARCOT.

To

The

The Chief Engineer for
Irrigation
Madras.

Sir,

Enclosure 1.

1 Estimate

- I have the honor to forward
an estimate amounting to Rs. 3200.
for the repairs to the Thalunge tank.
2. This tank as you are aware is sit-
uated close to the Madras Railway
and its breaching last year carried
away a large portion of the Railway
embankment.
3. The drainage area of the tank is
about six square miles, a good deal
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pid run off of water.
4. The estimate provides for raising
and strengthening the bund and
re-

Dec 2/1875
P.M. 507/173.

revetment as well as for repairing the breaches, and for lengthening the sluices to the extent rendered necessary by the raising of the bund.

5. It is also proposed to lengthen the calingula by 50 feet making the total length 200 feet.

6. This will be provided for separately as a minor new work.

7. It would be better if the estimate had been accompanied by sections, and a plan of the proposed additions to the sluices, but the Range Officer has so much work on hand that I have not cared to insist on the preparation of these, as it is there has been a good deal of delay in the submission of the estimate.

8. Under ordinary circumstances I should have hesitated to propose an expenditure which will bring the cost of repairs up to twelve years revenue in

The sketch
shows a
movement of
100 feet north
from the old line.

in fourteen years, and I think the raising of the bund is a mistake, but as the greater part of the work has been done on emergency, we have no option but to complete it.

9. Steps will be taken to preserve this tank from injury by the breaches of the tanks above it.

10. I have not been able to inspect the work since the date when I visited it in company with yourself, but intend to take an early opportunity of doing so.

I have the honor to be
Sir

Your most obedt servant
J. B. B. I. Captain

District Engineer North Arcot

Imperial Irrigation Return

North West District
No. 100 Wallajah Cause
Saluz Wallajah

Detailed estimate No. 9 of 1873/74

Work Widening, Raising, Surfing and resetting the head of
Shalunglu Tank, closing breaches and lengthening the sluice
2nd class slope $1\frac{1}{2}$ to 1 Commencing southern end

Widening

Raising

Measurement				Remarks	Measurement				Remarks
L	B	D	Total		L	B	D	Total	
12	2	$\frac{3}{4}$	18	✓	12	3	1	36	
30	.	.	"		30	"	"	"	Good
132	1	$1\frac{3}{4}$	231	✓	132	$2\frac{1}{4}$	$\frac{1}{2}$	$148\frac{1}{2}$	✓
60	1	2	120	✓	60	$2\frac{1}{4}$	$\frac{1}{2}$	$67\frac{1}{2}$	✓
53	$2\frac{1}{2}$	$1\frac{3}{4}$	$231\frac{1}{8}$	✓	53	$2\frac{5}{8}$	$\frac{3}{4}$	$104\frac{5}{16}$	To sluice
132	2	$1\frac{3}{4}$	462	✓	132	$2\frac{5}{8}$	$\frac{3}{4}$	$259\frac{1}{8}$	✓
52	1	$1\frac{1}{2}$	78	✓	52	$2\frac{1}{4}$	$\frac{1}{2}$	$58\frac{1}{2}$	To Shalunglu
19	.	.	.	✓	19	"	"	"	Length of do
66	2	1	132	✓	66	$2\frac{5}{8}$	$\frac{3}{4}$	$129\frac{15}{16}$	
108	$1\frac{1}{2}$	$1\frac{1}{2}$	243	✓	108	$2\frac{1}{4}$	$\frac{1}{2}$	$121\frac{1}{2}$	✓
293	2	1	586	✓	293	$2\frac{1}{4}$	$\frac{1}{2}$	$329\frac{3}{8}$	
22	8	1	176	Phillipsen gully	22	6	3	396	Closing breach
8	$1\frac{1}{4}$	$2\frac{1}{2}$	25	✓	8	$2\frac{5}{8}$	$\frac{3}{4}$	$15\frac{3}{4}$	✓
20	9	2	360	do do	20	$7\frac{1}{2}$	4	600	do do
140	1	$2\frac{1}{2}$	350	✓	140	$2\frac{1}{4}$	$\frac{1}{2}$	$157\frac{1}{2}$	✓
17	"	"	"		17	$5\frac{1}{4}$	$2\frac{1}{2}$	$223\frac{3}{8}$	do do
Carries over 3012 $\frac{7}{8}$				✓	Carries over 2647 $\frac{7}{8}$				✓

To D. E. North West District
928 July 1874 459.8

To

C. E. No. 11514.

The District Engineer,

North Arcot.

To

The Chief Engineer
for the Irrigation.

Dated 21st July 1873

Received 23rd July 1873

No. 1362.

Enclosure 1.

Subject.

Forwards for examination
an estimate of Rs. 3200

for repairing the sluice
at Shalunglu tank.

P. M. 5071/73.

Brought forward	3012 $\frac{3}{4}$	2647 $\frac{3}{4}$	
99 1 2	198	99 $2\frac{1}{4}$ $\frac{1}{2}$	111 $\frac{3}{8}$
7 . .		7 6 3	126
184 1 2	368	184 $2\frac{1}{4}$ $\frac{1}{2}$	207
24 . .		24 $3\frac{3}{4}$ $\frac{1}{2}$	135
21 . .		21 . .	
	3578 $\frac{1}{8}$		3227 $\frac{1}{4}$
Add	3227 $\frac{1}{4}$	1001 $6\frac{1}{2}$	6506 $\frac{1}{2}$
Total Culvert	6806 $\frac{1}{8}$		
		Total Gravel of Culvert	6506 $\frac{1}{2}$

Stone	new	turns	old	new	
100 $\frac{1}{2}$ 3	150			Old stone new turn	
10 $\frac{1}{2}$ 3	15			do	
12 $\frac{1}{2}$ 3		18		New stone	
126 $\frac{1}{2}$ 3	126	63	$\frac{1}{3}$ do		
120 $\frac{1}{2}$ 3	90	90	$\frac{1}{2}$ do		
44 $\frac{1}{2}$ 3	44	22	$\frac{1}{3}$ do		
130 $\frac{1}{2}$ 3	65	130	$\frac{2}{3}$ do	do	Salungulali
6 $\frac{1}{2}$ 2		6		New stone in rear of South wing of weir	
45 $\frac{1}{2}$ 3	22 $\frac{1}{2}$	45	$\frac{2}{3}$ do		
14 $\frac{1}{2}$ 3	10 $\frac{1}{2}$	10 $\frac{1}{2}$	$\frac{1}{2}$ do		
21 $\frac{1}{2}$ 4		42		All new stone in front of breach	
				Large fault	
171 . .				Good	
198 $\frac{1}{2}$ 3	198	99	$\frac{1}{3}$ new stone		
120 $\frac{1}{2}$ 3	180		old stone		
33 $\frac{1}{2}$ 3	33	16 $\frac{1}{2}$	$\frac{1}{3}$ New stone		
24 $\frac{1}{2}$ 5		60	New stone at breach		
258 $\frac{1}{2}$ $3\frac{1}{2}$	451 $\frac{1}{2}$		Rebuilding old stone to sluice		
120 $\frac{1}{2}$ 3	180		do do		
66 $\frac{1}{2}$ 2	49 $\frac{1}{2}$	16 $\frac{1}{2}$	$\frac{1}{4}$ New stone		
24 $\frac{1}{2}$ 2		24	All new		
Total Culvert	1615 $\frac{1}{2}$	642 $\frac{1}{2}$			

				Lengthening 1 st sluice
12 $2\frac{1}{2}$ $\frac{3}{4}$	22 $\frac{1}{2}$			Flooring to sluice
24 $\frac{3}{4}$ 1	18			Side walls
12 $\frac{3}{4}$ $\frac{3}{4}$	29 $\frac{1}{4}$			Arch
4 4 $\frac{3}{4}$	12			Floor to Basin
19 $\frac{3}{4}$ 4	57			Walls to do
Total Culvert	138 $\frac{3}{4}$			Brick in Mortar
				Rebuilding front and rear portion of 2 nd sluice
24 $2\frac{1}{2}$ $\frac{3}{4}$	45			Flooring
48 $\frac{3}{4}$ 1	36			Side walls
24 $\frac{3}{4}$ $\frac{3}{4}$	58 $\frac{1}{2}$			Arch
8 4 $\frac{3}{4}$	24			Floor to Basin
38 $\frac{3}{4}$ 4	114			Walls to do
Total Culvert	27 $\frac{1}{2}$			
144 $1\frac{1}{2}$ 2	432			Raising wing walls of Salungulali

Adjacent Cawmies 95-8-4 Rs. 502-3-10

Average revenue of 5 years " 352-0-6

Date of last repair and cost of large fault Rs. 674-1-10 of 3rd June/60
do do Small do. 285-10-8 of 15th October/59

Necessity of work. Fault breached in 5 places and carried away the Railway embankment. If the tunnel is raised and under the sluices must be lengthened in rear. Structure collapsed in portion, without backing and in general too low.

The high rate entered for earth for the breaches is in consequence of the earth having to be shifted 100 yds. and the soil being brackish.

Cause of rate being high for repair. It will be necessary to remove the whole of the stone, cut away portions of the tunnel to

to obtain a correct alignment. - excavate foundation for and
 construct the structure one and a half feet below the river bed
 to supply first for a backing for the whole, - and finish off the
 river top slope. -

P.M. 5/11/73.

No. 623.
 From Dist Engr North Street No 1362 to the
 To Ch Ch - 459 ft - 28 -
 From Ch Ch - 1768 - 30 August 1873

Note by the Chief Engr for Irrigation

The submission of an esti-
 mate for the repair of the
 Shalunghy Tank was delayed
 in the first instance by
 press of work, and afterwards
 by the necessity of a reference
 to the District Engineer for
 further information. Some of
 the work was done in emer-
 gency and a great deal of
 the earthwork had been car-
 ried out before I visited the
 Tank with Captain Kinnif-
 erch in May last. This is
 one of the Tanks which caused
 damage to the Madras Rail-

Go. No 13.
 86 Survey
 1873.

2. Under the explanations furnished by the District Engineer the estimate is recommended for sanction. The average Revenue of the Tank is only Rupees 352, but the work provided for is not in excess of that required for the safety of the Tank, and as a consequence of the Railway

3. I am not altogether satisfied that the explanations of the rates are sufficient. So far as railway rates affect the price of labour, or in other words the daily hire of a cooly, their influence on P.M. rates may be at once admitted, but railway rates themselves are no guide to what should be allowed for Departmental work, because the former provide for profits to contractors and many grades of

of subcontractors, and the same system is not, or should not be, followed in Public works. The justification for it in the case of the Railway is that a very large quantity of work has to be done in a very short time, and this can be accomplished only by the help of many men whose interest it is to obtain labour. P.M. rates should approximate rather to the cost of the work to the lowest grade of subcontractor on the Railways, than to that to the Railway, and the difference is believed to be very great. I am quite willing to admit such an increase of rates, above those of 15 or 20 years ago, as may be supported by the difference between the cooly hire and cart hire.

catchure & then to use, but anything beyond this requires to be very carefully accounted for.

4 With regard to the way in which estimates are prepared, it seems clear that if in a case like this, in which the sanction of Government was necessary, the requirements of the Tank were carelessly determined in a very rough manner, & no proper directions as to the work to be done and as to the relation to be maintained between full tank level, maximum water level and the top of the bund, were drawn up, estimates to be sanctioned locally are not likely to receive more attention, and the funds provided for the maintenance of

of irrigation works cannot be judiciously laid out. The District Engineer says that he cannot do the work properly with the inadequate establishment available, and I quite agree with him that the establishment cannot do all the work required in an efficient manner; but, after providing for emergent work, which sometimes must be done without much regard to economy, Captain Pennington should require all ordinary work to be carefully estimated for and carefully carried out, & the number of works to be taken up should be strictly limited to that which can be so dealt with.

Fort St George 3 Voluntaries Lt Col W.
11 September 1873. 3 Chiefs for Irrigation.
To The Secretary to Govt P.W.D.

No 2526 P. D.

Pro. of the Madras Govt.
Read the following

From the Chief Secy for S. R. No 623 of 11 Sep/33
Encl. 3

The Government
sanction the Estimate amount-
ing to Rupees 3,300 for
the repair of the Thalanga
Tank in the North Arcot
District, but they must
observe that very far
from sufficient care was
bestowed upon its prepara-
tion, and that it is
requisite that, while all
that is necessary to render
tanks

22/9

18/10/33
The Secretary to
Govt. S. R. 2

The Chief Secy

for Proctor

The Secretary to
Govt. S. R. 2

18/10/33

Encl. 11
Recd 15/11/33

Encl. 6

Note on the
revised estimate
for the repairs of
the Thalanga
Tank. S. R. 2

No 2526-18/10/33

No 2526

No 2526-18/10/33

tanks secure and efficient
should be ascertained
and estimated for, it is
essential that the examina-
tion of their conditions
and wants should be so
made as to ensure that
neither too much nor too
little work is provided.

For, but that they are put
in order at the minimum
outlay which will suffice
for the end to be attained.

2. The special atten-
tion of the District En-
gineer is called to para 3
of the note by the Chief
Engineer for Irrigation
on the subject of rates,
and with regard to the
work

Work to be done by the Es-
tablishment, at his
disposal, he will take
care that the number
of works taken up at
once is restricted to that
which can be properly
estimated for to begin
with, and thereafter
efficiently carried out.

Ln. 13/9/13

G.M.

34
4

To The Dist. Eng. Mr. A. C. Smith
Controller with Mr. J. E. Smith
Chief Eng. for Irrig.

S. C. Smith 24/10/13

Ch 507
Govt. of 1873 Madras.
PUBLIC WORKS.

To The District Engineer
North Arcot

Dated

Recd.

Encl. 6

G. O. 16th Oct 1873, No. 2526-

Nos. 235 & 236

Thalavay Tank, North
Arcot Dc - Pp my order
on note by Mr J. B. Esq
for Drafts for submitting
estimate for Repair
of the tank.

N. 235.36.

R. 25 Sept 73
Recd to City 15 Sept 73