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MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	2015	Press
B.P. No.		Mis. —
Dated	15-7	6875
		— 195 —

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
15th July 1875.*

Read the following:—

No. 409.

No. 654.

MEMORANDUM.

In paragraph 21 of the Memorandum of Inspection, dated 14th August 1874, of works in the South Arcot District, remarks were made upon the Katumylur anicut and upon the discreditable manner in which the Sepakkum channel supplied therefrom had been carried out, it being apparent, even on simple inspection, that though reported completed the excavations had stopped far short of the proper levels.

2. *Anicut.*—The original estimate for the project amounted to Rs. 11,000 and was sanctioned in G. O., No. 3,087, of the 1st October 1868. In G. O., No. 212, of the 23rd January 1872, a revised estimate was sanctioned, and this provided for an additional sum of „ 1,663

Making the total „ 12,663

In the first estimate a cut stone apron 24 feet wide in rear of the under sluices and 12 feet wide elsewhere was provided for, and with reference to the remark that the apron as executed is of rubble masonry, the Range Officer, Mr. R. E. Norfor, who prepared both estimates, explains that whereas originally 4,575 cubic feet of cut stone were allowed for, in the revised estimate the quantity was reduced to cubic feet 2,034, and that this sufficed only for the coping of the body or crest wall and for what was used in the head sluice. It must be noticed, first, that the head sluice is a perfectly distinct item of the estimate, and that the quantities allowed for the two works were—

Anicut	...	...	...	...	...	...	Cubic feet	4,161
Head sluice	...	...	...	...	...	...	"	414
Total								4,575

Estimate, dated 22nd August 1868.

The coping throughout was to be 9 inches thick and the items appertaining thereto are—

Cut stone for top of Anicut	...	...	...	...	...	...	C. FT.	336
Do. piers of do	...	...	...	...	...	...	96	
Do. facing to piers	...	...	...	...	...	...	207	
								639
Also the head sluice if constructed as intended required	...	...	...	...	...	...	414	
								1,053

or but little more than half the quantity used, so that the explanations given are incomplete. Mr. Norfor states that he is unable to say what the circumstances were which induced him to dispense with the cut stone, unless it was that he considered that the rough stone on rock, which it appears had been met with, would be equally lasting and cheaper than cut stone.

*Proceedings of the Madras Government, Public Works Department,
15th July 1875.*

3. *Sepakkum Channel*.—For this channel the original estimate provided—

Earthwork, cubic yards 57,620 $\frac{1}{4}$; and in the revised estimate the difference was but trifling, viz:—

	C. YDS.
Earthwork	57,620 $\frac{1}{4}$
Blasting Stones	223 $\frac{1}{2}$
	<u>57,844$\frac{1}{2}$</u>

From the comparative statement, dated 25th February 1875, it would appear that 52,640 cubic yards have been shown in the accounts as excavated and paid for at a cost of Rupees 3,366-12-11, and Mr. Norfor calculates the quantity of work done, or now to be seen, at cubic yards 46,200, or 6,440 cubic yards less than that paid for, and he gives it as his opinion that "as the banks were thrown up some four years ago and apparently not tamped or properly sloped, there has been no doubt a great deal of loosely thrown up earth washed down." The difference however, according to his calculations, is nearly 14 per cent., and moreover three-fourths of the earthwork done was executed when he was the Range officer. Again, the work still to be done, as included in the estimate submitted by him, is as follows:—

4,328	Cubic yards of limestone soil.
148 $\frac{1}{2}$	" of rock to be blasted.
3,548	" of gravel soil to be removed.
145 $\frac{1}{2}$	" of rocks to be burnt and removed.
19,988 $\frac{1}{2}$	" of earthwork.
<u>28,158$\frac{1}{2}$</u>	

Now, if Mr. Norfor's views were correct the total quantity of work required for the channel would be—

	C. YDS.
Already paid for	52,640
Still to be done	28,158
Deduct washed down	6,440
	<u>21,718</u>
	<u>74,358</u>

against the cubic yards 57,844 of his own estimate. Such a discrepancy at once discredits his calculations, and it appears fair to conclude that these as regards either work done or to be done are incorrect; as palpably the channel was never anything like completed, the inference is that a great deal more work than was really done was paid for. It has further to be remarked that the present estimate provides for cutting the channel for the first 1,130 yards, or down to the first aqueduct, on a flatter slope

1 foot too high.

than was formerly intended, because this aqueduct has been built at a higher level than it should have been, or what is the same thing the rock thereat was not cut down to the proper level, and it cannot now be removed without risk of injury to the work. For this mistake Mr. Hawksworth appears to be responsible, as both aqueducts were commenced by him. Mr. Norfor remarks, paragraph 11, that he has always found the estimated quantities of earthworks in cutting exceeded by the actual, owing to the lengths on which the calculations of the former are made being greater than those on which the work is executed. As to this it has to be noticed that the difference can be but small, and, moreover, in the present case much of the work is in embank-

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15th July 1875.*

ment, and for this less than the calculated quantity of earth would be required. On the whole, therefore, the evidence leads to the conclusion that either the original estimate was grossly inaccurate, and this, if the case, might easily and conclusively have been demonstrated, or at least 12,000 and probably 15,000 cubic yards of earthwork have been paid for though not done. Mr. R. E. Norfor as Range officer while three-fourths of the expenditure was incurred, and afterwards as Officiating District Engineer, had ample opportunity for taking care that the work was properly carried out, and upon him the principal share of responsibility, therefore, for the very discreditable manner of its execution must rest.

4. With regard to the proposal to cut the channel as far as the aqueduct in the first mile with the slope of 0.56 feet only instead of 1.56 intended, it must be noticed that this would altogether alter the quantity of water capable of being conveyed, and the undersigned considers, therefore, that the channel should be excavated as originally intended to within a few feet of the aqueduct, and that under the latter a narrower channel, but as wide as can be safely cut out, should be made; then the difference of discharge will be trifling.

5. The item for the removal of prickly-pear has gone through the following changes:—

	RS.	A.	P.
1st.—Estimate based apparently upon no measurements ...	118	11	9
2nd.—Do. do. do.	438	13	1
3rd.—Do. work done	320	1	4
To be done, measurements made	243	1	6
	<u>563</u>	<u>2</u>	<u>10</u>

certainly much of the work remaining to be done is the result of imperfect clearances in the first instance.

6. The estimate provides also for some additional works required to make the channel efficient. These are—

(1.) An inlet and outlet in the 2nd mile, Rupees 352.

The data necessary for determining whether the dimensions allowed are correct have not been noted. At any rate an approximation to the area drained by the stream should have been given; then the maximum water level must not exceed full supply level in the channel, and consequently the crest of the inlet weir must be below that level, and if the channel bank and ruined tank bund be connected probably the crest may be placed at any convenient level or a masonry work here be altogether omitted, for the only advantage of constructing a masonry inlet would be to prevent submergence of cultivated lands in the neighbourhood and loss of water. The outlet with the modifications noted on the plan will probably do. These works, though called in the estimate calingulahs, bear no resemblance to works of that class.

(2.) An under-tunnel Rupees 376.

The normal bottom width of the channel being 6 feet it is not apparent why at this masonry work that width should be doubled; the length of the tunnel should be reduced. Six inches of concrete over the arch will be better than 1 foot of earth. The cost of the tunnel will not exceed Rupees 350.

(3.) Alteration of masonry dam, 3rd mile, Rupees 25.

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15th July 1875.*

Here again the length of crest, 12 feet, appears to be somewhat excessive. No water lines have been marked, and consequently the data for determining the proper length are absent. Judging from the general arrangements, the waterway would seem to be about 68½ square feet against 42, the full area of that of the channel where in cutting. If the central opening be made 10 feet wide, and the walls limiting it be raised another foot, the dimensions will be about right. A rough stone apron, 18 feet by 6 feet wide, will be needed on the lower side.

(4.) Two distribution sluices, Rupees 165.—

The section of the bank as given on the plan bears no resemblance to the normal section, and the sluice tunnels are much longer than is necessary. The head and rear walls are altogether inappropriate to the circumstances, and the slopes would extend over the vent. Water wings as sketched are needed in rear, and similar wings, but with a straight splay, should be added in front. About 50 Rupees will suffice for each sluice. It is a pity that designs are not prepared with reference to the conditions to be satisfied.

7. The work to be done to the anicut will be a revenue charge, and should be met from the repair grant.

The completion of the channel with the additional works required will be a capital charge, and will cost about Rupees 4,000, and the repair of the anicut (revenue) Rupees 222.

The District Engineer should revise the designs of the works and transmit a correct abstract estimate for communication to the Controller.

The sanction already accorded is for	Rs. 12,663
and according to the comparative statement the work already done has cost	Rs. 13,400
and the additional to be done will cost	4,000
	Rs. 17,400

Difference requiring sanction ... 4,737
JOHN MULLINS, Lieut.-Colonel, R.E.,
Offg. Chief Engineer.

OOTACAMUND,
16th June 1875.

(Signed)

No. 410.

ORDER THEREON, 15th July 1875, No. 2,015.

IRRIGATION, No. 44.

THE papers submitted to Government, taken in connection with the remarks of the Chief Engineer for Irrigation when inspecting the Sepakkum Channel, indicate lamentable mismanagement, and very great carelessness. The channel was reported complete in 1872-73, and towards the end of 1873 the then Range Officer brought to the District Engineer's notice that it had not been cut down to its proper depth; but no effective measures were taken to provide for the completion of the channel, and more than two years have elapsed and it is still useless for the purpose for which its formation was sanctioned. There can be little or no doubt also that a large part of the work paid for was never really done.

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15th July 1875.*

2. The Katumylur Anicut Project, of which the channel formed a part, was originally estimated to cost Rupees 11,000, and probably under efficient supervision it might have been carried out satisfactorily for but little more. As it is the work will cost about Rupees 17,400, and the supposed return of 11 per cent. on the outlay will become reduced to 7 per cent., while if establishment charges and interest be included in the cost it is clear that no adequate return for expenditure can be expected from the 316 acres intended to be irrigated.

3. The responsibility for the discreditable failure of this project rests upon Mr. R. E. Norfor, who prepared the estimates, commenced, and carried out about three-fourths of the work, and has been directly or indirectly connected with it throughout. The Government have had to notice on several occasions instances of marked inefficiency in connection with works in Mr. Norfor's charge, and he has recently been called upon to refund a part of the money overpaid on the Vyllore tank. On the other hand, the remarks made in the foregoing memorandum indicate that this officer's qualifications, as regards the designing of works, are far from what must be required from one of his standing. It is not advisable to require him to make a further refund of money wasted or spent on non-existent work, but it is clear to the Honorable the Governor in Council that he must be deemed ineligible for promotion until he exhibits a marked improvement in his method of carrying out public works, and His Excellency therefore directs the removal of Mr. Norfor's name from its present position in the Gradation List to the bottom of the Executive Engineers of the 3rd grade.

4. Supplemental sanction to the extent of Rupees 4,740 for the completion of the channel is given, and the works should be completed at once in anticipation of a specific appropriation of funds, which will be made later in the year on the review of savings and demands at the end of the 3rd quarter.

(True Extract.)

Major, R.E.,

Offg. Joint Secretary to Government.

To the District Engineer, South Arcot.

„ Controller of Public Works Accounts.

„ Chief Engineer for Irrigation.

Exd. S. T. Austin.

Spare Copies

Govt. of (1875) Madras.

PUBLIC WORKS.

THE DISTRICT ENGINEER,

SOUTH ARCOOT,

Dated July 15th.

To,

Resd.

Encl.

G. O. 15th July 1875. No. 2,015.

JULY.

Nos. 409-410

Sepakkum Channel, Katungalur Ancient Project, South Arcot.—Giving supplemental sanction to the extent of Rupees 4,740 for the completion of the —, and directing that the works be completed at once in anticipation of a specific appropriation of funds to be made later in the year. The responsibility for the discreditable failure of this project resting upon Mr. R. E. Norfor, his name is therefore removed from its present position in the Gradation List to the bottom of the Executive Engineers of the 3rd grade.

Irrigation.

7/6/54
Memorandum

In para 21 of the Memorandum of Inspection dated 12th August 1874 of works in the South Arcot District, remarks were made upon the Katungalur Ancient and upon the discreditable manner in which the Sepakkum Channel supplied there. If and had been carried out, it being apparent even on simple inspection that though reported completed the excavations had stopped far short of the proper levels.

Anicut. 2. The original estimate for the project amounted to Rupees 11,000 and was sanctioned in h. O. No. 3087 of the 1st October 1868. In h. O. No. 312 of the 23rd January 1872 a revised estimate was sanctioned and this provided for an additional sum of Rupees. 1663

Making the total Rupees 12,663

Plan dated 24th Feb 1868 In the first estimate a cut stone apron 2 1/2 feet wide in rear of the under sluices

and 12 feet wide elsewhere was provided for and with reference to the remark that the apron as executed is of rubble masonry, the Range Officer, Mr. R. E. Dorfor, who prepared the estimate explains that whereas originally 4,575 C.F. of cut stone were allowed for, in the revised estimate the quantity was reduced to C.F. 2,034 and that this suffices only for the coping of the body or crest wall and for what was used in the head sluice. It must be noticed first that the head sluice is a perfectly distinct item of the estimate, and that the quantities allowed for the two works were

Letter No 892
para 10.

Ancient	C.F. 4161
Head sluice	414

Total C.F. 4575

The coping throughout was 6 9/16 inches thick and the items appertaining thereto are

Cut stone for top of Ancient	C.F. 33 1/2
do " piers of do	96
do " facing to piers	209
	639
also the head sluice if constructed as intended required	414

Total C.F. 1053

or but little more than half the quantity used so that the explanations given are incomplete. Mr. Dorfor states that he is unable to say what the circumstances were which induced him to dispense with the cut stone unless it was that he considered that the rough stone on rock, which it appears had been met with, would be equally lasting and cheaper than cut stone.

Sepak Rum Channel.

3. For this Channel the original estimate provided

Earth work Cubic Yards 57,620 1/4
and in the revised estimate the difference was but trifling viz:

Earth work	C Yds 57,620 1/4
Blasting stones	223 7/8
	57,844 1/8

From the comparative statement dated 25 February 1875 it would appear that 52,610 C Yds have been shown in the accounts as excavated and paid for at a cost of Rupees 3,366-12-11 and Mr. Dorfor calculates the quantity of work done, or now to be seen, at Cubic Yards 46,200 or 6,410 cubic Yards less than that paid for, and he

he gives it as his opinion that "as the banks were thrown up some 4 years ago and apparently not tamped or properly sloped, there has been no doubt a great deal of loosely thrown up earth washed down". The difference however, according to his calculations is nearly 14 per cent, and moreover $\frac{3}{4}$ of the earthwork done was executed when he was the Range Officer. Again the work still to be done as included in the estimate submitted by him is as follows.

4,328	Cy of limestone soil
148 $\frac{1}{2}$	do of rock to be blasted
3,548	do of gravel soil to be removed
148 $\frac{3}{4}$	do of rocks to be burnt and removed
19,988 $\frac{1}{2}$	do of earthwork
28,158 $\frac{3}{4}$	

Now if Mr. Harford's views were correct the total quantity of work required for the channel would be.

Already paid for Cy	52,640
Still to be done Cy	28,158
do washed down	6,440
	21,718

against the Cy 57,844 of his own estimate. Such

1 foot too high

Such a discrepancy at once discredits his calculations, and it appears fair to conclude that these as regards either work done or to be done are incorrect; as palpably the channel was never any thing like completed, the inference is that a great deal more work than was really done was paid for. It has further to be remarked that the present estimate provides for cutting the channel for the first 1130 yards, or down to the first aqueduct, on a flatter slope than was formerly intended, because this aqueduct has been built at a higher level than it should have been, or what is the same thing the rock thereat was not cut down to the proper level, and it cannot now be removed without risk of injury to the work. For this mistake Mr. Harford appears to be responsible, as both aqueducts were commenced by

by him. In reference to para 11, that he has always found the estimated quantity of earth works in cutting exceeded by the actual, owing to the lengths on which the calculations of the former are made being greater than those on which the work is executed. As to this it has to be noticed that the difference can be but small, and moreover in the present case much of the work is in embankment and for this less than the calculated quantity of earth would be required. On the whole therefore the evidence leads to the conclusion that either the original estimate was grossly inaccurate and this if the case, might easily and conclusively have been demonstrated, or at least 12,000 and probably 15,000 C yds of earth works have been paid for though not done. Mr R. E. Storer as Range Officer while $\frac{3}{4}$ of the expenditure was incurred and afterwards as officiating

District Engineer had ample opportunity for taking care that the work was properly carried out, and upon him the principal share of responsibility therefore for the very discreditable manner of its execution must rest.

As to the proposal to cut the channel as far as the aqueduct in the first mile with the slope of 0.56 feet only instead of 1.56 intended, it must be noticed that this would altogether alter the quantity of water capable of being conveyed, and the undersigned considers therefore that the channel should be excavated as originally intended to within a few feet of the aqueduct and that under the latter a narrower channel, but as wide as can be safely cut out, should be made; then the difference of discharge will be trifling.

5. The item for the removal of prickly
pear has gone through the following
changes.

1st estimate - based apparently
upon no measurements. Rs 118-11-7

2nd do " 438-13-1

3rd do work done. Rs 320-1-4
to be done,
measurements
made. } 243-1-6 563-2-10

Certainly much of the work remaining
to be done is the result of imperfect
clearances in the first instance.

6. The estimate provides also for some
additional work required to make
the channel efficient.

These are:

1. An inlet and outlet in the 2nd mile Rs 352.
The data necessary for determining
whether the dimensions allowed are correct
have not been noted. At any rate
an approximation to the area drained
by the stream should have been given;
then the maximum water level must
not

not exceed full supply level in the
channel, and consequently the crest
of the inlet weir must be below
that level, and if the channel
bank and ruined tank bund be
connected probably the crest may
be placed at any convenient level
of a masonry work here be ab-
solutely omitted for the only advan-
tage of constructing a masonry
inlet would be to prevent sub-
mergence of cultivated lands in the
neighbourhood and loss of water. The
outlet with the modifications noted
on the plan will probably do.
These works though called in the
estimate Calingulaho bear no
resemblance to works of that class.

2. An under tunnel Rupees 376.

The normal bottom width of the
channel being 6 feet it is not
apparent why at this masonry
work that width should be doubted
the

the length of the tunnel should be reduced - Six inches of concrete over the arch will be better than 1 foot of earth - The cost of the tunnel will not exceed Rupees 350.

3. Alteration of masonry dam 32
Rupees 25.

Here again the length of crest 12 feet appears to be somewhat excessive. No water lines have been marked and consequently the data for determining the proper length are absent. Judging from the general arrangements the waterway would seem to be about $68\frac{1}{2}$ square feet against 42, the full area of that of the Channel wherein cutting - If the central opening be made 10 feet wide, and the walls limiting it be raised another foot the dimensions will be about right - A rough stone apron, 18 feet by 6 feet wide will be needed on the lower side.

4. 2 Distribution sluices Rupees 165

The section of the bank as given on the

5
the plan bears no resemblance to the normal section, and the sluice tunnels are much lower than is necessary - The head and rear walls are altogether inappropriate to the circumstances, and the slopes would extend over the vent. Water wings as sketched are needed in rear and similar wings, but with a straight splay, should be added in front - About 50 Rupees will suffice for each sluice - It is a pity that designs are not prepared with reference to the conditions to be satisfied.

6
7. The work to be done to the Anicut will be a Revenue charge and should be met from the repair grant.

The completion of the channel with the additional works required will be a capital charge, and will cost about Rupees 4,000 and the Repair of the Anicut (Revenue) Rs 222

Difference requiring sanction Rs 4.737

Polacumund
16th June 1875

To
The Offg. Secretary of Government
S.H.O.

can

W. H. H. H.
H. H. H. H.

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22-10-1942

P. W. 1875 Sept.
No: 4399

From

The Offg. Chief
Engineers

Dated 16 June
1875

L. 7. No: 554

Memo: on the estimate
for repairs to the
Hatchery Ancient
South Creek Dist.
&c.

X Given to Mr
Hankins
9 July -

S.B. No: 2015: 15-7-75.

N 409

Pub. Works Dept.
Proceedings of the Indian Government
Read the following:-
From
The Offg Chief Engineer (H.S. No 652 d/16 June 1875)

No: 2015

The papers submitted
to Government, taken
in connection with the
remarks of the Chief
Engineer for Irrigation
when inspecting the
Sefak Rum Channel
indicate lamentable
mismanagement, and
very great carelessness.
The channel was re-
ported complete in
1872-73 and towards
the end of 1873 the then
Range Officer brought
to the District Engineer
notice that it had not

commenced, and carried
out about $\frac{3}{4}$ th of the
work, and has been
directly or indirectly
connected with it through
out. The Government
have had to notice on
several occasions in-
stances of marked
inefficiency in connec-
tion with works in Mr.
Torf's charge, and he
has recently been called
upon to refund a part
of the money overpaid
on the Tyloer tank.
On the other hand the
remarks made in the
foregoing Memorandum
indicate that this
Officer's qualifications
as regards the designing

10
of works are far from
what must be required
from one of his standing.
It is not advisable to
require him to make
a further refund for
money wasted or spent
on non-existent work,
but it is clear to the
Honorable the Governor
in Council that he
must be deemed in-
eligible for promotion
until he exhibits a
marked improvement
in his method of car-
rying out Public Works,
and His Excellency
therefore directs the re-
moval of Mr Torf's
name from its present
position in the Gradation

list to the bottom of the
Executive Engineers of the
3^d grade.

8- Supplemental save-
-tion to the extent of
Rs 4,740 for the
completion of the chan-
-nel is given, and the
work should be com-
-pleted at once in an-
-ticipation of a specific
appropriation of funds,
which will be made
later in the year on
the review of savings
and demands at the
end of the 3^d quarter.

44. 18/6.

409-410

SC 23-7-75

11-7-75
J.E. Southcott

35

4 X
Given to Mr
X

with the Enclosure

is therefore removed from
present position in the
Gradation list to the
of the Executive Engineer
of the 3rd grade.

4399

Gobt. of (1875) Madras.
PUBLIC WORKS.

W. H. H. H. H.
W. H. H. H. H.

Dated

Issued

Recd.

Encl.

O. O. 15th 1875. No. 2015

No. 409-410

Apprentice Channel, Kattumylar
Canal Project, S. District. Giving
supplemental sanction to the extent
of Rs. 4,740 for the completion
of the ~~work~~, and directing that the
works be completed at once in
anticipation of a specific appro-
priation of funds to be made later
in the year. The responsibility
for the ~~irrevocable~~ failure
of this project resting upon
Mr. H. S. Hor for his name