

(1) Number of pages 25

(2) Date of repair 1866

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE.

Government of Madras.

Public works **DEPARTMENT.**

G.O. No. 1006	Press
638-639	<u>Mis.</u>
Dated 27-3-	1866.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department.
27th March 1866.

No. 638. Read the following letter from the Consulting Engineer for Irrigation and Canal Company, to the Secretary to Government, Department of Public Works, dated Madras, 3rd March 1866, No. 155 :—

1. I have the honor to submit, for the consideration of Government, a letter No. 507 of the 10th January, from the Agent and Manager Madras Irrigation and Canal Company, with its accompanying letter No. 1,123 of the 22nd December from the Chief Engineer, and a report by the Executive Engineer Bowanassy Division, forwarding a revised estimate for the earthworks of the Main Canal in the 5th Section, miles 61 to 72 inclusive.
- 2 Letters in original from Agent.
1 Copy of do. to do.
1 Comparative Statement.
1 Abstract Estimate.
1 Statement showing difference between original and revised estimate.
Nos. 1 to 14, detailed Estimate.
8 Plans.

2. The original sanction* for this section was Rupees 2,05,967,† or Rupees 17,163 a mile. When a double banked canal in the 63rd mile was substituted for a single bank, in order to avoid the submergence of the Teragopila valley, an additional sanction, Rupees 22,538,‡ was given for raising the banks two feet in the 61st, 62nd, and 63rd miles, and a third sanction,|| amounting to Rupees 1,16,650, provided for the second bank in the Teragopila valley, which had been omitted from the previous estimate, and for excess caused by increase of rates and additional work in the 72nd mile. The total of the estimates at present sanctioned is, therefore, Rupees 3,45,155, or Rupees 28,762 a mile, being an increase of 67 per cent. on the first estimate. The total of the revised estimate now submitted is Rupees 5,57,649-15-0, less Rupees 165-15-0 the value of stone obtained from the Metacondal cutting, and used on other works, or Rupees 5,57,484; but this includes Rupees 50,000 for stores and plant, which will not be an ultimate charge against the works, and which, in accordance with the arrangement approved for other sections, may therefore be deducted, making the reduced total Rupees 5,07,484, or Rupees 42,290 a mile, an increase of 146 per cent. on the original estimate, and making the supplemental sanction required to be Rupees 1,62,329. Of this sum Rupees 50,000 are to cover the charges of plant and stores used on the work, and Rupees 30,000 represent the value of the stone expected to be obtained from the Metacondal cut; but the stone actually found proved to be a friable shale, and, instead of this considerable sum, Rupees 165-15-0 only were realized, and so the deduction made from the original estimate has to be cancelled.

* Proceedings Madras Government, No. 736, dated 11th April 1862.

† Amount sanctioned for earthwork and revetment... 2,18,998 11 3
Do. for proportion of superintendent and sundries... 16,968 15 3

‡ Proceedings Madras Government, No. 2,382, dated 19th August 1864.

|| Proceedings Madras Government, No. 3,357, dated 22nd November 1864.

Deduct value of stores... 2,35,967 10 6
30,000 0 0

2,05,967 10 6

3. Allowing for this erroneous deduction the several estimates will stand thus :—

Per-centage of increase.

Original... Rupees 2,35,967 . . . 9.5

2nd 3,75,155 ... 58.9

3rd 5,07,484 ... 115.

4th

4. In examining the estimates and the cross sections of the embankments as proposed to be completed, it appeared to me that in some cases the dimensions of the banks were in excess of what was absolutely necessary, and that it was not requisite to give the outer and inner slopes the same degree of flatness, as the latter alone were subject to the action of the canal water. In some instances also the rates entered required explanation and, perhaps, reduction. A reference was therefore made, and the Chief Engineer has explained in his reply why he does not consider that any alteration should be made in the earthworks, and as regards rates he has altered some and shown why those unaltered were fixed as entered.

To Agent, No. 337, 17th January, No. 1,274 of the 1st ultimo.

Paragraphs 2 to 8.

5. The red ink alterations in the general estimate, comparative statement, &c., have been made in this Office from the revised detailed estimates forwarded by the Chief Engineer. The amounts of former sanctions quoted in this letter differ from those entered by the Chief Engineer by Rupees 44, and this small discrepancy was pointed out in my letter to the Agent, but as it has not been explained, and as it does not affect the total estimated cost of the work, I have merely made the necessary correction at the foot of the estimates.

6. The comparative statement shows the difference between the quantity and cost of the earthworks and pitching in the several miles as previously and now estimated. It will be seen that the works not before provided for are—

Pitching to outer slope of upper banks at Vagoo ...	RS.	A.	P.
Do. at sluices and calingulahs	1,229	4	0
Catch-water drains	943	4	0
Tree planting	4,649	13	11
Ferry approaches and revetments	1,074	0	0
	1,352	12	8
Contingencies 10 per cent. ...	9,249	2	7
	924	11	0
	10,174	0	7
	50,000	0	0
	60,174	0	7

To which may be added the allowance for plant and stores

Another item which may be noticed is the pitching, for which hitherto the amount allowed was very insufficient. On this in the 63rd and 64th miles the extra sanction asked for is Rupees, 21,236-4-10; of which Rupees 20,367-6-10 are for the 63rd mile, against Rupees 2,576-9-0 allowed in former estimates. The cost of earthworks in the same mile is very heavy. Rupees 56,306-7-7 have already been allowed: the work done has cost Rupees 47,269-2-4, and Rupees 33,604-12-0 are still required, causing an excess of Rupees 24,567-6-9. Exclusive, therefore, of the aqueduct and its subsidiary works, which probably before they are finished will much exceed the present sanction, Rupees 36,910, the outlay on this mile will be—

For earthworks	Rupees
Pitching	80,873-14-4
"	26,259-3-2
	Rupees 1,07,133-1-6

Adding the increased cost of pitching Rupees 21,236, with its share of contingencies 2,124 Rupees, to the sum Rupees 60,174 for additional works including

provision for plant, and deducting this total, Rupees 83,534, from the supplemental sanction, Rupees 1,62,329, now required, the difference, Rupees 78,795, represents the increased cost of earthwork, &c.

7 The estimates hitherto sanctioned provided for earthwork to the extent of cubic yards 20,48,239, which were estimated to cost Rupees 3,45,088, or a general average rate of 2 $\frac{3}{4}$ Annas a cubic yard. The present revised estimate includes cubic yards 22,12,376, for which Rupees 3,82,169 are allowed, or an average of 2 $\frac{3}{4}$ Annas a cubic yard. The nature of the soil in the 72nd mile, in which is the greater part of the Metacondal cutting, somewhat interferes with the fairness of the general average, and, excluding this mile, the former average becomes 2 $\frac{1}{2}$ Annas, and the present 2 $\frac{4}{5}$ Annas a cubic yard. It is intimated in the Executive Engineer's report that the system of lump contracts adopted has prevented any loss from over-pay-

ments, and it may be assumed, therefore, that the additional quantity* of earthwork now provided is required to secure

the stability and efficiency of the canal; and, granting this, and taking into consideration the high rates prevailing in contiguous divisions, I am of opinion that the cost of the earthworks, if completed within the present estimate, will not be excessive.

8. Subject to funds from Guaranteed Capital being available, I beg to recommend that supplemental sanction for the 5th Section, Main Canal, to the extent of Rupees 1,62,329 be given.

9. I subjoin a Memorandum of the amount of estimates already sanctioned or submitted with the probable total expenditure which will be necessary in connection therewith:—

	RS.
Amount of estimates already sanctioned...	70,01,874
Cash expenditure to 31st October	55,79,476
Cost of Permanent Establishment	16,14,447
Stores and other floating heads of charge	11,85,188
Home charges not included in Indian Account ...	3,19,123
	86,98,234
Balance of sanctioned estimates	14,45,247
Deduct postponed works	3,50,000
	10,95,247
Permanent Establishment at 30 per cent... ..	3,28,574
Home charges	40,000
Probable expenditure for completion of sanctioned works	101,62,055
Supplemental sanction for 5th Section now asked for	1,62,329
Cost of Permanent Establishment 30 per cent. thereon	48,691
Home charges, stores, &c., at 20 per cent... ..	32,466
Probable total outlay in connection with estimates above referred to, including that for 5th Section.	104,05,541

No. 639.

ORDER THEREON, 27th March 1866, No. 1006.

CIVIL WORKS, No. 80.

1. With this letter the Consulting Engineer submits a revised estimate, amounting to Rupees 5,57,484, for the

*Proceedings of the Madras Government, Public Works Department.
27th March 1866.*

earthworks and revetments of the 5th or Bowanassy Section (miles 61 to 72 inclusive) of the Madras Irrigation and Canal Company's Canal:—

2. The estimates for this section already sanctioned are as follows:—

Proc. Madras Govt. No. 736 dated 11th April 1862.	Original sanction	Rs.
" " 2,382 " 19th August 1864	Supplemental do.	2,05,967
" " 3,357 " 22nd Nov. "	Do. do.	22,538
		1,16,650
		3,45,155

or Rupees 2,12,329 less than that now submitted, but as a sum of Rupees 50,000 on account of depreciated value of stock in store, which will not ultimately be a charge against the work is included in this account, sanction is actually required for Rupees 1,62,329 only.

3. The Consulting Engineer explains that this large excess has thus arisen—

Value of plant used on the work not allowed for in the original Estimate	Rs.	A.	P.
Value of Metakondah cutting, stone allowed in original Estimate, but not realized...	50,000	0	0
Works not before provided for	30,000	0	7
Increased cost of pitching	9,249	2	0
Do. do. earthwork	21,236	4	10
Contingencies at 10 per cent	37,082	0	7
	14,761	8	0
	1,62,329	0	0

The first item calls for the remark that the sum to be written off on account of the value of tools and stock, very nearly 10 per cent. on the total cost of the work, appears exceedingly high. The amount previously allowed for pitching is stated to have been very insufficient and hence the present increase. The estimates hitherto sanctioned provided for 20,48,239 cubic yards of earthwork at a cost of Rupees 3,45,088, whilst the present estimate provides for 22,12,736 cubic yards at a cost of Rupees 3,82,169, being an excess of 10 per cent. in quantity and about 16 per cent. in the rates; but taking into consideration the high rates paid in neighbouring sections, the Consulting Engineer is of opinion that if the earthworks are completed within the present estimate the cost will not be excessive. The remaining item is for the estimated value of stone obtained from the Metakondah cutting which was deducted from the amount of the original estimate, but which could not be realized as the stone obtained proved to be a friable shale.

4. The Government resolve to sanction the estimate now submitted provided that funds are available within the guaranteed million.

(True Extract.)

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

To the Consulting Engineer for Irrigation and Canal Company, with twenty-eight Enclosures.
" Manager for do. do.

Exd S. T. Augustin.

Consulting Engineer's Office
Irrigation and Canal Company
Madras 3rd March 1866.

N^o 155.

Respected Sir,
I have the honor to acknowledge the receipt of your letter of the 10th inst. in relation to the estimate for the 5th or Bowanassy Section of the Madras Irrigation and Canal Company's Canal, and in reply to inform you that the same has been forwarded to the Secretary to Government, Public Works Department, for his consideration.

I have the honor to submit for the consideration of Government a letter N^o 507 of the 10th January from the Agent and Manager Madras Irrigation and Canal Company, with its accompanying letter N^o 1123 of the 22nd March from the Chief Engineer, and a report by the Executive Engineer Bowanassy Division, forwarding a Revised Estimate for the earthworks of the Main Canal in the 5th Section, miles 61 to 72 inclusive.

The original sanction for this section was Rupees 2,05,967 or Rupees 17,163 a mile. When a double banked canal in the 63rd mile was substituted for a single bank in order to avoid the submerged of the Serapilla valley, and additional

Estimated cost for earthwork and revetments 2,18,998-11-3
" for proportion of superintendence and sundries 1,69,68-15-3
2,35,967-10-6
Deduct value of stores 30,000-0-0
2,05,967-10-6

additional sanction Papes 22,538 was given for P.M. 4. 11. 2382 / 17 Aug 64 raising the bank 2 feet in the 61st, 62nd, and 63rd miles, and a third sanction amounting to Papes 116,650 provided for the second bank in the Tera-gajula valley, which had been omitted from the previous estimate, and for expenses caused by increase of rates, and additional work in the 72nd mile. The total of the estimates at present valuation is therefore Papes 3,45,155 or Papes 28,762 a mile, being an increase of 67 per cent on the first estimate. The total of the revised estimate now submitted is Papes 5,57,649-15-00, less Papes 165-15-00 the value of stone obtained from the Metacandal cutting and used on other works, or Papes 5,57,484, but this includes Papes 50,000 for stores and Plant which will not be an ultimate charge against the works, and which, in accordance with the arrangement approved for other sections, may therefore be deducted, making the reduced total Papes 5,07,484, or Papes 42,290 a mile, ~~being~~ an increase of 146 per cent on the original estimate, and making the supplemental sanction required to be Papes 1,62,329- Of this sum Papes 50,000 are to cover the charges of Plant and Stores need and the work, and Papes 30,000 represent the value of the stone expected to be obtained from the Metacandal Cut, but the stone actually found proved

proved to be a friable shale, and, instead of this considerable sum, Papes 165-15-00 only were realized, and so the deduction made from the original estimate has to be cancelled.

3. Allowing for this erroneous deduction the several estimates will stand thus:

Original Papes	235,967	Percentage of increase
2 nd	258,505	9.5%
3 rd	375,155	58.9%
4 th	507,484	115%

4. In examining the estimates and the cross sections of the sub-bankments as proposed to be completed, it appeared to me that in some cases the dimensions of the banks were in excess of what was absolutely necessary, and that it was not requisite to give the outer and inner slopes the same degree of flatness, as the latter alone were subject to the action of the canal water. In some instances also the rates entered required explanation and perhaps reduction. A reference

being made to the 11th 337-17 Aug was therefore made and the Chief Engineer 11th 1274 of the 1st ult. has explained in his reply why he does not consider that any alterations should be made in the earthworks, and as regards rates he has altered some and shown why those matters were fixed as entered.

para 8: 2 to 8

5. The red ink alterations in the General Estimate

Estimate, Comparative Statement has been made in this office from the revised details estimates forwarded by the Chief Engineer. The amounts of former sanctions quoted in this letter differ from those entered by the Chief Engineer by Rupees 44, and this small discrepancy was pointed out in my letter to the Agent, but as it has not been explained, as it does not affect the total estimate cost of the work, I have merely made the necessary correction at the foot of the estimate.

6. The comparative statement shows the difference between the quantity and cost of the earthworks and pitching in the General miles previously and now estimated. It will be seen that the works not before provided for are:

Pitching to outer slope of upper banks at Vagor	1229-4-0 ✓
Do at sluices and culverts	943-4-0 ✓
Catchwater Drains	4649-13-11 ✓
Tree plantings	1074-0-0 ✓
Serry approaches and enclosures	1352-12-0 ✓
Contingencies 10 per cent	9249-2-7 ✓
to which may be added the allowance for plant & stores	424-12-0 ✓
	10175-1-7 ✓
	50000-0-0 ✓
	60175-1-7 ✓

Another item which may be noticed is the pitching for which hitherto the amount allowed was very insufficient. On this in the 63rd and

64th miles the extra sanction asked for is 21236-4-0 of which Rupees 20367-6-10 are for the 63rd mile, against 2576-9-0 allowed in former estimates. The cost of earthenworks in the same mile is very heavy; Rupees 56306-7-7 have already been allowed and the work done has cost 47269-2-4 and Rupees 38604-12-0 are still required, leaving an excess of Rupees 21567-6-9. To balance therefore of the agreed and its subsidiary works, which probably before they are finished will much exceed the present sanction, Rupees 36910-0-0 the outlay on this mile will be

For earthenworks	Rupees 80073-14-4 ✓
Pitching	26259-3-2 ✓
	107133-1-6 ✓

Adding the increased cost of pitching Rupees 21236, in that & share of contingencies 2124 Rupees, to the sum Rupees 60714 for additional works including provision for plant, and deducting this total, Rupees 83534 from the supplemental sanction, Rupees 162329, now required, the difference, Rupees 78795, represents the increased cost of earthenworks.

7. The estimates hitherto sanctioned provided for earthenworks at the rate of 2048239, which more restricted to cost Rupees 345000, on a general average rate of 2 1/2 cubic yards. The present revised estimate includes cubic yards 2212376, for which Rupees 382169 are allowed, or an

an average of $2\frac{3}{4}$ annas a cubit yard. - The nature of the soil in the 72nd mile, in which is the greater part of the Metacandal cutting, is somewhat interferes with the fairness of the general average, and excluding this mile, the former average becomes $2\frac{1}{2}$ annas, and the present $2\frac{3}{4}$ annas a cubit yard. It is intimated in the Executive Engineer's report that the system of lump contracts adopted has prevented any loss from overpayments, and it may be assumed therefore that the additional quantity of earthwork now provided is required to secure the stability and efficiency of the canal; and, granting this, and taking into consideration the high rates prevailing in contiguous divisions, I am of opinion that the cost of the earthworks completed within the present estimate, will not be excessive.

3. Subject to funds from Guaranteed Capital being available, I beg to recommend that supplemental sanction for the 5th Section's Main Canal to the extent of Rs. 162,329 be given.

4. I subjoin a Memo of the amount of estimates already sanctioned or submitted with the probable total expenditure which will be necessary in connection therewith.

Amount

Amount of estimates already sanctioned - 700,187 4
 Cash expenditure to 31st October - 57,947 6 11
 Cost of Permanent establishment - 164,447
 Stores & other floating heads of charge - 118,518 8
 Name charges not included in Indian amount - 3,19,123 86,98,234
 Balance of sanctioned estimates - 14,524 7
 Deduct postponed work - 35,000 10,95,247
 Permanent establishment @ 30 percent - 32,857 4
 Name charges - 4,000
 Probable expenditure for completion of sanctioned works - 10,16,255
 Supplemental sanction for 5th Section now asked for - 162,329
 Cost of permanent establishment - 30 percent thereon - 48,691
 Name charges, Stores &c @ 20 percent - 32,466
 Probable total outlay in connection with estimates above referred to, including that for 5th Section - 10,40,551

I have the honor to be
 Sir,
 Your most obedient servant,
 Colundullis Captain, A.E.
 Engineer for S.C. Company

1006
Proceedings of the Machine Commission
Under date the 27th March 1866
Read the following

From the Comy. Engineer
J. J. & Co. 27th March 1866

With this letter the
Consulting Engineer sub-
mits a revised Estimate
amounting to Rs. 5,57,484
for the earthwork and re-
volvement of the 5th or
6th section (Sections 61 to 72 inclusive) of the
Machine Irrigation and
Canal Company's Canal.
The Estimate for
this section already re-
vised are as follows.

Original

Received by the Comy. Engineer
the 27th March 1866
Copy in the letter to the Comy. Engineer
of the 27th March 1866.

Received by the Comy. Engineer
the 27th March 1866
Copy in the letter to the Comy. Engineer
of the 27th March 1866.

(Dated 3rd March 1866)

Page 28.

Submitted for the consideration
of Government a letter dated 27th March 1866
from the Comy. Engineer
in which he has submitted
a revised Estimate for the work
of the 5th or 6th section of the
Machine Irrigation and
Canal Company's Canal.

Original sanction — 205,967

Supplemental — do — 22,538

~~228,505~~

345,155

which is less than

that now submitted, but

as a sum of Rs. 50,000

on account of depreciated

value of stock in store,

which will, not ultimately

be a charge against the

work, is included in this

account, sanction is ac-

tually required for Rs.

1,62,329 only.

The Consulting En-

gineers explain that this

large excess has thus

arisen

Proc. H. C. No. 756 of 11 April 1862.
" — 2382 — 19 August 1864.
" — 3357 — 22nd Nov. "

Value of plant used on
the work not allowed
for in the original Co.
— 50,000 —

Value of Metacondah Cutting
stone allowed in original
Estimate but not realized — 30,000

Works not before provided for — 9,249-2-7

Increased cost of pitching — 21,236-4-10

do. do. earthwork — 37,082- - -

Contingencies at 10 per cent — 14,761-8-7

The first item calls for
the remark that the sum
to be written off on account
of the value of tools and stock,
very nearly 10 per cent on
the total cost of the work,
appears exceedingly high.

The amount previously
allowed for pitching is
stated to have been very
insufficient and hence the

the present increase

Then estimates hitherto sanc-

-tioned provided for 2048239

cubic yards of earthwork

at a cost of Rs. 3,45,088

whilst the present estimate

provides for 2212736 cubic

yards at a cost of Rs.

3,82,169 being an excess

of 10 per cent in quantity

and about 16 per cent in

the rate, but taking into

consideration the high

rates paid in neighboring

sections the Consulting

Engineer is of opinion

that if the earthworks

are completed within the

present estimate the cost

will not be excessive.

The

The remaining item is
for the estimated value
of stone obtained from
the Alai Kondah cutting
which was deducted
from the amount of the
original estimate but
which could not be
valued as the stone
obtained proved to be a
friable shale.

The Government
resolve to sanction the Es-
timate now submitted
provided that funds
are available within the
guaranteed million.

It is recommended
from the Committee
to the P. & F. Committee
to be approved.

Conf. Eng. for 1900-01. 28th March 1900

4 Managers. 505 18

28th March

Copy in Letter to England
of 24: April 1866.

To W W D
Pro. of Court for March

A. 1000.
Pro. of the Marine Court
of 24th March 1866

1000
1000
1000

The revised estimate
amounting to £5,571 18s for
Earthworks and reclamation
of the Bowanapoy Section of the
Swigaton Company's Canal,
Sunderland Conditionally