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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 2923	Press
457-60	Misr
Dated 19 9	1867.

Not to be folded or roughly handled

1. 5/13

*Proceedings of the Madras Government, Public Works Department,
19th September 1867.*

No. 459. Read the following letter from the Consulting Engineer for Irrigation and Canal Company, to the Secretary to Government, Department Public Works, dated Madras, 6th September 1867, No. 67:—

1 Letter in original from Agent.
1 Report by Mr. H. C. Cotton.
1 Letter by do.
18 Plans.
12 Estimates.

Received with Agent's Endorsement No. 240 of the 28th idem.

1. I have the honor to submit, for the consideration of Government, a copy of a letter No. 509, of the 20th ultimo, from the Chief Engineer, Madras Irrigation and Canal Company, forwarding revised estimates for the masonry works of the 5th Section Main Canal.

2. In the comparative Statement and Abstract Supplemental Estimate, the present sanction for masonry works is entered as 81,547 Rupees, but there is a small mistake in the

				rs.	A.	p.	
* Sanction in G. O. No.	736,	dated 11th April 1862,	for	32,245	13	5	item of Contingen-
Do. in "	2,869,	" 2nd Dec. "	for	9,360	0	0	cies, and the actual
Do. in "	2,880,	" 3rd Oct. 1863,	for	2,691	0	0	sanction is Rupees
Do. in "	217,	" 20th Jan. 1864,	for	654	0	0	81,860-13-5.* The
Do. in "	2,382,	" 19th Aug. "	for	36,910	0	0	corrected amount of
Total ...				81,860	13	5	the revised estimate

is Rupees 1,95,960-13-5, so that the amount of supplemental sanction required becomes Rupees 1,14,100.

3. The Comparative Statement affords no information as to the quantity of work already done, and the expenditure on which amounts to 70,026 Rupees out of the 75,558 sanctioned. The Chief Engineer states that the submission of the estimates has been "delayed in order to obtain reliable measurements of work done to account for the past expenditure," but the records of work appear not to admit of any information on this point being obtained from them, and "to avoid still further delay, and the temporary stoppage of the works of the 5th Section," Mr. Latham has now sent in these estimates, in the hope that Government will not insist upon measurements being taken before sanctioning the funds required for the completion of these works.

4. I altogether differ from the Chief Engineer as to measurements of works being interesting in themselves; nothing Latter part of paragraph 4. can be more uninteresting indeed, but

they are essentially necessary, and in the case of masonry works they are very simple, and no Executive Engineer, with a proper sense of the duties and responsibilities of his position, would for a moment think of permitting the disbursement of money without taking care that the work represented by the expenditure had been carefully measured and recorded.

I allude to this subject again, because the way in which the Chief Engineer has referred to it would seem to show that he does not attach that importance to the systematic record of expenditure, which it seems to me that it undoubtedly demands. The greater part of the outlay shown in these estimates as already incurred, took place before the present Chief Engineer assumed charge, but some works have been in progress since that date, and it would have been more satisfactory, and I should with less hesitation have recommended the Government to permit the continuance of the works, had Mr. Latham been able to show that, at

any rate, regarding this comparatively recent expenditure, all needful care had been taken.

5. Under present circumstances it is probable that delay in according sanction would occasion more inconvenience than the most complete examination of the works would do good, because whatever might be the result of such examination, no beneficial action could be taken thereupon; I therefore beg to recommend that, as was recently ordered in the case of the 7th Section earthworks, sanction be given for the completion of the masonry works of the 5th Section, and that the final passing of expenditure be postponed until the total quantity of work done shall have been, on this completion, ascertained and duly reported.

6. With regard to the work remaining to be done and provided for in these estimates, a few remarks are necessary, and changes in the design of works have to be noticed.

7. The late Executive Engineer's report on the revised estimates is dated October 1865, and the estimates after, it is presumed, revision in the Chief Engineer's Office, bear date September 1866.

Culvert No. 1 has been altered from 6 to 14 feet span. The increase on the culvert itself is Rupees 4,914, and Rupees 1,658 are provided as the *probable* cost of an escape channel or outfall.

Culverts Nos. 2 and 3 were both of 6 feet span in the original estimate, and they have been altered to 8 feet span. I should doubt the correctness of the sums put down against them as expenditure already incurred, for the culverts are exactly alike in design, they are situated only half a mile apart, and yet No. 2 is stated to have cost, exclusive of earthworks, Rupees 2,896, and No. 3 Rupees 1,976. The total estimated cost of these similar works differs as much as 1,720 Rupees. The escape channels of Culverts Nos 1 and 2 are entered to cost the same amount, Rupees 1,658, and the former is taken from the latter, yet one is a 14 and the other an 8-foot culvert, and it is not probable that the necessary outfall works will in either case be the same.

In Culvert No. 1 the excavation for foundations seems over-liberal in quantity; the rate is six Annas a cubic yard, but for the outfall channel eight Annas a cubic yard are allowed, and the latter work ought to be the cheaper of the two.

8. There are two points connected with these culverts, which should receive consideration:—first when the culvert itself is built in a cutting in stratified rock, as is very generally the case, and is intended to be used as a crossing, the puddle should be carried down to, or rather carried up from, the foundations behind the abutments and over the arch; the puddling over the arch alone will not make such a culvert water-tight, and when used as crossings roof and sides ought to be fairly free from leakage. Second, where the culverts are not to be used as crossings, it would generally be far less expensive to build the arches so as to stand the internal pressure due to a head of a few feet of water, than to cut out great lengths of inlet and outfall channels in rock. I am under the impression that originally many of these culverts were intended to be what are called inverted syphons, so that that arrangement would have been perfectly proper had the arches and other masonry been well and carefully constructed of proper materials and thickness.

9. Teragopila Aqueduct.

Original Estimate, Rupees	33,555	0	1	} Difference 63,753.
Present	97,308	15	8	

The design of this work has been somewhat altered and improved. The report shows that the foundations had to be carried lower than was at first supposed necessary. The original rate, $2\frac{1}{2}$ Rupees, for rubble stone in chunam, the great mass of the work, was certainly much too low. At the same time I think the

* Rupees 8 a cubic yard. actual cost* and the estimated cost* of the remainder of this description of

work is too high. Last year, when I was inspecting the canal with the Chief Engineer, that Officer thought 5 Rupees would be a fair rate, and supposing the stone to be brought five or six miles, I consider that 6 Rupees would be a fair and liberal rate, for the stone is so well adapted for building purposes that it needs no dressing for bedding, and but very little on the face to produce the good effect and appearance which the work already done presents. The rate, Rupees 9, entered for archwork, would also tend to show that 6 Rupees for straight work should suffice. There is an item, 32½ squares, of "plastering with two coats of chunam to the in and outside." No outside plastering can be necessary, and on the inside none except on the floor over the arches, which has been separately provided for, unless it be found necessary for the stoppage of leakage; the rate, Rupees 5 a square for this work, is too high. Rupees 6,254-1-9 are entered for pitching in chunam to banks above and below the aqueduct. Some money has already been wasted on work of this description, and pitching in chunam is not a serviceable description of work. Either a masonry revetment wall, or a dry stone revetment, should be constructed, and probably the latter will suffice if the bank be properly consolidated and the revetment backed with suitable soil. The rate, 6 Annas a cubic yard, allowed for rammed earth appears to be altogether unnecessary. Probably $2\frac{1}{2}$ Annas would be enough; one cooly can consolidate as much earth as half a dozen can place in position; the soil is easy, and the lead small.

Altogether I think 76,000 Rupees would be about the fair value of the aqueduct against the 97,300 shown in the estimate.

10. Culverts Nos. 4 and 5 in the 64th and 66th miles have both been enlarged from 6 to 8 feet span. Their considerably increased cost, Rupees 3,850 for the former and Rupees 710 for the latter, are chiefly due to the cost of the outfall channels.

11. In the 67th mile it is intended to construct a 14-foot culvert, No. 6, instead of one of 6 feet, and the drainage is sufficiently considerable to make this a necessity. The estimate for the revised work is Rupees 13,773, and the rates appear fair, with the exception of that, Annas 8 a cubic yard, for the excavation of the outfall channel. I do not think the nature of the sub-soil has been ascertained, and from my recollection of the locality, I should say that nothing requiring such a rate is likely to be met with. This channel, with the approaches, is estimated to cost Rupees 5,597. I may add that in this and other works the rate for concrete, 5 to $5\frac{1}{2}$ Rupees a cubic yard, does not appear to have been founded on carefully ascertained data. Concrete should be much cheaper than masonry, whereas it is in some instances actually rather more expensive.

Proceedings of the Madras Government, Public Works Department.
19th September 1867.

12. Culvert No. 7 of 3 feet span in the 69th mile is entered as having cost Rupees 570, against 1,400 Rupees allowed for it. The escape channel, however, is estimated to cost Rupees 1,484, and, as a culvert of this size cannot be used as a passage, I should recommend the outfall channel being dispensed with, and the arch loaded so as to avoid risk of blowing up. The head of water would not exceed 5 or 6 feet, and with water in the canal the downward pressure would exceed that on the soffit of the arch.

13. The original estimated cost of the scouring sluice in the 70th mile was Rupees 2,484, the revised estimate amounts to Rupees 5,751. The report says it has been built of good stone, and it is thought that its cost will not be deemed excessive. Part of the stone for it was taken from the bed of the canal within a mile of the sluice; the position of the quarries whence the rest was obtained is not stated. The former estimate allowed $2\frac{1}{2}$ Rupees, too low a rate, for the rubble work, but $7\frac{1}{2}$ Rupees and $13\frac{1}{2}$ Rupees were allowed for cut-stone, and Rupees 70 for plastering, none of which were, I think, found necessary. Altogether the average rate of the 390 cubic yards of masonry was about Rupees 3-6-0, and probably Rupees 5-6-0 would have been a liberal rate, and this would have raised the cost of the sluice, exclusive of shutters and escape channel, from 1,494 to 2,274 Rupees, instead of to Rupees 3,861; so that, as far as I can judge, the sluice, which is finished, has cost about 1,500 Rupees more than was necessary.

14. For 3-foot culvert No. 8 an escape channel is to be provided at a cost of Rupees 1,756-6-3, the culvert itself having cost Rupees 1,462. Here again loading the arch and dispensing with the channel would seem to be the proper arrangement.

15. Culvert No. 9 was to have been one of 6 feet; it has been built of 8 feet span, at an increased cost of Rs. 2,200.*
* Which includes 10 feet extra length of barrel. Besides this, however, the escape channel has been entered at Rupees 6,163, and has work to be done. I believe the channel has been cut right through, though I am not certain that it has been fully completed. No detailed estimate of this channel has been sent, and I do not, therefore, know what rate has been given; but if 12 Annas have been allowed, as in the excavations for foundations, this would be 3 or 4 Annas too much.

16. The extra cost, 28 per cent. of the bridge in the 72nd mile, is stated in the report to be due chiefly to the approaches. As the spoil from the cutting would have formed these at a nominal cost, it is not clear why so considerable a sum as 1,450 Rupees should have been necessary.

17. Two ferry boats are still included in the estimate, though from paragraph 23 of my letter, printed in Proceedings of the Madras Government 31st October 1866, No. 3,474, it will be seen that all the ferries have been superseded. The Chief Engineer has still to forward an estimate for the bridge at Pamalapad, crossing No. 8, 69 miles 20 chains.

18. The general result of my examination of these plans and estimates is that, while to enable the Chief Engineer to go on with the works, it may be proper to sanction them, they have not been so carefully prepared as to make it at all certain that the fair and proper cost of the works has been ascertained, and that, therefore, considerable responsibility will attach to the Executive Engineer in

Proceedings of the Madras Government, Public Works Department,
19th September 1867.

working upon such estimates, especially should it be attempted to base contracts upon them.

19. The culvert plans show that the traffic ramps on the lower side require remodelling, the turn at the bottom being much too sharp. They should be arranged on easy curves, and so that the mouth of the culvert may be seen at a distance of a few yards. There should also be room for carts to pass just below the mouth of the culvert, otherwise a cart descending just at the time another cart was issuing from the culvert, would block the passage altogether, and it would, in the case of loaded carts, be a difficult matter to take either cart out of the way.

No. 460. ORDER THEREON, 19th September 1867, No. 2,903.

IRRIGATION, No. 23.

1. With this letter the Consulting Engineer for the Madras Irrigation and Canal Company submits a revised estimate of Rupees 1,95,961, for the masonry works in the 5th Section of the Company's Main Canal. The aggregate of the several sums sanctioned for those works is Rupees 81,861, and the supplemental demand is therefore Rupees 1,14,100, or nearly 140 per cent. The necessity for this additional outlay is alleged to be due to modifications which it is considered expedient to adopt in the designs of some of the works, and to the inadequacy of the rates originally allowed. As, however, no complete measurements of work done have been made, the Government are left without the means or the information which they ought to have before them to enable them to form any reliable judgment as to whether some part at least of the large excess expenditure which is said to be required to finish the works in question is not necessary as the result of the inefficient and careless management of which the Government have had so frequently to complain; but, agreeing with Captain Mullins in considering that the delay which would be entailed by obtaining complete measurements of the work done is likely to cause more inconvenience than to be productive of any advantage, His Excellency in Council sanctions the revised estimates, on the distinct understanding that the passing of the expenditure will be contingent on a satisfactory statement being furnished of the whole of the work done on its completion.

2. The Chief Engineer's attention will be directed to the remarks and suggestions in paragraphs 6 to 19 of Captain Mullins' letter.

(True Extract.)

(Signed) J. H. M. SHAW STEWART, Major, R. E.,

Under Secretary to Government.

To the Consulting Engineer for the Madras Irrigation and Canal Company,

With thirty-three Enclosures.

„ Manager for do. do.

Exd. S. T. Augustin.

Consulting Engineer's Office
Irrigation Canal Company
Madras, 6th September 1867.

N^o 67

From,

Captain, J. C. Pullin, R.E.

Consulting for I.C. Co.

To,

The Secretary to Government
Department of Pub. Works.

Sir,

I have the honor to submit for the consideration of Government a copy of a letter, received with acknowledgment of Government No. 240 of the 28th Decr. — N^o 509 of the 20th ultimo, from the Chief Engineer Madras Irrigation and Canal Company, forwarding revised estimates for the Masonry works of the 5th Section Main Canal.

2. In the Comparative Statement and Abstract Supplemental Estimate the present sanction for masonry works is entered as Rs. 81,547 Rupees, but there is a small mistake in the item of Contingencies, and the actual sanction

*Sanction in G.O. No. 736 of 11 April 62 for Rs. 32265-13-5
Do in Do. No. 2864 of 2nd Decr 62 " 9360- " "
Do in Do. No. 2880 of 3rd Oct 63 " 2891- " "
Do in Do. No. 217 of 20 Jan'y 64 " 654- " "
Do in Do. No. 2382 of 19 Aug 64 " 36910- " "
Rs. 81860-13-5

is Rs. 81,860-13-5.

The corrected amount
of the revised estimate
is Rupees 1,95,960-13-5,

so that the amount of supplemental sanction required becomes Rupees 1,14,100.-

3. The Comparative Statement affords no information

information as to the quantity of works already done, and the expenditure on which amounts to 70026 Rupees out of the 75558 sanctioned. The Chief Engineer states that the submission of the estimates has been "delayed in order to obtain reliable measurements of works done to account for the past expenditure", but the records of works appear not to admit of any information on this point being obtained from them and "to avoid still further delay and the temporary stoppage of the works of the 5th Section" Mr. Latham has now sent in these estimates, in the hope that Government will not insist upon measurements being taken before sanctioning the funds required for the completion of these works.

4. I altogether differ from the Chief Engineer as to measurements of works being interesting in themselves - nothing can be more uninteresting indeed, but they are essentially necessary, and in the case of masonry works they are very simple, and no Executive Engineer with a proper sense of the duties and responsibilities of his position would for a moment think of permitting the disbursement of money without taking care that the works represented by the expenditure had

latter part of para 4.

had been carefully measured and recorded. I allude to this subject again because the way in which the Chief Engineer has referred to it would seem to show that he does not attach that importance to the systematic record of expenditure, which it seems to me that it undoubtedly demands. The greater part of the outlay shown in these estimates as already incurred took place before the present Chief Engineer assumed charge, but some works have been in progress since that date and it would have been more satisfactory, and I should with less hesitation have recommended the Government to permit the continuance of the works, had Mr. Latham been able to show that, at any rate, regarding this comparatively recent expenditure all needful care had been taken.

5. Under present circumstances it is probable that delay in according sanction would occasion more inconvenience than the most complete examination of the ^{works} would do good, because whatever might be the result of such examination, no beneficial action could be taken thereupon; I therefore beg to recommend that, as was recently ordered in the case of the 7th Section earthworks, sanction be given for the completion of the masonry

ing masonry works of the 5th Section, and that
for the final passing of expenditure be post-
poned until the total quantity of work
to be done shall have been, on this completion,
of ascertained and duly reported.

With regard to the work remaining
to be done and provided for in these estimates
of a few remarks are necessary, and changes
in the design of works have to be noticed.

The late Executive Engineer's report
on the revised Estimates is dated October 1865,
and the estimates after, it is presumed,
have revision in the Chief Engineer's Office bear
date September 1866.

The Culvert No. 1 has been altered from 6 to 14 feet
span. The increase on the culvert itself
is Rupees 4,914 and Rupees 1,658 are provided
as the probable cost of an escape channel
or outfall.

For Culverts No. 2 and 3 were both of 6 feet span
in the original estimate, and they have
now been altered to 8 feet span. I should doubt
if the ^{costs of the} same put down against them as ex-
penditure already incurred, for the culverts
now are exactly alike in design, they are situated
the only 1/2 a mile apart, and yet No. 2 is stated
to have cost, exclusive of earthworks, Rupees

2,896 and No. 3 Rupees 1,976. The total esti-
mated cost of these similar works differs as
much as 1,920 Rupees. The escape channels
of culverts No. 1 and 2 are entered to cost the
same amount Rupees 1,658 and the former
is taken from the latter, yet one is a 14 and
the other an 8 feet culvert, and it is not pro-
bable that the necessary outfall works will
in either case be the same.

In Culvert No. 1 the excavation for foundations
seems over-liberal in quantity: the rate is
6 annas a cubic yard, but for the outfall
channel 3 annas a cubic yard are allowed,
and the latter works ought to be the cheaper
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3. There are two points connected with
these culverts which should receive consi-
deration. 1st When the culvert itself is built
in a cutting in stratified rock, as is very
generally the case, and is intended to be used
as a crossing, the puddle should be carried
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tions behind the abutments and over the
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man culverts are not to be used as crossings, it would
be generally be far less expensive to build the
-for arches so as to stand the internal pressure
done due to a head of a few feet of water, than
as to cut out great lengths of inlet and outlet
-b. channels in rock. I am under the impression
to be that originally many of these culverts were
a. intended to be what are called inverted syphons,
in 1850 that that arrangement would have been
perfectly proper had the arches and other ma-
son masonry been well and carefully constructed of
and proper materials and thickness.

Teragopila Aqueduct.

Original Estimate Rupees 33,655-11 Difference
Present ~~to~~ 97,308-15 63,653

The design of this work has been somewhat
altered and improved. The report shows that
as the foundations had to be carried lower than
or on was at first supposed necessary. The original
Culvert rate 2 1/2 Rupees for rubble stone in chumam
in the great mass of the work - was certainly
been much too low. At the same time I think
the actual cost and the estimated cost of the *Roda aubiqua*
remainder of this description of work is too
high. Last year when I was inspecting the
only canal with the Chief Engineer, that officer
to have thought 5 Rupees would be a fair rate, and
supposing the stone to be brought 5 or 6 miles

I consider that 6 Rupees would be a fair and li-
beral rate, for the stone is so well adapted for
building purposes that it needs no dressing for
bedding and but very little on the face to produce
the good effect and appearance which the work
already done presents. The rate Rupees 9-
entered for archwork would also tend to show
that 6 Rupees for straight work should
suffice. - There is an item 32 1/2 squares of
"plastering with 2 coats of chumam to the in-
and outside". - No outside plastering can be
necessary, and on the inside none except
on the floor over the arches, which has
been separately provided for, unless it be
found necessary for the stoppage of leak-
age: the rate, Rupees 5 a square, for this
work is too high. - Rupees 6,254-19 are
entered for pitching in chumam to banks
above and below the Aqueduct. Some money
has already been wasted on work of this de-
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6. Altogether I think 76,000 Rupees would be about the fair value of the Aqueduct against the 97,000 shown in the estimate.

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11. In the 67th mile it is intended to construct a 14 feet culvert No 6 instead of one of 6 feet, and the drainage is sufficiently considerable as to make this a necessity. The estimate for the revised work is Rupees 13,773 and the rates appear fair with the exception of that, annas 8 a cubic yard, for the excavation of the outfall channel. I do not think the nature of the subsoil has been ascertained and from my recollection of the locality I should say that nothing requiring such a rate is likely to be met with. This channel with the approaches is estimated to cost Rupees 5,597.

I may add that in this and other works the rate for concrete 5 to 5 $\frac{1}{2}$ Rupees a cubic yard does not appear to have been founded on carefully ascertained data. Concrete should be much cheaper than masonry, whereas it is in some instances actually rather more expensive.

12. Culvert No 7 of 3 feet span in the 69th mile is entered as having cost Rupees 570 against 1,400 Rupees allowed for it. The escape channel however is estimated to cost Rupees 1,484 and, as a culvert of this size cannot be used as a passage, I should recommend the outfall channel being dispensed with and the arch loaded so as to avoid risk of blowing up. The head of water would not exceed 5 or 6 feet, and with water in the canal the downward pressure would exceed that on the soffit of the arch.

13. The original estimated cost of the scouring sluice in the 70th mile was Rupees 2,484, the revised estimate amounts to Rupees 5,751. The report says it has been built of good stone and it is thought that its cost will not be deemed excessive. Part of the stone for it was taken from the bed of the canal within a mile of the sluice; the position of the quarries whence the rest was obtained is not stated. The former estimate allowed 2 $\frac{1}{2}$ Rupees too low a rate for the rubble work, but 7 $\frac{1}{2}$ Rupees and 13 $\frac{1}{2}$ Rupees

13½ Rupees were allowed for cut stone and Rupees
the 70 for plastering, none of which were I think
found necessary. Altogether the average rate
of the 390 cubic yards of masonry was about
as ^{least} 3-6- and probably 5-6- ^{least} would have been
a liberal rate, and this would have raised
to the cost of the sluice, exclusive of shutters
and escape channel, from 1494 to 2274 Rupees
instead of to Rupees 3861; so that as far as
I can judge the sluice, which is finished, has
cost about 1500 Rupees more than was ne-
cessary.

14. For 3 feet culvert N^o 8 an escape channel
is to be provided at a cost of Rupees 1756-6-8,
the culvert itself having cost Rupees 1462-
sp. Here again loading the arch and discharging
is with the channel would seem to be the proper
arrangement.

15. Culvert N^o 9 was to have been one of
6 feet; it has been built of 8 feet span, at
an increased cost of Rupees 2200. Besides ^{which includes}
this however the escape channel has been ^{10 feet extra length}
entered at Rupees 6163 and as works to be
done - I believe the channel has been cut right
through, though I am not certain that it has
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of this channel has been sent, and I do not
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therefore know what rate has been given;
but if 12 annas have been allowed, as in the
excavations for foundations, this would be
3 or 4 annas too much.

16. The extra cost, 28 per cent, of the Bridge
in the 72nd mile is stated in the report to
be due chiefly to the approaches. As the
spoil from the cutting would have formed
these at a nominal cost, it is not clear
why so considerable a sum as 1450 Rupees
should have been necessary.

17. Two ferry boats are still included in
the estimate, though, from para: 28 of my
letter printed in Proceedings of the Madras
Government 31st October 1866 N^o 3474, it
will be seen that all the ferries have been
superseded. - The Chief Engineer has still
to forward an estimate for the Bridge at
Pamalapiad, crossing N^o 8 - 69 miles 20 chains.

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of these plans and estimates is that, while
to enable the Chief Engineer to go on with
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contracts upon them. —

19. The culvert plans show that the
traffic ramps on the lower side require
remodelling, the turn at the bottom being
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the culvert may be seen at a distance of a
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at the time another cart was ascending from
the culvert, would block the passage alto-
gether, and it would, in the case of loaded
carts, be a difficult matter to take either
cart out of the way. —

I have the honor to be
Sir,
Your most obedient servant,
Colonel Mullins Captain R.E.
Consulting Engineer for S.W. Company.

Copy in a Letter to England
of 22nd October 1867 No 47

Copy of Letter for
Main Canal No 3414
The General Engineer
to

The Secretary to Govt.
D. H. O.

Dated 6th
Recd 20th Sept^r 1867

E. 33 in separate
part

Submitted for the considera-
tion of Government a copy
of a letter No 509 of the 20th
Mto. from the Ch. Engineer
M. H. O. forwarding re-
vised estimates for the
Masonry works of the 5th
Section Main Canal.

No 2903. 19 Sept^r 1867

Mr. L. 59

2. 11th 21st 1867 No 13th

Public Works Department.

No 2903

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 19th Sept^r 1867

Read the following

From the Chief Engineer for
S. H. Company (Here enter No. by dated 6th Sept^r 1867)

With this letter the
Consulting Engineer for the
Madras Irrigation and Canal
Company submits a revised
estimate of Rs. 1,95,961, for
the masonry works in the
fifth section of the Company
Main Canal. The aggregate
of the several sums sanc-
tioned for those works is
Rs. 81,861, and the supplement-
al demand is therefore
Rs. 1,14,100 or nearly 140 per
cent. The necessity for this
additional outlay is al-
leged to be due to modifications
which

W. H.

which it is considered ex-
pedient to adopt in the
designs of some of the
works, and to the inadequacy
of the rates originally al-
lowed. He, however, as
complete measurements
of work done have been
made, the Government
are left without the
means or the informa-
tion which they ought
to have before them
to enable them to form
any reliable judgment
as to whether some part
at least of the large ex-
cess expenditure which
is said to be required
to finish the works in
question is not necessary
as the result of the
inefficient and careless
management of which
the

the Government have
had so frequently to
complain; but, agreeing
with Capt. Mullins in
considering that the
delay which would be
entailed by obtaining
complete measurements
of the work done is likely
to cause more inconve-
nience than to be product-
ive of any advantage,
His Excellency in Council
sanctions the revised
estimates, on the dis-
tinct understanding
that the passing of
the expenditure will be
contingent on a satisfactory
statement being fur-
nished of the whole of
the work done on its
completion.

The Chief Engineer's
Attention

attention will be directed
to the remarks and sug-
gestions in Paras 6 to
19 of Capt. Mullins
letter.

P. W. 186 . Department.

No.

PROCEEDINGS OF GOVERNMENT.

Dated

AB

To
The Comd. Genl. in I.C.C. with thirty three enclos.
Manager for 20/3/67
20/3/67

Copy in W. & A. 1867
D/22? October 1867 A. 17.

Pub. Works 1867 Department

Pro: of Govt for September

1867

Pro: of the Madras Govt.
Of 19th September 1867

Approving conditionally
the Revised Estimate amounting
to Rs. 1,95,961 for masonry work
in the 5th section of the
Irrigation and Canal Compa-
ny's Main Canal.

Ch. 459-460