

(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. 364	Press ~~Mis.~~
131-32	
Dated 6. 2	1871.

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
6th February 1871*

Read the following papers:—

No. 131. From the Superintending Engineer, 2nd Division, to the Chief Engineer for Irrigation, dated Camp, —, 30th September 1870, No. 94.

I HAVE the honour to forward a revised estimate and comparative statement for the bridge over the Commamoor channel (Toongabuddra) at Kolakalur, sanctioned in G. O., No. 1,676, 21st May 1869.

1 Revised Estimate and Abstract Estimate amounting to Rupees 20,910.
1 Comparative Statement

2 Part of this excess is caused by unforeseen charges for materials, slight modification of plan rendered necessary in construction and baling, but upwards of half is for cutting the channel under the bridge.

3. In No. 143, 6th January 1863, Colonel Anderson proposed to widen the Toongabuddra to nearly double its present breadth at this part. A large part of this charge therefore really is debitable to the Commamoor channel project; but it will be better to do the work at once and utilize the bridge, as the larger project cannot be ready for some time to come.

4. The bridge has been built in a curve of the old channel, the new cutting will straighten and improve it. Rupees 1,726 should be paid from Local Funds being half excess after deducting cost of channel.

No. 4.

Note by the Chief Engineer for Irrigation.

THE Superintending Engineer, 2nd Division, asks for supplemental sanction to the extent of Rupees 7,000 for the bridge over the Commamoor channel at Kolakalur, an estimate, Rupees 13,650, for which was sanctioned on the 21st May 1869, G. O., No. 1,676

2. The excess is due—

1st.—To increase of rates.

2nd.—Alterations of design, involving additional work.

3rd.—To alteration of site of bridge.

The principal increase of rate is on concrete, which was estimated at Rupees 3-6-0 the cubic yard, and has cost Rupees 4-14 6. This great difference is stated to be due "to the cost of breaking the stone." The explanation appears to be very insufficient in the case of a material which has been in constant use in the Delta for many years.

In the estimate a levelling course of 3 inches of concrete under the flooring was alone provided for, but 6 inches of this material have been placed under the bridge itself, and 9 inches under the flooring; the depth of the flooring has been made 15 inches instead of 1 foot. As regards the flooring the alterations were made in consideration of the "force of the current," but this remark is not understood, and, if there would be a current liable to disturb a flooring of the thickness given in the sanctioned design, it is clear that the bridge would be much too small, and,

in that case, it would have been an error to contract the water-way by giving an additional towing-path, which is another item of extra work.

The parapets are shown $1\frac{1}{2}$ feet, instead of $1\frac{1}{4}$ feet, thick. Why this has been done is not evident as, for a foot above the roadway, they were to have been 2 feet thick, so as to keep cart wheels away from the parapets, and the alteration would reduce the width of the roadway unnecessarily, and contrary to the rule laid down in the order sanctioning the estimate. As they have not yet been built, the original arrangements should be adhered to. The baling is shown as having cost Rupees 1,314 against Rupees 250 allowed in the estimate.

Lastly, the bridge is being built to the west of the present line of the canal. The Superintending Engineer says, (paragraph 4,) "the bridge has been built in a curve of the old channel," which means that the line of a straight cut, which is to supersede the curve, has been selected for the site.

3. The cost of excavating a new line for the canal is not properly debitable to the bridge. It would be a part of the Commamoor canal improvements, for a portion of which there is an old sanction of Rupees 1,95,770, and for completing which an estimate is now under preparation. I may add that the new cut has not yet been made, and that consequently only a small sum on its account, just at the bridge site, has to be adjusted, and this should, I think, be debited to the estimate just referred to. In my opinion there was not a sufficient advantage in the change of line to make it advisable to incur the expense which the alteration involved. In order that the bridge may be utilized, it will be necessary to connect the channel under it with the canal, but, before this is done, the Superintending Engineer should send in a large scale survey showing the arrangements intended to be carried out, when such as may be approved may be sanctioned for debit to the canal estimate.

4. The additional towing-path has not yet been constructed, and it can be postponed until it is seen whether the current under the bridge will admit of any contraction of the water-way being made without inconvenience.

5. The amount of the revised estimate will, with these modifications, be as follows, as submitted by Superintending Engineer . Rs. 20,630

Deduct—	RS.	A.	P.
For additional towing-path	364	0	10
„ increase of thickness of parapets ..	66	12	5
„ earthwork, excavation, etc.	350	0	0
„ do, new cut ..	3,807	12	0
Contingencies at $7\frac{1}{2}$ per cent.	344	2	3
			4,933
Reduced amount of revised estimate ..			15,717
Amount of sanctioned estimate ..			13,650
Balance requiring sanction			2,067

6. I visited the bridge works in December, at which time the piers and abutments were 10 feet high, and, as far as I can judge from the enquiries then made, and from subsequent discussion with the Superintending Engineer, not

only were the estimate rates very ample, but instead of supplemental sanction being asked for there should have been a considerable saving. As regards the concrete work the reason given for an increase of rate is, I think, inadmissible. The stone appears to have been brought from quarries 4 miles distant, and it is said that the cost of the carting a cubic yard is 1 Rupee. Rupees 1-8-6 are really charged for breaking up the stone for concrete, and this added to 1 Rupee for carriage and 7 Annas, the cost at the quarries would make Rupees 2-15-6 for the stone at the bridge ready for use as concrete; now Kolakalur is under 15 miles from the Seetanagram quarries, where any quantity of small stone, or of stone very easily reducible to the required size, is obtainable. Its carriage thence in boats would cost about $7\frac{1}{2}$ Annas a cubic yard, and with proper management its whole cost would perhaps have been 13 Annas a cubic yard, including 4 Annas for its purchase at the quarry. My opinion, therefore, is that the estimate rate, Rupees 3-6-0, was too high, and that a proper rate would be—

	RS.	A.	P.
* This allowance is high, as $\frac{1}{3}$ rds only of a solid Stone	0	13	0
yard would be used			
2 Parahs of chunam	1	0	0
† Supposing it to be brought from the river.			
4 Do of sand ..	0	6	0
Labour $1\frac{1}{2}$ men coolies	0	5	0
Do. $2\frac{1}{2}$ women do.	0	4	2
Sundries	0	2	10
			2 15 0

7. Similarly the masonry ought in this situation to be executed for Rupees 5 a cubic yard, including dressing the face stones, with excellent rubble throughout, whereas all I could see in rear of the face stones was small stone just adapted for concrete with but very little breaking. It was suggested that this might only have been a finishing off course when the work was stopped pending the sanction of a supplemental estimate, but, if so, it was singular that nothing else was visible. I cannot so well judge of the proper cost of baling, but it may be noticed that the foundations could easily have been got in during the dry season at the beginning of 1870, that before that there was ample time for the collection of all necessary materials, and for the transport of all but chunam by water; and that, with proper arrangements, in soil such as is met with in this locality, baling need not be costly.

9. Altogether I think it extremely unsatisfactory that any supplemental sanction should have been asked for on account of the bridge itself. The work is but a few miles from the Range head-quarters at Dugirala, and all the arrangements in detail ought to have been gone into and settled by the Range Officer; without much better explanations than have as yet been afforded, I cannot recommend that any additional sanction should be given. Baling may very probably require a considerable additional allowance, but it is requisite, even if this be admitted, to show that the increase under this head could not have been met from savings on masonry.

(Signed) J MULLINS, Major, R E,
CAMP, GODAVERY DELTA,
2nd January 1871.

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

No. 132

ORDER THEREON, 6th February 1871, No. 364.

IRRIGATION, No. 2.

In Proceedings dated 21st May 1869, No. 1,676, the Government sanctioned an estimate of Rupees 13,650, for the construction of a bridge across the Commamoor channel at Kola-kalur on the Guntoor and Masulipatam road, but that amount proving inadequate, the Superintending Engineer submits a revised estimate of Rupees 20,650, exhibiting an excess of Rupees 7,000, which is stated to be due (1) to an increase of rates, (2) to alterations of design, and (3) to a change in the site of the bridge.

2. In his Note above read, the Chief Engineer for Irrigation comments on the explanations which have been furnished of the causes of this excess. The rate provided in the original estimate for concrete was Rupees 3-6-0, but that actually paid was Rupees 4-14-6. Major Mullins is of opinion that even the former rate was higher than necessary, and that, on the data given in paragraph 6, Rupees 2-15-0 should have sufficed. A depth of 15 inches has been allowed for the flooring instead of a foot for which the sanctioned estimate provided. Major Mullins points out that, if this alteration were made on account of the force of the current, as explained in the comparative statement, the bridge cannot be considered of sufficient width to allow of a second towing-path being added to it.

3. As the canal is on a curve where the road crosses it the position selected for the bridge is on the line of a straight cut across the bend, and the outlay on this improvement in the direction of the canal represents 54 per cent. of the excess. The new cut has not yet been made, and in Major Mullins' opinion it should properly form a charge against the canal improvements, for the completion of which an estimate is under preparation. Major Mullins does not consider that the advantage to be gained by the change of line will compensate for the cost of the new cut, but the bridge having been built, it will now be necessary to divert the channel as proposed.

4. The excess of Rupees 1,064 which has occurred in the item of baling is stated to be chiefly due to very heavy springs having been met with, but Major Mullins observes that the foundations might easily have been got in during the dry season at the beginning of last year.

5. By deducting the cost of the new cut and of the additional towing-path provided for in the revised estimate, which it is considered should be deferred for the present, and by certain other minor modifications indicated in paragraph 4, Major Mullins reduces the amount of that estimate to Rupees 15,717, being Rupees 2,067 in excess of the original estimate, but he expresses the opinion that instead of any increase there should have been a large saving, and, in the absence of fuller explanations, he does not recommend that any supplemental sanction should be accorded.

6. The Government quite concur with the Chief Engineer for Irrigation in considering the reasons assigned for an increased outlay to be most unsatisfactory. Under more efficient arrangements than appear to have been made for the construction of the bridge His Excellency the Governor in Council is satisfied that no additional expenditure would have been necessary, and under the opinions

expressed by Major Mullins, the Government are not prepared to sanction any portion of the revised estimate until more satisfactory explanations shall have been furnished, with information as to whether, after deducting the cost of the several works indicated in paragraph 4 of Major Mullins' Note, and after a careful scrutiny of the other charges included in the revised estimate, any supplemental sanction will actually be needed.

7. Colonel Moberly will submit through the Chief Engineer for Irrigation the survey referred to in paragraph 3 of that officer's note.

(True Extract.)

Colonel, R.E.,

Secretary to Government.

To the Superintending Engineer, 2nd Division.

„ Chief Engineer for Irrigation.

„ Controller of Public Works Accounts.

Ed. S. T. Augustin.

Govt. of {1871} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

2ND DIVISION.

cc. cc. cc.

Dated February, 6th.

Recd.

Encl.

G O, 6th February 1871, No. 364

FEBRUARY

Nos. 131-132

Bridge — Passing orders on the revised estimate for the construction of a bridge across the Commamoor channel on the Guntur and Masulipatam road in the Kistna District.

4
Note by the Chief Engineer for Irrigation

The Superintending Engineer asks for supplemental sanction to the extent of Rs. 7000 for the Bridge over the Commamoor channel at Kolaka -kur, and Estimate, Rs. 13,650, for which was sanctioned in the 21st May 1869 No. 1676.

2 - The excess is due

1st To increase of rates

2nd Alterations of design involving additional work.

3rd To alteration of site of bridge.

The principal increase of rate is on Concrete, which was estimated at Rs. 3.6.0 the cubic yard, & has cost Rs. 4.11.6. This great difference is stated to be due "to the cost of breaking the stone". The explanation appears to be very insufficient in the case of a material which has been in constant use in the Delta for many years.

In the Estimate a levelling course of 3 inches of Concrete under the flooring was alone provided for, but 6 inches of this material have been placed under the bridge itself, and 9 inches under the flooring. The depth of the flooring has been made 16 inches instead of one foot. As regards the flooring the

the alterations made in consideration of the "force of the current", but this remark is not understood, & if there would be a current liable to disturb a flooring of the thickness given in the sanctioned design, it is clear that the bridge would be much too small & in that case, it would have been an error to contract the water way by giving an additional towing path, which is another item of extra work. The parapets are shown $1\frac{1}{2}$ feet, instead of $1\frac{1}{4}$ feet, thick - why this has been done is not evident as, for a foot above the road way, they were to have been 2 feet thick, so as to keep carts & wheels away from the parapets, & the alteration would reduce the width of the roadway unnecessarily, & contrary to the rule laid down in the order sanctioning the estimate: as they have not yet been built, the original arrangements should be adhered to. The hauling is shown as having cost Rs. 1314, against Rs. 250 allowed in the estimate. Lastly the bridge is being built to the west of the present line of the Canal. The Superintending Engineer says (paraphrasing) "the bridge has been built in a curve of the old channel", which means that the line

line of a straight cut, which is to supersede the curve, has been selected for the site. 3. The cost of excavating a new line for the canal is not properly debitable to the bridge. It would be a part of the Gummamooz canal improvements for a portion of which there is an old sanction of Rs. 195,770, & for completing which an estimate is now under preparation. I may add that the new cut has not yet been made, & that consequently only a small sum on its account, just at the bridge site, has to be adjusted, and this should, I think, be debited to the estimate just referred to. In my opinion there was not a sufficient advantage in the change of line to make it advisable to incur the expense which the alteration involved. In order that the bridge may be utilized, it will be necessary to connect the channel under it with the canal, but, before this is done, the Superintending Engineer should send in a large scale survey showing the arrangements intended to be carried out, when such as may be approved may be sanctioned for debit to the canal estimate.

4. The additional towing path has not yet been constructed, and it can be postponed until it is seen whether the current under the bridge will admit of any contraction of the waterway being made without inconvenience.

5. The amount of the revised Estimate will, with these modifications, be as follows; as submitted by Supdg. 20,650

Deduct
 For additional towing path Rs. 364-11-10
 Increase of thickness of parapets 66-12-5
 Earthwork excavation &c — 350-0-0
 — do — new Cut — 3807-12-0
 Contingencies @ 7½ per cent — 344-2-3 4,933

Reduced amount of revised Estimate Rs. — 15,717

Amount of sanctioned Estimate — 13,650

Balance requiring sanction Rs. 2,067

6. I visited the bridge works in December, at which time the piers & abutments were 10 feet high, and, as far as I can judge from the enquiries then made, & from subsequent discussion with the Supdg. Engineer, not only were the estimate rates very ample, but instead of supplemental sanction being asked for, there should have been a considerable saving — as regards the

the concrete work the reason given for an increase of rate is, I think, inadmissible — the stone appears to have been brought from quarries 4 miles distant & it is said that the cost of carting a cubic yard is 1 Rupee — Rupees 1.8.6 are now charged for breaking up the stone for concrete & this, added to 1 Rupee for carrying & 7 annas, the cost at the quarries would make 2.15.6 for the stone at the bridge ready for use as concrete — now Kislakat is under 15 miles from the Setauagram quarries, where any quantity of small stone or of stone very easily reduced to the required size, is obtainable — the carriage thence by boats would cost about 7½ annas a cubic yard, & with proper management its whole cost would perhaps have been 13 annas a cubic yard, including 4 annas for its purchase at the quarry. My opinion therefore is that the estimate rate, Rupees 3.6.0, was too high, & that a proper rate would be

This allowance is	Stone	_____	0.13.0
high as 2 only of	2 Paraks (human)	_____	1.0.0
a solid yard would	4 — do — Land	_____	0.6.0
be used.			
Supposing it to	Labor 12 men Coolies	_____	0.5.0
be brought from	2½ women — do	_____	0.4.2
the river.	— Sundries	_____	0.2.10
			<u>2.15.0</u>

7 Similarly the masonry ought in this situation to be executed for ~~repees~~ 5 a cubic yard, including dressing the face stones, with excellent results throughout, whereas all I could see in rear of the face stones was small stone just adapted for concrete with but very little breaking: it was suggested that this might only have been a finishing off course, when the work was stopped pending the sanction of a supplemental estimate, but, if so, it was singular that nothing else was visible.

I cannot so well judge of the proper cost of hauling, but it may be noticed that the foundations could easily have been got in during the dry season at the beginning of 1870, that before that there was ample time for the collection of all necessary materials, & for the transport of all by human labour, & that, with proper arrangements, in soil such as is met with in this locality, hauling need not be costly.

9 Altogether I think it extremely satisfactory that any supplemental sanction should have been asked for on account of the bridge itself. The work is but a few miles from the Range Head Quarters at Dugirala

5
Dugirala, and all the arrangements in detail ought to have been got into & settled by the Range Officer; without much better explanations than have as yet been afforded, I cannot recommend that any additional sanction should be given. Hauling may very probably require a considerable additional allowance, but it is requisite, even if this be admitted, to show that the increase under this head could not have been met from savings on masonry.

W. H. Williams Major R.E.
Chief Engineer, for Irrigation

Camp Godavari Delta
2 January 1871

25 Jan 1870 A. 274

1871

No 364 - 8. Feb 1871

Notes on the revised estimate for the Commamoor Channel at Kolakaloor

12. Jan 1870

2. 8. 1870

2. 8. 1870

G. O. No 430
12. Feb 1864
P. W. C.

2096

Superintending Engineer
2nd Division Camp
30th September
1870.

From Colonel F. J. Moberly R.E.
Superintending Engineer to D. M.
To Major J. Mullins R.E.
Chief Engineer for Irrigations

Sir I have the honor to forward a Revised

Enclosures

1 Revised Estimate mental Estimate and Comparative Statement
2 abt 10 Rs
aug 16 Rs 20910
3 Comparative Statement
for the bridge over the Commamoor Channel
Tongabuddra at Kolakaloor sanctioned in
G. O. No 1676. 21st May 1869.

2 Part of this excess is caused by unforeseen charges for materials, slight modification of plan rendered necessary in construction and baling, but upwards of half is for cutting the Channel under the bridge

3 In No 143. 6th January 1863 Colonel Anderson proposed to widen the Tongabuddra to nearly double its present breadth at this point. a large part of this charge therefore really is debitable to the Commamoor Channel project. but it will be better to do the work at once and utilize the bridge as the larger project cannot be ready for some time to come

4 The bridge has been built in a curve off the old Channel, the new cutting will

straighten and improve it - Rs 1726 should be
paid from Local Funds being $\frac{1}{2}$ Excess after deducting
cost of Channel. I have the honor to be

Sir
Your Most Obedt Servant
H. Neoberry Colnd R.E.
Superintending Engineer D.D.

Recd 19th Dec 1900

From The Superintending
Engineer D.D.
The Chief Engineer
for Irrigation

Rs 1726
Rs 1726
Rs 1726

of Rs 1726 a year for the
the fillet and temporary
statement for the Bridge
over the Concan in the
relat to the water. For
sanction and approval
of the same.

Handed 19th Dec 1900

No 127
Supy Engr Office D.D.
D. D. D. D.
15th December 1890

From
Colonel F. J. Neoberry R.E.
Super Engineer D.D.
To The Chief Engineer for
Irrigation.

Enclosure Sir
1. Estimate

In reply to your memo No 207.
19th October. I have the honor to report
that the Archimedian screws cost Rs 286,
and are valued at Rupees 220 now.
2 There being no funds available
under "Tools and plant" when application
was made to me, I instructed the Range
Officer to enter the amount in his Estimate,
but before it was submitted, the grant
for this year had been made, and I can
now provide it if the Government sanction
is accorded which appears to be necessary.

I have the honor to be
Sir
Your Most Obedt Servant
H. Neoberry Colnd R.E.
Super Engineer D.D.

Public Works Department
 No. 364
 Proceedings of the Madras Government
 Under date the 6th February 71.
 Read the following

From The Chief Engineer for
 Irrigation. (H.E. No. 1 of 2nd January 1871)

In Proceedings dated
 21st May 1869 No. 1676, the
 Government sanctioned
 an estimate of Rs 13,650,
 for the construction of a
 bridge across the com-
 mon channel at
 Kolakalur on the Kuntur
 and Masulipatam Road.
 But that amount proving
 inadequate, the Supg.
 Engineer submits a re-
 vised estimate of Rs
 20,650 exhibiting an
 excess of Rs 7,000 which is
 stated to be due (1) to
 an

Chief Engineer
 To the Chief Engineer
 for Irrigation
 dated 15 December
 1870
 No. 1 of 2
 P. 4. 190/71
 Regarding the
 estimate of the
 Madras Government,
 the value of the
 bridge being
 estimated at
 Rs 13,650
 and the
 value of the
 bridge being
 estimated at
 Rs 20,650

an increase of rates (2) to alterations of design and (3) to a change in the site of the bridge.

In his note above read the Chief Engineer for Irrigation comments on the explanations which have been furnished of the causes of this excess. The rate provided in the original estimate for concrete was Rs 3-6, but that actually paid was Rs 4-10-6.

Major Mullins is of opinion that even the former rate was higher than necessary and that, on the data given in para 6, Rs 2-15 should have sufficed. A depth of 15 inches has been allowed for the flooring instead of

of a foot for which the same estimate provided. Major Mullins points out that if this alteration were made on account of the force of the current, as explained in the comparative statement, the bridge cannot be considered of sufficient width to allow of a second towing path being added to it.

As the Canal is on a curve, the position selected for the bridge is on the line of a straight cut across the bend, and the outlay on this improvement in the direction of the Canal represents 5% per cent of the excess. The

The new cut has not yet been made, and in Major Mullins' opinion it should properly form a charge against the Canal improvements, for the completion of which an estimate is under preparation. Major Mullins does not consider that the advantage to be gained by the change of line will compensate for the cost of the new cut, but the bridge having been built, it will now be necessary to divert the channel as proposed.

The excess of Rs 1064 which has occurred in the item of hauling is stated to be chiefly due to very heavy springs having been

been met with, but Major Mullins observed that the foundations might easily have been got in during the dry season at the beginning of last year. By deducting the cost of the new cut and of the additional towing path provided for in the revised estimate, which it is considered should be deferred for the present and by certain other minor modifications indicated in Para 4 Major Mullins reduces the amount of that estimate to Rs 15,717 being Rs 2,067 in excess of the original estimate, but he expressed the opinion that

that instead of any increase there should have been a large saving and in the absence of fuller explanations he does not recommend that any supplemental sanction should be accorded.

The Government quite concur with the Chief Engineer for Irrigation in considering the reasons assigned for an increased outlay to be most unsatisfactory. Under more efficient arrangements than appear to have been made for the construction of the bridge, His Excellency the Governor in Council is satisfied that no additional expenditure would have

have been necessary and under the opinions expressed by Major Mullins the Govt. are not prepared to sanction any portion of the revised estimate until more satisfactory explanations shall have been furnished with information as to what after deducting the cost of the several works indicated in Para 4 of Major Mullins' note, and after a careful scrutiny of the other charges included in the revised estimate, any supplemental sanction will actually be needed.

Col. Innes will submit through the Chief

Chief Engineer for Irriga-
tion the survey referred
to in para 3 of that
officer's note.

(13)

14

[Signature]

$\frac{22}{3}$

To
The Supr Engr. & 2^d Asst
Chief Engineer for Irriga-
tion
Controller
Desp 8/2/71

Per 12 February 1878
" 21st May 1879

198

Govt. of 1871 Madras.

PUBLIC WORKS.

To
The Superintending Engineer
P. L. L. L.

Date

Recd

End

G O, 6th Feb 1878, No 364.

Nos. 102-132

Preparing orders in the
to estimate for the con-
of a bridge across the
main channel on the
+ Nasulipatan road
Kutna St. —