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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 118 Press Mis.

241-62

Dated 15 1 1869.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
15th January 1869.

Read the following papers —

No. 241 From the Superintending Engineer, 6th Division, to the Chief Engineer for Irrigation and Joint Secretary to Government, Public Works Department, dated Tanjore, 12th November 1868, No 845

* In G. O, No 270, 24th January 1868
1 Abstract Estimate, Rupees 1,00,000
1 Plan
1 Comparative Statement
1 Statement—Cost of bridges independently of the dams

1 With reference to paragraph 11 of my letter,* No. 1,318, dated 2nd December 1867, I have the honor to forward a revised estimate, with plans, for the regulating dams and bridges at the Codamoorty head

2. With the exception of some modification of the wings, to admit of their protecting the approaches more effectually than the wings originally designed were likely to do, the designs may be said to be the same as those approved and sanctioned in G O, No 775, dated 4th March 1867, though it is proposed to place the lower apron in the Codamoorty six inches lower than was originally designed, as it has been found, with regard to the Arsalaur and Veerasholen dams, that there has been a greater deepening of the bed below the dams than was anticipated, and it is proposed to extend the lower apron so as to embrace the portion of the work between the sluice aprons, instead of confining the lower or advanced apron to the protection of the work immediately below the sluices These alterations add but little to the cost of the work.

3 It was originally intended to build the foundations solid, and to carry them to a depth of seven feet, which I proposed to increase to ten feet; but, owing to the height at which the water stood throughout last season, it was not found possible to get rid of the water to the desired depth so as to admit of the foundations being laid solid, and it was found necessary to resort to box and well foundations, and these have been laid in the Cauvery to a depth of twelve feet, with six feet of solid masonry over the wells. As there was no time to be lost when it was discovered that the foundations could not be laid solidly, boxes were resorted to while wells were under preparation, but they were abandoned as soon as the wells were ready, owing to their excessive cost The change in the foundations has added Rupees 21,345 to the cost of the work, more than one third of this excess being due to baling, which was very heavy.

Wells, six feet
Solid, six feet

Rupees 13,695, masonry
" 7,650, baling
21,345

The omission of front embankments in the original estimates adds Rupees 2,500 more to the estimate, and the cost of approaches and making up a bank on the spit between the two rivers adds Rupees 1,850 more to the estimate, these and the other trifling differences which are shown in the comparative statement, enclosed, bring up the estimate from Rupees 72,300 to Rupees 1,00,000

4 An abstract estimate is enclosed, showing the cost of the bridges, independently of the dams, to be Rupees 68,600, and the stability of the bridges will be considerably augmented owing to the protection afforded by the solid and rough stone aprons provided for the dams, and in consideration of the fact that the bridges were required for the most part for the purpose of communication, the

as those approved & sanctioned in G.O.

Collector had consented to recommend that the cost of the bridges should be defrayed from Local Funds under "Communication," but as the Revenue Board

No 7,075, dated 6th October 1868

have recommended that only a moiety of the cost of bridges on Local Fund roads should be defrayed from Local Funds, I have deducted only Rupees 34,300 from the estimate, leaving Rupees 65,700 to be provided for from the Loan Fund instead of Rupees 72,300.

5 I have not deemed it worthwhile to await a reply from the Governor of the French Settlements to G. O ,* No 2,777, before submitting the estimate, because

* 31st August 1868

even if any change is required it may be made by altering the height and length of the various steps in the Codamoorty dam, the length of the work cannot be altered, as it is necessary to provide for the escape of a large volume of water by the Codamoorty during high floods

6 The work executed last season was as follows —

The Cauvery north abutment and wings, and the south abutment and wing, the nose and a portion of the west wing of the Codamoorty dam were raised to

221

ten feet above foundations, while the dam, retaining walls, piers, and flooring were brought up to the level of the apron, the latter being completed with the

210.

exception of that under one arch, which the rising of the water early in June rendered it impossible to complete, for the same reason the nose was not completed, the foundations only being partially laid for that portion of it which is formed by the Codamoorty north abutment and rear wing, and these foundations will have to be removed and re-laid next season The nose has been protected by temporary works this season, which have answered their purpose so far, and there appears to have been no scour or dislodgement in the portion of the floor and lower apron which was left incomplete

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No 241. From the same Officer, to the Chief Engineer for Irrigation and Joint Secretary to Government, Public Works Department, dated Tanjore, 25th November 1868, No. 907

1 Memorandum

1. With reference to G O, No. 3,646, dated 20th instant, I have the honor to enclose a memorandum showing that the alterations required to the Codamoorty and Cauvery dams are as follows :—

2 The dam under the third arch from each abutment in the Cauvery to be raised six inches or to 211½

3. The dam under the second arch from each abutment in the Codamoorty to be lowered by six inches or to 213½

4. These changes will involve no extra outlay.

Memorandum showing the alterations required to the Cauvery and Codamoorty Dams to give effect to the recommendation that 25,000 cubic yards per hour should be added to the supply which is to be provided for the Codamoorty in addition to that provided by the works already designed

In the correspondence which has hitherto taken place, the volume of water passing down the Codamoorty in a 5 5 feet flood has been considered, viz, 5,83,000 cubic yards per hour,

Vide Form H 55 B, Column 4

this represents 1 7 of the theoretical supply

2 The time at which water is required is when the supply is below the theoretical supply, and so instead of adding 25,000 cubic yards per hour to 5,83,000, I propose to add this amount to the theoretical supply shown in column 8 of Form II

Codamoorty, 3,51,000 cubic yards per hour
Cauvery, 7,49,000 do do
Adding 25,000 to the Codamoorty supply, we have in Codamoorty 376, Cauvery 724, or the proportion of supply is as 34 to 66

3 The designs proposed provide for dividing the water as 32 to 68, and for this division the areas of waterway are as 31 to 69, the Codamoorty having an overfall in low freshes

The proportions—	Are now		Are to be	
	W	Area of waterway	W	Area
Codamoorty	32	31	34	33
Cauvery	68	69	66	67

4 This may be effected by raising the dam six inches under two arches of the Cauvery dam, and by lowering the dam six inches under two arches of the Codamoorty dam

(Signed) R F OAKES, Captain, R E,
Superintending Engineer, 6th Division

MEMORANDUM.
No 110

1 The Government in their Order No 775, dated 14th March 1867, sanctioned the construction of the following regulating works for the Cauvery and its larger branches in Tanjore —

	Rs
Dams and bridges for the Cauvery and Codamoorty	72,300
at an estimated cost of	10,000
Cauvery and Arasalaur dams	7,300
Do and Veerasholen	9,550
Minor masonry works	
	99,150

The Superintending Engineer submitted amended designs for the Arasalaur and Veerasholen dams in December 1867, and obtained the sanction of Government (Government Order, No 270, dated 24th January 1868) for the outlay of Rupees 10,940 in excess of the original estimates for those works. Captain Oakes also reported that he contemplated increasing the depth of the foundations of the Codamoorty works from seven to ten feet, but he did not anticipate that the alteration would add very largely to the sanctioned estimate. This expectation has, however, been disappointed in consequence of its having been found impossible to carry the foundations solid to the depth of ten feet, and of its having been necessary in consequence to have recourse to wells and boxes, the cost of which amounts to Rupees 17,446, or deducting the solid masonry, for which they have been in part substituted, to Rupees 13,696 The original allowance for baling was 4,250, which has proved far from sufficient. The spring water was found at a higher level than had been anticipated partly in consequence of unseasonable rains in January last,

as those approved & sanctioned in G.O.

and Rupees 6,400 were expended under this head during the operations of last season The excess is estimated at Rupees 7,650

2 The earthwork for the approaches and foundations was not sufficiently provided for in the original estimate, and the embankments on the spit between the two rivers and in front of the dams, were omitted by an oversight. The excess under these heads amounts to Rupees 5,097

3. By the above and other alterations of a trifling kind the estimate is raised to Rupees 1,00,000, or Rupees 27,700 in excess of the amount already sanctioned by Government

4 The revised estimate was submitted by Captain Oakes before he received the Order of Government directing a modification of the waterway to allow of a larger proportion of water than had been provided for in Captain Mead's original design being passed down the Codamoorty, for the benefit of the cultivation under it in French territory. A memorandum has, however, since (25th November) been forwarded by Captain Oakes, explanatory of the alterations which are necessary to give effect to the above instructions, and the Government will observe that they do not necessitate any radical change in the design, and that they will not affect the cost of the works

5 With reference to the remarks in paragraph 4 of Captain Oakes' letter, to the effect that the cost of bridges across the Codamoorty and Cauvery, independently of the regulating dams, will amount to Rupees 68,600, and that a moiety of this amount should be defrayed from Local Funds under "Communications," I would beg to observe that in Captain Mead's report it is stated that the object

Paragraph 85

of the bridges at the Codamoorty was to improve the communication along a feeder to the Boodalore station, Great Southern of India Railway, and the Government sanctioned the estimates (72,300) without remark as to the source from which the extra outlay entailed by the construction of the bridges was to be defrayed

6 I have always been of opinion that the cost of constructing bridges across canals which intersect existing communications, is a fair charge against the "Agricultural" allotment Many bridges in the Godavery and Kistna Deltas, will on this principle have to be charged to the Delta works But in Tanjore, the Codamoorty and various other streams are as old as the Cauvery itself, and must take the precedence in consequence of all roads that may be carried across them, and I am of opinion, that no portion of the cost of constructing bridges across them can fairly be charged to the works of Irrigation in the Delta, unless the bridges are required to answer the purpose of sluices, in which case a roadway of six or eight feet would generally be sufficient.

7 In the case under consideration, the Cauvery is bridged by thirteen arches of thirty-four feet span, without any sluice apparatus, and the Codamoorty by the same number and size of arches, but with two of them arranged as sluices Allowing that sluices may hereafter be required at the Cauvery dam, the most that is needed for both works is a bridge of six or eight feet roadway. Considering that the cost of the works is proving much greater than Government contemplated when they accorded sanction to the original estimate, I would recommend that instead of sanctioning the additional outlay, they should call on the Superintending Engineer to curtail the design to the limited width of roadway abovementioned, leaving it optional to the Revenue authorities to make it up to the additional width required to adapt the bridges for ordinary traffic, and to make good the extra cost by a contribution from "Local Funds."

FORT ST. GEORGE,
4th December 1868.

(Signed) J. C. ANDERSON, Colonel, R. E.,
Chief Engineer for Irrigation.

No. 242. ORDER THEREON, 15th January 1869, No. 118.

IRRIGATION, No. 19.

1. The Government observe from these papers that the estimate of Rs. 72,300 sanctioned in Proceedings of the 14th March 1867, No. 775, for regulating dams with bridges for the Cauvery and Codamoorty in Tanjore is likely to be exceeded by Rupees 27,700. This increase is stated to be chiefly due to the following causes —

(1.) The necessity which arose for resorting to wells and boxes when it was found that the foundations could not be carried solid to the required depth.

(2.) The insufficiency of the allowance for baling.

2. The Chief Engineer for Irrigation suggests that instead of this large additional outlay being sanctioned, the Superintending Engineer should be required to modify the design of the bridges so as to limit the width of roadway to six or eight feet, which he thinks ample, and that it should be left to the Revenue authorities to propose hereafter such additional width being given as may be required to adapt the bridges for ordinary traffic, the cost of this extra work being defrayed from Local Funds.

3. The Government are, however, of opinion that, if the moiety* of the cost of the superstructure of bridges of the full width can be provided from Local Funds, advantage should be taken of the present opportunity for at once building the dams with the bridges complete The papers will accordingly be communicated to the Revenue Department with a view to the requisite funds being provided should it be deemed advisable to take advantage of the proposed constructions for road communications.

* Rupees 34,300.

(True Extract.)

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

To the Superintending Engineer, 6th Division
" Controller of Public Works Accounts.
" Accountant General.
" Revenue Department.

Exd. S. T. Augustin.

as those approved & sanctioned in G.O.

Govt. of {1869} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

6TH DIVISION

&c, &c, &c

Dated January 15th

Recd

Enl

G O, 15th January 1869, No 118

JANUARY.

Nos. 241-242

Cauvery and Codamoorty.—Passing orders on the endorsement of the Chief Engineer for Irrigation submitting, with remarks, the revised estimate forwarded by the Superintending Engineer for regulating dams with bridges for the Cauvery and Codamoorty in the Tanjore District.

No. 845

Supl Engs Office 6th D.
Tanjore 12th November/68

From,

Capt. R. F. Oakes R.E.
Supl Engineer 6th D.

To,

Lieut. Colol J. C. Anderson R.E.
Chief Engineer for Irrigation &
Joint Secretary to Govt.
D. P. W.

Sir,

Enclos: 4
1 - Abstract Estimate Rs 100,000 -
1 - Plan -
1 - Comparative Statement
1 - Statement Cost of Bridges independently of the Dams -
4

With reference to para 11 of my Letter No 1318, dated 2d December 1867, I have the honor to forward a Revised Estimate with plans for the Regulating Dams and Bridges at the Codamurty Head.

In G O No 270, 24th January 1868.

With the exception of some modification of the Wings to admit of their protecting the approaches more effectually than the wings originally designed were likely to do - the designs may be said to be the same as those approved & sanctioned in

G.O.

G.O. No 775, dated 4th March 1867, though it is proposed to place the lower Apron in the Codamurty 6" lower than was originally designed, as it has been found with regard to the Arsalaur and Veerasholen Dams that there has been a greater deepening of the bed below the Dams than was anticipated & it is proposed to extend the lower Apron, so as to embrace the portion of the Work between the Sluice Aprons instead of confining the lower or advanced Apron to the protection of the work immediately below the Sluices. These alterations add but little to the Cost of the Work.

It was originally intended to build the foundations solid & to carry them to a depth of 7' which I proposed to increase to 10' but owing to the height at which the water stood throughout last Season it was not found possible to get rid of the water to the desired depth so as to admit of the foundations being

being laid solid & it was found necessary to resort to box and well foundations & these have been laid in the Cavery to a depth of 12' with 6' of solid Masonry over the Wells — As there was no time to be lost when it was discovered that the foundations could not be laid solidly boxes were resorted to while Wells were under preparation but they were abandoned as soon as the Wells were ready owing to the excessive Cost — The Change in the foundations has added Rs 21,345 to the cost of the work more than 1/3 of this excess being due to baling which was very heavy — The omission of front Embankments in the Original Estimates adds Rs 2500 more to the Estimate & the Cost of Approaches and making up a bank on the Spit between the 2 Rivers adds Rs 1,850 more to the Estimate

Wells 6'
solid 6'

Rs 13,695 — [illegible]
" — 7,650 — Baling
21,345 —

Estimate - these & the other trifling differences which are shown in the Comparative Statement, Enclosed, brings up the Estimate from Rs 72,300 to Rs 100,000 :-

An Abstract Estimate is Enclosed showing the Cost of the Bridges, independently of the Dams, to be Rs 68,600 and the stability of the Bridges will be considerably augmented owing to the protection afforded by the solid & rough one Aprons provided for the Dams, and in consideration of the fact that the Bridges were required for the most part for the purpose of Communication the Collector had consented to recommend that the cost of the Bridges should be defrayed from Local Funds under Communication but as the Revenue Board have recommended that only a moiety of the Cost of Bridges on Local Fund Roads should be defrayed from

No 7075 dated 6th October/68.

from Local Funds - I have deducted only Rs 34,300 from the Estimate leaving Rs 65700 to be provided for from the Loan fund instead of Rs 72,300 :-

I have not deemed it worthwhile to await a reply from the Governor of the French Settlements to G.O. No 2777 before submitting the Estimate because even if any change is required it may be made by altering the height & length of the various steps in the Codamoorty Dam - the length of the work cannot be altered as it is necessary to provide for the Escape of a large volume of water by the Codamurty during high flood.

31st August 1868 -

The work executed last season was as follows :-

The Canery North Abutment & Wings & the South Abutment & Wing, the nose and a portion of the West wing of the Codamurty Dam were raised to 10' above foundations while

221 -

while the Dam, retaining walls, Piers & flooring were brought up to the level of the Apron, the latter being completed with the exception of that under one Arch which the rising of the water early in June rendered it impossible to complete. for the same reason the Nose was not completed, the foundations only being partially laid for that portion of it which is formed by the Codamoorty North Abutment and rear Wing & these foundations will have to be removed & relaid next Season — The Nose has been protected by temporary works this Season which have answered their purpose so far & there appears to have been no scour or dislodgement in the portion of the floor & lower Apron which was left incomplete

I have the honor to be
Sir,
Your Most Obdt. Servt.
W. F. Oakes Capt. R.E.
Supg Engineer 6th Division.

15

Memo. shewing the alterations required to the Cavery & Codamoorty Dams to give effect to the recommendation that 25,000 Cubic yards per hour should be added to the supply which is to be provided for the Codamoorty in addition to that provided by the works already designed –

In the Correspondence which has hitherto taken place the Volume of water passing down the Codamoorty in a 5.5' flood has been considered viz 5,83,000 Cubic yards per hour, this represents 1.7 of the theoretical supply.

Vide Form H 5.5. B Column 4.

The time at which water is required is when the supply is below the theoretical supply & so instead of adding 25,000 Cubic yards per hour to 5,83,000 I propose to add this amount to the theoretical supply shewn in Column 5 of Form H.

Codamoorty 3,51,000 Cyds per hour.

Cavery — 7,49,000 — " — " — "

Adding

From
The Chief Engineer
To
The Chief Engr for Irrigation and Forest
Secy to Govt. N.W.D.

Dated 12 Nov 1868.

P. Fr. 4748/68.
No 845.

Forwards Revised Estimates, Plans, &c for the Regulating Dams and Wedges at the Codamoorty head –

Adding 25,000 to the Codamoosty supply we have in Codamoosty - 376
Cavery - 724, or
the proportion of supply is as 34 to 66.

The designs proposed provide for dividing the water as 32 to 68, & for this division the Areas of waterway are as 31 to 69 the Codamoosty having an Overfall in low freshes.

The proportions

	are now		are to be	
	W	area of waterway	W	area
Codamoosty	32	31	34	33
Cavery	68	69	66	67

This may be effected by raising the Dam 6" under 2 Arches of the Cavery Dam & by lowering the Dam 6" under 2 Arches of the Codamoosty Dam —

J. Fiske Capt. R.E.
Supt Engineer 6th Dn

17

Supt Engr 6th D

C

Enclosure in a letter from the Supg Engineer 6th Dn No. 907, dated 25 November 1868.

P. W. 4748/68.

Memorandum showing the alterations required to the Codamoorty and Cavery Dams.

No. 907

Supg Engr Office 6th Dn
Tanjore 25 November/68

19

From,

Capt. R F Oakes RE.
Supg Engr 6th Dn

To,

Colonel J. C. Anderson RE
Chief Engr for Irrigation
& Joint Secretary to Govt.

Sir,

Enclo 1.
1. Memo.

With reference to G. O. No. 3646 dated 20th Instant, I have the honor to enclose a memo showing that the alterations required to the Codamoorty & Cavery Dams are as follows.

The Dam under the 3d Arch from each Abutment in the Cavery to be raised 6" or to 211½.

The Dam under the 2d Arch from each Abutment in the Codamoorty to be lowered by 6" or to 213½

These changes will involve no extra outlay.

I have the honor to be
Sir
Your most Obdt Servt
R. F. Oakes Capt. RE.
Supg Engr 6th Dn

The Supp Engineer 6 Dec

To

The Chief Engineer for Irrigation and Joint Secy to Govt. P.W.D.

Dated 25 Decr 1868.

Recd

No 907

P. W. 4748/68

Forwards a Memo showing the alterations required to the Coodamoorty and Cauvery Dams.

No 110

91

1 The Government in their order No 775 dated 14th March 1867 sanctioned the Construction of the following regulating works for the Cauvery and its larger branches in Tanjore,

	Rs
Dams and Bridges for the Cauvery & Coodamoorty at an estimated Cost of	72300
Cauvery and Arasalar Dams	10,000
Do & Veerasholem	7300
Minor Masonry works	9550
	99,150

The Superintending Engineer submitted amended designs for the Arasalar and Veerasholum Dams in December 1867 and obtained the sanction of Government (Government Order No 270 dated 24 January 68) for the outlay of Rs 10,940 in excess of the original estimates for those works. Captain Oakes also reported that he contemplated increasing the depth of the foundations of the Coodamoorty works from 7 to 10 feet, but he did not anticipate that the

alteration

alteration would add very largely to the sanctioned estimate. This expectation has however been disappointed in consequence of its having been found impossible to carry the foundations solid to the depth of 10 feet, and of its having been necessary in consequence to have recourse to wells and boxes, the cost of which amounts to Rs 17,446, or deducting the solid masonry for which they have been in part substituted to Rs 13,696 The original allowance for baling was 4,250, which has proved far from sufficient. The spring water was found at a higher level than had been anticipated partly in consequence of unseasonable rains in January last; and Rs 6400 were expended under this head during the operations of last season The excess is estimated at Rs 7650

2 The earthwork for the approaches and foundations was not sufficiently provided for in the original estimate and the embankments on the spit between the two rivers and in front of the dams, were omitted by an oversight. The

The excess under these heads amounts to Rs 5097.

3 By the above and other alterations of a trifling kind the estimate is raised to Rs 100,000, or Rs 27,700 in Excess of the amount already sanctioned by Government

4 The revised estimate was submitted by Captain Oakes before he received the order of Government directing a modification of the waterway to allow of a larger proportion of water, than had been provided for in Captain Meads original design being passed down the Cooda-moorly for the benefit of the cultivation under it in French territory A memorandum has however since (25" November) been forwarded by Captain Oakes, explanatory of the alterations which are necessary to give effect to the above instructions; and the Government will observe that they do not necessitate any radical change in the design, and that they will not affect the cost of the works

With

5 With reference to the remarks in para 4 of Captain Oakes' letter, to the effect that the cost of Bridges across the Coodamooty & Cauvery, independently of the regulating dams, will amount to Rs 68,600, and that a moiety of this amount should be defrayed from Local Funds under "Communications", ~~On the point~~ I would beg to observe that in Captain Mead's report, it para 85
is stated that the object of the Bridges at the Coodamooty, was to improve the Communication along a feeder to the Boodaloor Station of Great Southern of India Railway and as the Government sanctioned the estimate (72,300) without remark as to the source from which the extra outlay entailed by the Construction of the Bridges was to be defrayed.

6 I have always been of opinion that the cost of Constructing Bridges across Canals which intersect existing Communications is a fair charge against the "Agricultural" allotment

allotment. Many Bridges in the Godavery & Kistna Deltas, will on this principle have to be charged to the Delta works. But in Tungore, the Coodamooty, and various other streams are as old as the Cauvery itself, and must take the precedence in consequence, of all roads that may be carried across them and I am of opinion, that no portion of the cost of Constructing Bridges across them can fairly be charged to the works of Irrigation in the Delta; unless the Bridges are required to answer the purpose of sluices, in which case, a roadway of 6 or 8 feet would generally be sufficient.

7 In the case under consideration the Cauvery is bridged by 13 Arches of 34 feet span, without any sluice apparatus, and the Coodamooty by the same number and size of arches, but with two of them arranged as sluices. Allowing that sluices may hereafter be required at the Cauvery dam, the most that is needed, for both works is a Bridge of 6 or 8 feet roadway.

Considering

5. Considering that the cost of the works is proving much greater than Government contemplated when they accorded sanction to the original Estimate, I would recommend, that instead of sanctioning the additional outlay; they should call on the Superintending Engineer to curtail the design to the limited width of roadway above mentioned; leaving it optional to the Revenue Authorities to make it up to the additional width required to adapt the Bridges for ordinary traffic, and to make good the extra Cost by a contribution from "Local Funds."

Fort St George
the 4th December 68

H Andrews Colonel R.E.
Chief Engineer for Irrigation

To

The Secretary to Government
Public Works Department

Public Works 1868 Department
Proc. of Govt. for January
Item No. 4748

The Chief Engineer
for Irrigation

To
The Secretary to Government P. W. Dept.
2 Plans sent to Coll. Anderson on the 21st Jany 1869.

Dated 4th } December 68
Recd. 5th }

Enclosed No. 110

Forwarding revised estimate plans &c for the regulating dams and bridges at the Coodumoorty head Tanjore District

No. 118 - 15th Jany 1869

No. 241

C. 11th Decr 1868 R. 15th

Comparative Statement showing Original and Revised Estimate for Constructing Regulating Dams with Bridges at the Codamoorty Head.

Description of Work	Original Estimate Quantity	Rate	Amount	Revised Estimate Quantity	Rate	Amount	Excep to the original Estimate	Decrease to the original Estimate	Total Excep above the original Estim.	
Box foundations	"	"	"	7612½	4 2	1982 6 9	1982 6 9	"	"	? Estimate as
Circular wells	"	"	"	11734¼	2 9	2016 13 2	2016 13 2	17446	"	foundations.
Square wells	"	"	"	78234¾	2 9	[illegible] 9 6	13446 9 6¾	"	"	
Brick work	291460 3/16	2 3	40986 10	204793¾	2 3	37236 12 1	"	3749 13 2¾	"	of wells
Plastering	95750	2 8	2393 12	95800	2 8	2395	1 4	99	"	
Cut stone	499	12	374 4	499	[illegible]	499	124 12	"	"	
Rough stone	3694	3 8	12929	2322	5 [illegible]	12771	"	158	"	t is impossible to
										ie yard
Excavation and filling in	22032	3	4131	31180	2 6	4871 14	740 14	"	"	
Filling in Roadway on Bridges	1859	3	348 9	1859	3	348 9	"	"	"	
Earth work approaches	6660	1 6	624 6	26,461⅔	1 6	2480 12 6	1856 6 6	"	"	Original Estimate
New Centrings	4	300	1200	4	300	1200	"	"	"	
Erecting and Striking Centrings	24	50	1200	24	50	1200	"	"	"	
Country Centrings	4	50	200	4	50	200	"	"	"	al Estimate cost
Embankments 1868	"	"	"	"	"	1500	1500	"	"	
Do 1869	"	"	"	"	"	[illegible]	1000	"	"	
Baling	"	"	4250	"	"	11900	7650	"	"	original Estimate higher level than Rupees 6400 last season
Teakwood Shutters	105	3	315	105	3 8	367 8	52 8	"	"	
Sundries and Superintendence			3347 7			4583 10 10	1236 3 3	"	"	
Total			72300			100000	31,607 13 2¾	3907 13 2¾	27,700	

(Signed) H. R. Mead Captain R.E.
Executive Engineer

W. F. Vanes Captain R.E.
Superintg Engineer 6th Divn

Supg Engrs Office 6th Divn
Tanjore 17th November 1868

Statement of the Probable cost of the Bridges across the Cauvery and Codamoorty had they been built independently of the Dams

Quantity	Description of Charges	Rate	Amount
7612½	Cft. Box foundations	at " 4 2	1982 6 9
11734¼	Cft. Circular well foundation	at " 2 9	2016 13 2
50489¼	Cft. Square well foundations	at " 2 9	8677 13 5
224932 5/16	Cft. Brick in Chunam	at " 2 3	31631 1 8
	Plastering deduct 1/8		2095 10 "
	Excavation deduct 1/3		3247 14 8
	Earth work on Bridges		3489 " "
	Do. approaches		2480 12 6
4	New Centrings	300 " "	1200 " "
26	Erecting and striking Centrings	50 " "	1300 " "
	Embankments		2500 " "
	Baling deduct 1/3		7933 5 4
	Superintendence and Sundries		3185 9 8
	Total Rupees		68600 " "

(Signed) H. R. Mead Captn. R. E.
Executive Engineer

W. F. Yates Captain R.E.
Superintg. Engineer 6th Divn.

Supg. Engrs. Office 6th Divn.
Tanjore 5th November 1868

Vallam
10 Novr. 1868

C. Lee Morris
Collector

Tanjore District — New Work

Tanjore or No 1 Range

Record Abstract Estimate No. of 1868-69

Work — Constructing Regulating Dams with Bridges at the Cadamoorty head

Quantity	Description of Charges	Rate	Amount	Amount of work part
	Cauvery Dam and Bridge and Nose			
7612 1/2	Cft. Box foundations the boxes being filled with Brick in Chunam cubes well packed and fitted complete	42	1982 6 9	
11734 1/4	Cft. Circular well foundation 4 1/2 in diar 6' feet deep filled solid with cubes and brick jelly — at	29	2016 13 10	
25863 3/4	Cft. Square well foundation filled with cubes carefully packed including cost of well frames sinking &c &c — at	29	4445 5 3	
129760 13/16	Cft. Brick in chunam — at	23	18247 9 9	
47700.	Sqrft. Plastering — at	28	1192 8 .	
1038.	Cgdr. of Rough Stone — at	58	5709 . .	
16408	Do. Excavation and filling in at	26	[illegible]	
21883 1/2	Do. Earth work approaches at	16	2051 9 6	
929 1/2	Do. Do. on Bridge — at	3	174 4 6	
4.	New Centrings — at	300	1200 . .	
13.	Erecting and Stricking Centrings at	50	650 . .	
	Embankments		1500 . .	
	Baling		6400 . .	
	Carried over		48133 5 7	

On closure in a Letter from the Supt. Confirm. of Dr. No. 845, date 12 November 1868.

Statement of the proba[illegible] the cost of the Bridge across the Cauvery Dam at Cadamoorty, has been laid [illegible] and [illegible] Dr. [illegible]

	Brought forward		48133 4 5 11 7	
	Sundries and Contingencies		2466 10 5	
	Total for Cauvery Dam &c			50600
	Codamoorty Bridge and Dam exclusive of point of Nose.			
5337	Cft. Sqr. well foundation filled with cubes carefully packed including cost of well frames sinking &c	2 9	9001 4 3	✓
135033 15/16	Cft. Brick in Chunam at	2 3	18989 2 4	✓
48100	Sqr. ft. Plastering at	2 8	1202 8	✓
499	Cft. Cut stone at	1	499	✓
1284	Cyds. of Rough stone at	5 8	7062	✓
14772	Do. Excavating and filling in at	2 6	2308 2	✓
4578	Do. Approaches at	1 6	429 3	✓
929 1/2	Do. Filling on Bridge at	3	174 4 6	✓
4	Country Centrings 14 1/2' Span at	50	200	✓
11	Erecting and Striking Centrings	50	550	✓
105	Cft. Teak wood Shutters at	3 8	367 8	✓
	Embankment		1000	
	Baling		5500	
			47283 1	
	Sundries and Contingencies		2116 15 11	
	Total for Codamoorty Dam &c			49400
	Grand Total			100000
	Total		100000	
	Deduct moiety of Cost of Bridge to be Charged to Local Funds		34300	
	Balance		[illegible]	

Signed H. R. Mead Captain R.E.
Executive Engineer

Superintd. Office 6 Div.
[illegible] Nov. 1868

W. Yates Captain R.E.
Supg. Engineer 6 Divn.

Public Works Department

No 118 39

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 15th Jany 1869

Read the following

From The Chief Engineer for Irrigation (Here enter No 110 dated 4th December 1868)

The Government observe from these papers that the estimate of Rs 72300 sanctioned in Pro. of the 14th March 1867. No 775 for regulating Dams with bridges for the Cauvery & Codamoorty in Tanjore is likely to be exceeded by Rs 27700 This increase is stated to be chiefly due to the following Causes.

1 The necessity which arose for resorting

Enclosure in a Copy from the Supt Engineer of Ho No 845, dated 12th November 1868.

P. W. 4748/68.

Abstract Estimate for Constructing Regulating Dams with Bridges at the Codamoorty Arch.

to wells and boxes when it was found that the foundations could not be carried solid to the required depth

2. The insufficiency of the allowance for Balang

The Chief Engineer for Irrigation suggests that instead of this large additional outlay being sanctioned, the Supdg Engineer should be required to modify the design of the Bridges so as to limit the width of roadway to 6 or 8 feet, which he thinks ample, and that it should be left to the Revenue authorities to propose hereafter such additional width being given as may be required to adapt the Bridges for ordinary traffic, the cost of this extra work being defrayed from Local Funds.

The Government are, however, of opinion that, if the moiety of the cost of the superstructure of bridges of the full width can be provided from Local Funds, advantage should be taken of the present opportunity for at once building the Dams with the bridges

* Rs 34,300

(16)

Complete. The papers will accordingly be communicated to the Revenue Department with a view to the requisite funds being provided

I would add "should "it be deemed advisable to "take advantage of the proposed "Constructions for road comm." - It is to be doubted I think whether roads will be wanted just at the places where these dams are being built WDH

W.A.C.

To
The Supg Engr 6 Dn
" Controller
" Acct Genl
" Rev Dept
" Chief Engr for Inspection
Dept 16th Jan 69

C. 11th Decr 1868. 18th

Cue 4748

Govt. of {1868} Madras.

PUBLIC WORKS.

To The Superintending Engr. 1st Division

&c, &c, &c.

Dated

Recd Encl.

G O, 15th Aug 1869 No. 118.

Nos. 241 & 242.

Cauvery and Coodamoorty

Copy orders on the Estimate sent by the Chief Engr. for Dec. submitting, with remarks, the revised Estimate forwarded by the Supt. Engr. for regulating Dams with bridges for the Cauvery & Coodamoorty [illegible].

[illegible]

Rev. Dept.

Chief Engr. for Irrigation

Decr. 16th Jany. 69

C: 11th Decr. 1868. 18th