No. 296. Read the following endorsement of the Secretary to Government, Public Works Department, Fort St. George, dated 15th June 1871 :—

Read the following letter from the Superintending Engineer, 5th Division, to the Secretary to Government, Public Works Department, dated Cuddalore, 12th June 1871, No. 64.

I HAVE the honour to request that Government will be pleased to sanction from the Reserve under Communications for 1871-72 at their disposal, the balance of the estimate, Rs. 6,213-11-8, for the completion of the bridge across the Vellaur river near Chellumbrum in the South Arcot District.

2. A revised estimate of Rs. 53,930 was sanctioned in G. O. No. 2,850, of the 25th November 1870. An outlay of Rs. 34,716-4-4 was incurred up to the 31st March 1871, and Rs. 13,000 was allotted for this work in the current year's Budget, Item No. 235, the balance now requiring sanction is Rs. 6,213-11-8,

		RS.	A.	P.
Expenditure		34,716	4	4
Grant		13,000	0	0
Balance		6,213	11	8
	Total...	53,930	0	0

and I trust that Government will allot funds if possible.

3. It is very desirable that this bridge be completed within the next two or three months. One out of the eleven arches has been already turned, and if the work is stopped at its present stage of progress, considerable damage is likely to occur when the heavy freshes come down the river, which may be expected next month. Already several freshes have occurred since March which have created great difficulties in carrying on the work, and the ring bunds have been twice very considerably damaged.

TRANSFERRED to the Revenue Department, with G. O., No. 2,850, dated 25th November 1870.

(Signed) J. CARPENDALE, Colonel, R.E.,
Secretary to Government, P.W.D.

No. 297. ORDER THEREON, 27th June 1871, No. 1,113.

Local Funds, No. 12.
Civil Works.

REFERRED to the President of the Local Fund Board with a view to the early allotment of funds for the completion of the work.

(True Extract.)

(Signed) D. F. CARMICHAEL,
Acting Secretary to Government.

To the Collector of South Arcot.
,, the Public Works Department.
,, the Board of Revenue.

Fcd. E. C. Shunker.

Proceedings of the Madras Govern[illegible]*nent, Public Works Department,*
25th Novem[illegible]*er* 1870.

No. 481. Read the following letter fro[illegible] the Acting Superintending Engineer, 5th Division, to the Secre[illegible]nent, Public Works Department, dated Cuddalore, 5th N[illegible]o. 163 :—

I HAVE the honour to submit, for the [illegible]nction of Government, a revised esti-

One Revised Estimate of Rupees 53,930.
,, Comparative Statement.

[illegible]ate of Rupees 53,930, accompanied by [illegible]comparative statement, for the bridge Vellaur, on the coast road from Pondiche[illegible]hat is being constructed across the [illegible]y to Negapatam, or on the first branch of the Great Southern road from Madras [illegible]he Travancore frontier.

2. In G. O., No. 2,427, of the 9th A[illegible]gust [illegible]67, an estimate of Rupees 44,800 was sanctioned for this bridge, and the w[illegible] was commenced during the last official year on an allotment of Rupees 20,000. When the revised rates provided in this estimate were fixed, the Range Officer, Mr. [illegible]. E. Norfor, considered them sufficient, as he did not anticipate the many difficulti[illegible]s which he had afterwards to contend with when the work was commenced; [illegible]nd it is therefore apprehended that, notwithstanding the great attention and ti[illegible]me devoted by that officer to this work, and his earnest endeavours to economize in every possible way, the sanctioned estimate is likely to be exceeded by Rupees [illegible]9,130.

3. The causes which have led to this excess are detailed below :—

1*st*.—The first item of excess over th[illegible] revised estimate occurs in the brick-in-chunam work. The rate allowed in t[illegible]e estimate is 2 Annas and 3 Pice per cubic foot, while the actual cost of the work, done up to date, is at the rate of 2 Annas and 6 Pice per cubic foot. The [illegible]ause of this excess is chiefly attributable to the difficulty of obtaining fuel for burning bricks and chunam. It was expected that the ryots in the vicinity of th[illegible] work would dispose of their Carivalen topes for a reasonable offer, but it is now found that they refuse to do so at any price: and there has been no alternative, therefore, but to cut down old avenue trees [illegible]n abandoned lines of roads at gre[illegible]t distances from the work, and to cart the same departmentally. And the pay fo[illegible] the pit-sawyers and for the cartage thus entailed has greatly enhanced the price of the wood. Again, the laying of the solid foundation above the wells was a matter of great difficulty, and it was in consequence impossible to obtain the full profitable value of the men's wages, as the springs were very great and impeded th[illegible]e progress of the work.

2*nd*.—The next item of excess is in the wells. Those sunk up to the present time on the work have cost about Rupees 21 each, while the price entered for them in the estimate is only Rupees 16 each. When the estimate was prepared it was not intended that the wells should be filled with *hydraulic* concrete. The specification distinctly states that they are "to be filled with cubes, with concrete in the interstices, or to be filled entirely with concrete." But Colonel Foord, R. E., subsequently directed the Executive Engineer to use hydraulic concrete, similar to that employed by the French Engineers in the foundations of the Ariancoopam bridge, which is also built across a tidal river, between Cuddalore and Pondicherry. Moreover, the well-sinkers, who had to be obtained from Pondicherry and Cuddalore, taking advantage of the scarcity of this class of people near the work, and knowing that we were entirely at their mercy, commanded their own price, and it

was only after infinite trouble and [illegible]rry that they agreed to take 5 Rupees per well for sinking alone.

3rd.—The next a[illegible] the la[illegible] in the temporary dam and baling. The sum al[illegible]ed for th[illegible] 3,000, whereas Rupees 5,099-9-5 have been already laid o[illegible]nd Rupees 5,300 in addition are still required for these purposes. It is th[illegible]learly shown that the provision made in the original estimate for these servi[illegible]was altogether inadequate. In fact, the peculiar situation of the work makes i[illegible]ly impossible to estimate accurately the cost of the items in question. The [illegible]porary dam constructed last year was *completely* washed away by the unus[illegible] heavy flood in the river in November 1869, as reported in paragraph 4 of the [illegible]ecutive Engineer's letter, recorded in G. O., No. 214, of the 19th January 18[illegible] This was replaced this year, but it has been again *entirely* carried away by another heavy flood on the 7th September 1870. It is, however, to be observed that on both these occasions the dam would have had to be breached, had not the freshes done so, in order to prevent the erosion and destruction of the opposite bank that would have been caused by the groyne-like effect of the bund.

As regards baling. This river, as the Government are well aware, is dissimilar to most of those in the district, in its being tidal for many miles inland. At the bridge site the water is never less than 4 and 5 feet deep, and as much as 12 and 14 feet during floods. In fact, the "more than ordinary difficulty in laying the foundation," anticipated by Colonel Foord (*vide* paragraph 6 of his letter, recorded in the Government Order above quoted), has proved to be short of what has really had to be contended against from the constant floods, and the springs arising from the ebb and flow of the tide. Even with three picottahs working close together it was at times not possible to keep the foundations sufficiently dry for laying bricks in mortar, and hence the very heavy cost for baling water.

4th.—No provision is made in the estimate for filling in with concrete the interstices between the wells under the abutments and wing-walls, but, as Colonel Foord afterwards considered this system necessary in order to form one solid mass to build upon, it has accordingly been carried out at a cost of Rupees 773-7-0.

5th.—The sum allowed under the head of Sundries, namely, Rupees 1,490, which is only about 3½ per cent. on the amount of the estimate, is too small to meet the charges for minor supervision, sheds, petty stores, etc., required for a work of this magnitude, and an addition of Rupees 271 is found absolutely necessary.

4. So much for the excess. Per *contrá*, there are a few items upon which a saving can be expected, namely:—

1st.—*Approaches.*—When the estimate was prepared it was intended to build the bridge at the present ford, but my predecessor afterwards fixed the site a little to the west of this crossing, where the river is narrower, so that it is expected that Rupees 1,574, instead of Rupees 2,000, will be sufficient for the approaches. On the other hand, this alteration of the site will necessitate an outlay of about Rupees 4,000 in connecting the bridge with the road on either bank, including a tunnel and calingulah; for this a separate estimate will be submitted shortly.

2nd.—Gravel.—As this is not procura[illegible] nearer than Cuddalore, and could not, therefore, be laid down for the sum [illegible]ted, i[illegible]posed to use for the surface of the road-way [illegible]t bricks, by which a saving of Rupees 850 is a[illegible]

3rd.—Out of the sum of Rupees 1,0[illegible]Tolding, it is considered that 500 Rupees will be sufficient with [illegible]now on hand.

5. The work was commenced in A[illegible]on a grant of Rupees 20,000, and stopped in September 1869 after an outla[illegible]Rupees 19,930-13-0 had been incurred thereon, and the grant thus exhausted. [illegible]vas re-commenced in April 1870 on a further allotment of Rupees 20,800, of [illegible]Rupees 8,482-7-2 have been spent up to the end of October 1870, making the [illegible]expenditure Rupees 28,413-4-2.

6. The sum still required for completing the bridge is Rupees 13,199, that is, the balance of the revised estimate now submitted; and of this balance Rupees 10,000 has been applied for in my Budget Estimate for the ensuing year. As for the remainder, Rupees 3,199, I am unable to point out any source to which it may be charged, and should there be no likelihood of its being granted later in the year, I can only suggest that this sum be also included in the next year's Budget.

7. As it is of great importance that the work should be completed, if possible, before the next year's freshes come down, which may be expected about July next, and as, under the circumstances stated above, it would appear that the excess over the sanctioned estimate is unavoidable, I have the honour to request that the Government will be pleased to accord their sanction to the revised estimate herewith submitted, and to allot the funds required for the completion of the bridge.

8. I think it proper to state, in conclusion, that I have recently visited the site of the bridge, and examined the work as carefully as the state of the river would permit. I find the bricks of excellent quality, and the work, as far as I could judge, neatly and conscientiously carried out. And I am of opinion that the Government may rely upon the works being executed successfully under the Superintendence of Mr. R. E. Norfor, who, I am satisfied, uses his best endeavours to economize in every way consistent with the satisfactory completion of the work.

No. 482. ORDER THEREON, 25th November 1870, No. 2,850.

CIVIL WORKS, No. 34.

IN their Proceedings of the 9th August 1867, No. 2,427, the Government sanctioned an estimate of Rupees 44,800 for the construction of a bridge across the Vellaur on the coast road from Pondicherry to Negapatam in the South Arcot District, for which a revised estimate of Rupees 53,930 is now submitted, exhibiting a probable excess of Rupees 9,130. This increase is distributed under the following items:—

1. Brickwork.
2. Wells.
3. Baling and temporary dam, and
4. Sundries.

2. The excess* on brickwork is said to be due to the difficulty of procuring [illegible]rning bricks and chunam and [illegible] foundation above the wells on account of the [illegible] excavations from land springs.

3. The substitution, by [illegible] of the Superintending Engineer, of hydraulic concrete for "cubes, wi[illegible]te in the interstices, or concrete only" in filling the wells, and the enhanced r[illegible]equired to be paid to well-sinkers, have, it seems, led to the increase† under the quacy of the provision made for bali[illegible]tem of wells; while the utter inade- a tidal river like the Vellaur, which is moreover liable to constant floods, accounts for the very large excess‡ under item No. 3.

4. The amount entered under the head of Sundries which is about 3½ per cent. on the sanctioned estimate, is represented to have proved too small to cover the various charges under that head.

5. In addition to these causes of excess the Acting Superintending Engineer states that extra work to the extent of Rupees 773, not provided for in the original estimate, was carried out, also under the direction of Colonel Foord, in filling in with concrete the interstices between the wells under the abutments and wing-walls with a view to form one solid mass to build upon.

6. Under these explanations, and seeing that the Acting Superintending Engineer, after personal examination, certifies to the excellent quality of the materials used and the neat and economic manner in which the work is progressing under the superintendence of the Range Officer, Mr. Norfor, the Government sanction the revised estimate of Rupees 53,930.

7. The expenditure on the work up to the end of 1869-70 was Rupees 19,931, and a sum of Rupees 20,800 is provided for it in the current year's Budget, leaving a balance of Rupees 13,199 yet to be assigned. This amount His Excellency the Governor in Council will endeavour to allot in the outgoing Budget.

(True Extract.)

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

* Rupees 1,

† Rupees 2,205.

‡ Rupees 5,900.

To the Acting Superintending Engineer, 5th Division.
,, Controller of Public Works Accounts.

Exd. S. T. Augustin.

C/1919/71

Govt. of {1870} Madras.

PUBLIC WORKS.

To

THE ACTING SUPERINTENDING

ENGINEER, 5TH D[illegible]

&c., &c., &c.

Dated November 25th.

Recd. *Encl.*

G. O., 25th November 1870, No. 2,850.

NOVEMBER
Nos. 481-482

Chief Engr's Let. No. No 296

Bridge across the Vellaur.—The revised estimate of Rupees 53,930 for the construction of a bridge across the Vellaur on the coast road from Pondicherry to Negapatam in the South Arcot District, sanctioned with remarks.

and I trust that Government will allot funds if possible.

3. It is very desirable that this bridge be completed within the next two or three months. One out of the eleven arches has been already turned, and if the work is stopped at its present stage of progress considerable damage is likely to occur, when the heavy freshes come down the river, which may be expected next month. Already several freshes have occurred since March, which have created great difficulties in carrying on the work, and the ring bunds have been twice very considerably damaged.

I have the honor to be
Sir,
Your most Obedient Servant

A. Boileau Colonel R.E.
Superintg. Engineer, 5th Div.

Revenue Department

No. 1113.

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 27th June 1871.

Read the following letters from the

Supg: Engrs 5: 10 Dwgs.

Applying for the balance Rs: 6213. 11. 8 of the estimate for the completion of the Bridge across the Vellaur river near Chellumbrum in South Arcot Distt— (A.E. 12: June 1871 No 64)

Referred to the Collr of South Arcot for the consideration of the Local Fund Board in connection with the allotment of funds for the current year. Comble the cost.

President

J. D.S

To Collr of South Arcot Despd 28
2d Pubc Works Dept: 7
14 Board of Revenue 7

1113.

From Lt. Col. R.P. Boys Exr
Dated 23rd May 1871
Rect 12th June 1871.
No 64.
Bridge across Vellaur
Applying for the balance Rs 6213-11-8 of the estimate for the Bridge across the Vellaur river near Chellumbrum in South Arcot District, &c.
Submitted for the consideration of the Board of Revenue

Lt. Col. R.P. Boys Exr

Transferred to the Revenue Department with G.O. No 2805 dated 25th September 1871.

Secretary to Govt

Referred to the Collr of South Arcot for the consideration of the Local Fund Board in connection with the allotment of funds for the current year. Comble the cost.

Lt. Col. R.P. Boys Exr

Dated 25th November 1871
No 482
Rect 27th
Applying for the balance Rs 6213-11-8 of the estimate for the completion of the Bridge across the Vellaur river near Chellumbrum in South Arcot Distt.

Lt. Col. R.P. Boys Exr

Transferred to the Revenue Department with G.O. No 2805 dated 25th September 1871.

Secretary to Govt

15th June 1871
No 296
To
The Revenue Depte

Lt. Col. R.P. Boys Exr
Dated 23rd May 1871
Rect 12th June 1871.
Bridge across Vellaur
Applying for the balance Rs 6213-11-8 of the estimate for the Bridge across the Vellaur river near Chellumbrum in South Arcot District, &c.
Submitted for the consideration of the Board of Revenue

Lt. Col. R.P. Boys Exr

Copy forwarded

Secretary

Ref. 216-897

@ 22 June/21 RRB