

*Proceedings of the Madras Government, Public Works Department,
12th October 1875.*

No. 180. Read the following endorsement of the Officiating Chief Secretary to Government, Financial Department, dated Ootacamund, 16th September 1875, No. 473:—

Read the following papers:—

Proceedings of the Board of Revenue, dated 25th August 1875, No. 2,405.

From J. R. COCKERELL, Esq., President of the Local Fund Boards, Nilgiris, to H. E. STOKES, Esq., Acting Secretary to the Board of Revenue, dated Ootacamund, 17th June 1875, No. 20.

I HAVE the honor to submit a letter to the Nilgiri Local Fund Board from the District Engineer reporting that the Kotagherry Ghaut is now open for traffic, but that it has cost 25 per cent., or Rupees 11,720, in excess of the estimate, and an allotment of the money is required. I enclose the revised estimate.

2. The District Engineer assigns the following reasons for the extra expenditure:—

(1), that part of the work was scamped and had to be done over again, owing to his not being allowed a separate establishment to supervise;

(2), that the want of proper supervision led to a greater expenditure in blasting than would otherwise have been sufficient;

(3), that the execution of the earthwork exceeded the estimate, owing to the earth proving harder to dig than could have been anticipated;

(4), that more rock was encountered than was foreseen.

3. The District Engineer explains that he incurred the extra expenditure on his own responsibility and without sanction believing it his duty to carry on the work to a conclusion, as the Government in G. O., Financial Department, dated 15th May 1874, No. 840, expressed themselves as attaching great importance to the completion of the ghaut "within the current year."

4. The Local Fund Board, at a meeting held on the 31st May 1875, passed the following Resolution upon the letter:—

"Read letter from the District Engineer, dated the 24th May 1875, No. 118, submitting original and revised estimates for the excess expenditure on the Kotagherry new ghaut amounting to twenty-five per cent. over the estimated cost.

"The President will address Government on the subject, and will point out that the Board cannot hold themselves responsible for the excess expenditure incurred, inasmuch as the Government by G. O., No. 840, dated 15th May 1874, took the ghaut out of the Board's hands. In forwarding the explanation the President will point out that, notwithstanding the excess of the expenditure over the estimate, the execution of the work compares favorably with the execution of other ghaut works in the district, having been only twenty-five per cent. in excess of the estimate, whereas the excess over estimate on the Coonoor Ghaut was 100 per cent. and twenty-five per cent. on the Goodaloor Ghaut exclusive of the labor of a gang of convicts, whose work was estimated as worth Rupees 10,000. The cost per mile of the Kotagherry Ghaut is less than that of a similar ghaut on the Anaimallays."

5. The Local Fund Board consider that the execution of the ghaut has been satisfactory, and they trust that the Government may be pleased to supply the funds now required.

8544

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12th October 1875.*

From Captain J. L. MORANT, R.E., District Engineer, Nilgiris, to J. R. COCKERELL,
Esq., President of the Local Fund Boards, Nilgiris, dated Ootacamund, 24th May 1875,
No. 118.

I HAVE the honor to report that the new Kotagerry Ghaut is now completed and open for traffic; but I very much regret being obliged at the same time to forward a revised estimate for the work, amounting to Rupees 59,050, or nearly 25 per cent. in excess of the former sanctioned estimate, which was Rupees 47,330 (Rupees 41,930 sanctioned in Financial G. O., No. 606, of the 1st May 1872, and Rupees 2,400 in Public Works G. O., No. 113, of the 15th July 1874). The excess amounts to Rupees 11,720. Of this Rupees 6,684 were expended in 1874-75 and Rupees 5,036 are needed in 1875-76.

2. In Financial G. O., No. 849, of the 15th of May 1874, paragraph 2, Government are pleased to say that "they attach great importance to the completion of the Kotagerry Ghaut within the current official year," and the Local Fund Board in No. 21 of their Proceedings, dated 27th July 1874, observe that, "in their opinion, it is much more conducive to the interests of the district that this work should be finished before a new work is commenced." I beg also to state that the Kotagerry Ghaut has had to be carried out under the superintendence of the Wellington Overseer. Preparations have been in hand for some few months relating to the unfinished Wellington Barrack Block, which was to have been actively pushed on at the beginning of the current official year; it was therefore very important that the Kotagerry Ghaut should be completed before the new barrack was actually taken in hand, so as to allow of the Overseer being able to devote his attention to one work at a time. Had the completion of the Kotagerry Ghaut been delayed it must have been carried out at the same time that the Wellington Barrack was in hand. It would have been impossible for me with only one Overseer to undertake the two works together, and I was informed by higher authority and in a Government Order, that any extra establishment was out of the question.

For the above reasons I regret having taken upon myself to bring the Kotagerry Ghaut to a conclusion and to incur some unauthorized expenditure; for this, under the circumstances, I crave the indulgence of the Board and of Government.

3. Before proceeding to explain the causes of the excess in the estimate, I beg to lay before the Board the exceptional and difficult circumstances under which the work has been carried out.

Two other ghauts, neither of them so long as the Kotagerry Ghaut, have been constructed in this district. I allude to the Coonoor Ghaut and to the Goodaloor Ghaut. To construct the former (sixteen miles long), a special officer, Major Law, was resident at Coonoor to attend to that work only. He had under him at one time three Overseers, and he had the advantage of the advice of the Superintending Engineer who frequently resided at Coonoor.

To construct the Goodaloor Ghaut, ten miles long, a special resident Overseer was in charge, who lived at Neddiwuttum. To assist him in tracing the line an additional Overseer on Rupees 150 per mensem was employed for some time, and the Taluk Overseer was frequently sent from Ootacamund to assist in taking measurements and in making payments, &c.

For two years a gang of sixty convicts were employed on this ghaut free of charge, except for police guards. The value of their labor would be nearly Rupees 10,000.

I beg to be allowed to adduce another case. A new ghaut, somewhat similar to the Kotagerry Ghaut, has been recently opened as a bridle-path in the Coimbatore District up towards the Annamallay Hills. Colonel Farewell, the then Superintending Engineer for Ports and Communications, was sent to trace it for a length of 6½ miles. It occupied him six weeks. To assist him he had an Assistant Engineer and two Overseers. An Overseer experienced in ghaut works, and who was on the Goodaloor Ghaut Road, has since been retained on the ghaut to cut out and complete the bridle-path.

Now, in the case of the Kotagerry Ghaut, I have all along had no one in sole charge. Kotagerry is thirteen miles distant from Wellington, and the Kotagerry Ghaut is eighteen

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miles long. The Cantonment Overseer at Wellington, in addition to his other duties at the barracks and at Coonoor, and on the roads around those two stations, has had to trace, survey, and construct this ghaut. It has been a severe labor to him, and his unavoidable absences on this duty every other week from the Cantonment have been complained of by the authorities there.

4. The excess over the original estimate amounts to Rupees 11,720. This is made up of the following items:—

	Rs.
1. Unexpected rock encountered where it was not anticipated	... 7,218
2. The earth-cutting in parts proving harder than was expected	... 1,271
3. The cost of rebuilding certain retaining walls which failed	... 2,113
4. Additional first-class drains erected	... 1,118
Total	... 11,720

The first increase has occurred entirely between the fifth and eleventh miles of the ghaut, reckoning from Kotagerry. In this portion rock of a very hard description was unexpectedly encountered.

This increase might have been somewhat reduced by the building of additional walls in the place of blasting if only stone-builders in sufficient numbers to work constantly could have been procured. But the walls which were erected were built with very great difficulty and with repeatedly vexatious delays. Had a larger number of retaining walls been constructed the completion of the ghaut would have been retarded at least a whole year.

The third item is, of course, one which has caused me considerable concern. The walls which failed were three in number, of which only one was large. They were built by Mr. Power, the late Overseer, at a time when he was engaged on the surveys for the Coonoor water-supply and drainage. At that time he was also suffering from debility and sore-eyes. The foundations for the walls were well selected, but they were not carefully built throughout, and their sections were made slighter than ordered by me. One of the bridges and one of the drains were undermined by the flow of water and needed strengthening. One hundred and eleven retaining walls in all have been built on this ghaut, so that the percentage of failure is only three. The other items, I trust, need no remark.

5. I may here be permitted to mention that the new Coonoor Ghaut was completed at a cost exceeding its first sanctioned estimate by 50 per cent.; another 40 per cent. was expended on it, and Rupees 1,500 per mile were expended on it afterwards to bring its condition up to what it ought to be. It thus exceeded its original estimate by 100 per cent. The Goodaloor Ghaut exceeded its estimate by twenty-five per cent.

The new Kotagerry Ghaut has been opened out to a width of nowhere less than eight feet, at least six feet having been cut out of the solid. It is eighteen miles long, has five bridges—three of twenty feet and two of fifteen feet span,—and 182 stone drains. Where retaining walls have been built it is twelve feet wide inside the parapet. It has four zigzags, and its maximum gradient is 1 in 17.

The Annamallay Ghaut, which is stated in last year's Administration Report to be a bridle-path to the Poonachy Saddle, is only 6½ miles long with fourteen zigzags. At the zigzags the roads are each twelve feet wide for some little distance. Across rock it is blasted out to a width of six feet only, and in soil only three feet out of the solid ground has been cut. It has cost Rupees 2,800 per mile. The revised estimate of the Kotagerry Ghaut gives a mileage rate of Rupees 3,280. This is one-sixth of the cost of the new Coonoor Ghaut, which is twice as wide, and one-third that of the Goodaloor Ghaut, which is only half as wide again.

6. I beg, in conclusion, to express my sincere regret at the expenditure having exceeded the estimate; but I venture to submit that, under all the circumstances explained, it could not be avoided.

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12th October 1875.

ENCLOSURE No. 2.—Revised Estimate.

ENCLOSURE No. 3.—Comparative Statement.

SUBMITTED for the orders of Government.

2. The new Kotagherry Ghaut is reported to have been completed at a cost of Rupees 59,050, as per revised estimate now submitted. This estimate is in excess of the original one* by Rupees 11,720, and the causes of the excess are fully explained by the District Engineer.

* Amount of estimates, Rupees 47,330, sanctioned in G. O., Financial Department, dated 1st May 1872, No. 606, and G. O., Public Works Department, dated 15th July 1874, No. 113.

3. Of the excess, Rupees 11,720, Rupees 6,684 are stated to have been expended in 1874-75 and Rupees 5,036 as needed in 1875-76.

4. In their Proceedings, dated 13th November 1874, Miscellaneous No. 7,902, the Board requested the sanction of Government for a contribution of Rupees 2,412 from Provincial Funds for the completion of the work, but no order appears to have as yet been passed thereon.

5. The Board resolve to recommend Government to sanction a grant of Rupees 5,036 from Provincial Funds, which sum the District Engineer states is required for 1875-76. It is observed that there is nothing available out of the Local Funds of the Circle to meet any portion of the amount applied for.

6. The Board think that, as the fact that the estimate was about to be exceeded must have long been known to the District Engineer, it ought to have been brought to notice earlier.

(True Copies and Extract.)

(Signed) H. E. STOKES,
Acting Secretary.

TRANSFERRED to the Public Works Department for disposal with reference to G. O., Financial Department, dated 15th May 1874, No. 849, paragraph 2.

(Signed) D. F. CARMICHAEL,
Officiating Chief Secretary.

No. 181.

ORDER THEREON, 12th October 1875, No. 2,911.

CIVIL WORKS, No. 12.

In paragraph 2 of Financial Department Order, No. 849, of 15th May 1874, it was decided that the balance required to complete certain works alluded to in paragraph 13 of the Revenue Board's Proceedings on which it was passed, would be provided from Provincial Funds. The Kotagherry Ghaut, however, was fully provided for by the allotment of Rupees 8,000 made in the Provincial Budget of 1874-75, added to the transfer of Rupees 3,380 recommended in Revenue Board's Proceedings of 13th November 1874. The additional sum of

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Rupees 2,400 asked for by the Board in the same Proceedings and alluded to in paragraph 3 of their Proceedings now under review, was granted in Public Works Order, No. 3,489, of 12th December 1874 (see also Public Works Order, No. 66, of 7th December).

2. Until the present reference was made therefore, all demands had been complied with. It was the duty of the District Engineer to include any such for the current year in his statement of surrenders due in its last quarter, and to include demands for the following year in his District Budget due in the previous quarter. He has done neither, but taken upon himself to lay out Rupees 6,896 in excess of his allotments for 1874-75, and to run in debt to the extent of Rupees 5,036 for the current year. His conduct is altogether irregular and constrains the Honorable the Governor in Council to censure Captain Morant. There need be no difficulty in accepting his revised estimate on the score of the out-turn of work being fully worth its cost, and the additional work carried out having been really needed, as it is impossible to estimate with complete accuracy for such work on so long a line of road, and it is accordingly sanctioned. But Captain Morant has erred in judgment in not informing the proper authorities of the liabilities he was incurring, and in assuming a responsibility which is strictly forbidden by the standing orders of the department.

3. The charge of Rupees 5,036 against the grants of the current year will be adjusted by transfer of Rupees 4,000 from item No. 2, and Rupees 1,000 from item No. 3, of the Nilgiri Local Fund Budget, on neither of which it has been ascertained has any expenditure as yet been incurred, there being no Provincial Funds available,

(True Extract.)

Major-General, R.E.,
Secretary to Government.

To the District Engineer, Nilgiris. ✓
" Controller of Public Works Accounts. ✓
" Board of Revenue. ✓
" Revenue Department. ✓
" Financial do. ✓

Exd. E. C. Shunker.
Spare Copies

In relation to the work on the
 Revenue Department
 Miscellaneous No. 7912

PROCEEDINGS OF THE BOARD OF REVENUE.

Date 13 November 1874.

Resolved, that the following
 be done.

Showing J. R. Cockrill Esquire
 President, Nilgiri L. S. Board

And the Secretary to the
 Board of Revenue
 Madras

Sir,

On the 9th June last the District
 Engineer addressed the Chief Engineer on the
 subject of the completion of the two Nilgiri
 Ghauts. In reply he received a copy of the
 Nilgiri Local Fund Budget with the
 following covering Government Order in the
 Revenue Department. The exact amount
 required to complete the Nilgiri Ghaut
 appears from a communication just made
 by the District Engineer to be Rs. 5,800 and
 there

there are no funds whatever available in the Public Works Department to meet the demand. It is noted that Rs 17000 were allotted in the P.W.D in 1873-74 and Rs 8000 in the Budget of the current year.

2. I have now the honor to submit a resolution passed by the Local Council Board at a meeting held on the 27th July 1874 and request sanction to the diversion of funds proposed.

Present. J. P. Cockerell Esq. President
" J. Lyones Esq.
" J. Stanes Esq.
" E. J. C. Baan Esq.
" H. Wapshare Esq.
" A. H. Strutton Esq.
" Capt. Marmad District Engineer
" H. B. Grigg Esq. Honorary Secy.

Read the following:-

Letter from the District Engineer of 27th October 25th July 1874 submitting plan and estimate of Rs 30220 for constructing a road from Pillar to the Corner Ghant.

Letter

Letter from Captain Reader on the subject of the above road.

The Board find that the completion of the Kotagiri Ghant will cost Rs 5792. The urgency of the work is noted in the Local Fund Budget where it is stated that from the peculiar nature of Ghant work it is highly desirable to complete this road as soon as practicable. The Board are still of this opinion. In the Budget Rs 3380 are allotted for the Koolikul and Pillar road. The Board propose that this money should be transferred to the Kotagiri Ghant and Government should be asked to contribute the balance Rs 2412 to complete it. They observe that in their opinion it is much more conducive to the interest of the District that this work should be finished before a new work is commenced.

Milgiri L. F. Board's office } I have &c
Coimbatore 25 August 1874 } J. P. Cockerell
President
Milgiri L. F. Board

Submitted for the orders of Government.

St.

Ed. Hughes
Copied from original

$$\frac{2.2645}{2} = 1.13225$$

Abstract of grants proposed for all repairs to be
disbursed by Public Works Department

1881-82

Main Roads

Provisional
Grants

Civil Buildings 3,820

No. 10: Pub. Improvements 1,400

Communications 5,330

Total Repairs 9,550

3,820

1,400

5,330

9,550

District Engineer's
Office Octacumund
19th October 1874

John Horne
Captain P.C.
District Engineer

Amounts listed
— amount of
— amount of

1874

Copd & Comm. appd

W. No. 1872, 20th

No. 6645A

from

The Anti-Slavery

Office

Dated 19th Oct 1874

Recd. 25th

1.

Detail Estimate
for Original work
Provincial

W. No. 1872, 20th

Detail Estimate
for Repairs +
Provincial.

W. No. 1872, 20th

Part II Detail Estimate for Original Works for 1875-76

Executive Department	Locality	Project Description	Amount of Estimate	Completed Expenditure after March 1875	Estimate for 1875-76	Remarks or References
1	2	3	4	6	7	8
		Medinatham Constructing 4 Police Huts	2340	1539	801	Sanctioned in G.O. R. W.D. N: 859 of 26 th March 1874.
		Potacamund Fencing and sloping of the whole of the Post Office Hill at Potacamund	1600	1600	2401	Financial Department G.O. N: 1471 of 1 st September 1874. Much needed.
		Metalling Potacamund & some roads	6,000	10,620	750	G.O. N: 126 of 20 th February 1874. G.O. N: 902 B of 31 st March 1874.
		Fair lawns and a manyanad roads			9,000	

N: 102 of 18th Feb 1874
 N: 102 of 18th Feb 1874

N: 102 of 18th Feb 1874
 N: 102 of 18th Feb 1874

N: 102 of 18th Feb 1874
 N: 102 of 18th Feb 1874

Abstract of the grants proposed for all Original Works to be disbursed by the Public Works Department

Main Heads

Civil Buildings

Communications

Total Rupees

2400

9000

11400

9000

11400

District Engineer's Office Ootacamund 19th October 1874

Statement of the sums required for Minor new Works to cost less than Rupees 500 each

District

Kelghurries

400

250

650

District Engineer's Office Ootacamund 19th October 1874

James Horant Captain P.C. District Engineer

Statement Showing the Expenditure incurred

upto 30th September 1875 and the Balances remaining on the following Works, as called for in the Chief Eng^r's Memo No 584 of 29th September 1875

Items	Budget grant.	Expenditure including liabilities upto 30th Sept. 1875	Balances remaining on the 30th October 1875
Provincial Service			
Metalling Ably to Coonor Road	3000	3009	" " "
Ootacamund Municipal Roads	5330	5262 7 4	67 8 8
Local Fund			
Original Works			
Spillanully to Hartary Junction Rd	2000	1546 1 6	453 14 6
Hartary by Pillor to the Coonor grant	8000	" " "	8000 " "
Petty New Works	2000	" " "	2000 " "

District Eng^r Office Ootacamund 30th September 1875

James Horant Captain P.C. District Engineer Kelghurries

No 184.

The Chief Engineer &
Secretary to Government
Sir

The balance of the sanctioned
Estimate for the New Koteryherry
Grant for which as yet funds have
not been provided is Rs 3592

2 I find that the sanctioned
Estimate will be exceeded by Rs 2200
which sum is within 5% of the Estimate.
This excess is within my power to sanction
as District Engineer therefore I need
not explain its cause, which I have
carefully investigated and find satisfactory.
I merely beg to mention that the New
Koteryherry Grant exceeded its esti-
-mate by 50 per cent and the Goodalor
Grant its Estimate by 25 per cent.

I have the honor to request
that you will be good enough to
move Government to allot at an
early date the sum of Rs 5792 to

Complete this very important line
of Communication. Unless funds
are allotted early the completion of
the plant within the Official
Year will be doubtful.

I have your
letter of the 10th inst. and in reply
to inform you that the same has been
forwarded to the proper authorities
for their consideration. I am, Sir,
Very respectfully,
Your obedient servant,
J. M. C. [Signature]

Mrs. S. B. [Signature]
1858/59

25

25

Charles

Charles

John

5

100

U

12

Capit. 22.

your office

16
March
May 1876

your office

Kotagherry Grant

Grand Expenditures from what funds

to purchasing alliments, &c.

Year.	Grand	Expenditures from what funds	to purchasing alliments, &c.
1871/72	2240	2341-0-5	Local funds
1872/73	7000	6991-1-1	do
	17000	17002-0-4	Provincial
1873/74	7000	7006-1-10	Local funds
	10,400	16,606-13-7	Provincial
1874/75	3,380	4,069-14-2	Local funds
Total	47,020	54,014-5-5	
Land Compensation	1500	1500	
Total	48,520	55,514-5-5	

Nov 13th 1872 No 525 of 20 Sanpuz.
Local fund Budget
R.R. 26 Nov 1873. 124, 246 of Aug 73, Aug 74 & 75.
Local fund Budget
R.R. Budget 14, 6 No 3489 of 12 Dec 74.
Local fund Budget

Estimate No 5 of 1875-76

Kotagherry District

Constructing a road (no where less than 8 feet wide) for laden Bullocks from here to Mettapolliam.

Particulars

5808	From junction of new track with Cokkiam road to 1 st Nullah
12540	1 st to 2 nd Nullah
34016	2 nd Nullah to 2 nd mile
12040	2 nd mile to 3 rd Nullah
11096	3 rd to 5 th Nullah
27456	5 th to 6 th Nullah
16128	6 th Nullah to 1 st crossing
6588	1 st crossing to 3 rd mile
20928	3 rd mile to 7 th Nullah
24232	7 th to 8 th Nullah
2612	8 th to 9 th Nullah
23086	9 th Nullah to 4 miles
15888	4 miles to end of Leary Rock
28160	End Leary Rock to end shut Rock
13984	End shut Rock to 10 th Nullah
9930	10 th to 11 th Nullah
9910	11 th Nullah to 5 th mile
16320	5 th mile to 2 nd crossing
37848	2 nd to 3 rd crossing
40180	3 rd crossing to 13 th Nullah
11472	13 th Nullah to 6 th mile
34080	6 th mile to end 1 st lot coffee
42460	7 th mile Nullah to end of coffee
72332	End 1 st lot coffee to Rocky corner
19056	From Rocky corner to 7 th mile
26000	7 th mile to Leary's Hill
571550	Leary's Hill

571500	Brought forward
2050 8 3 49200	From end of Coffey to 8 th mile
1288 8 12 25760	" 8 th mile to 8 th mile Nullah
2033 8 2 32528	" 8 th mile Nullah to end Nullah boundary
813 8 12 9756	" Nullah boundary to Big Rock
1416 8 2 1/2 22920	" Big Rock to 9 th mile
1491 8 12 17892	" 9 th mile to end Caullah boundary
1868 8 3 44832	" end Caullah boundary to end Nander boundary
1921 8 2 1/2 38420	" " Nander " to 10 th mile
569 8 1 4552	" 10 th mile to Moango's tree saddle
1623 8 2 1/2 25616	" Moango's tree saddle to 18 th Nullah
2170 8 1 1/2 30380	" 18 th Nullah to end Karpintty's Boundary
1118 8 2 17888	" end Karpintty's Bdy to 11 th mile
2602 8 1 1/2 28824	" 11 th mile to 19 th Nullah
1300 8 2 1/2 36000	" 19 th Nullah to cluster of Rocks
1078 8 3 22360	" cluster of Rocks to 12 th mile
1935 8 3 1/2 54180	" 12 th mile to 1 st Angle No. 1 zigzag
853 8 5 36120	" 1 st to 2 nd Angle No. 1 zigzag
1289 8 3 30936	" 2 nd Angle No. 1 zigzag to Big Nullah
1203 8 4 38496	" Big Nullah to 13 th mile
1953 8 2 31748	" 13 th mile to a large Nullah
1950 8 3 1/2 50700	" a large Nullah to a large Nullah
1377 8 1 11016	" Nullah to 14 th mile
1899 8 2 30384	" 14 th mile to Leap Rock
2540 8 2 1/2 45720	" Leap Rock to 1 st Angle No. 2 zigzag
841 8 2 1/2 16820	" 1 st Angle No. 2 zigzag to 15 th mile
2542 8 2 37472	" 15 th mile to 2 nd Angle No. 2 zigzag
1019 8 2 16304	" 2 nd Angle No. 2 zigzag to Drain
1119 8 2 30704	" Drain to 16 th mile
2163 8 2 1/2 47516	" 16 th mile to Nullah
1228 8 1 1/2 12280	" Nullah to Drain
1899 8 2 1/2 37780	" Drain to 17 th mile
406 8 1 1/2 20600	" 17 th mile to Bridge
8 1 1/2 18320	" Bridge to 1 st class drain
8 1 1/2 18320	" 1 st class drain to 18 th Nullah
7692	" 18 th mile to foot of shant
1582074	
2595	Cubic yards Earthwork

14 18 6 4 1/2 6804	Foundations to abutments off Bridge
20 21 6 4 1/2 11360	" " " to 1 st class drain
18144	Left
672	Leaves Earthwork to Foundations
210 8 1 1/2 2520	From Notman's Bridge to junction with new trace
230 8 3 5520	" 2 nd Nullah to 2 nd mile
50 8 2 1/2 1000	" 6 th Nullah to 1 st crossing
100 8 4 1/2 3600	" 9 th to 4 th mile
300 8 3 1/2 8100	" 4 th mile to Leap Rock
120 8 5 4800	" Leap Rock to Shrub Rock
107 8 2 1712	" 2 nd to 3 rd crossing
25 8 2 1/2 500	" " " "
39 8 3 936	" " " "
15 8 4 480	" " " "
75 8 5 3000	" " " "
60 8 2 1/2 1200	" 3 rd crossing to 13 th Nullah
135 8 4 4320	" " " "
28 8 2 1/2 560	" " " "
30 8 3 720	" " " "
37 8 4 1/2 1332	" " " "
46 8 5 1840	" " " "
50 8 6 2400	" " " "
365 8 4 11680	" " " "
20 8 10 1600	" " " "
48 8 5 1920	" " " "
72 8 3 1728	" " " "
106 8 2 1/2 2120	" " " "
40 8 3 1120	" " " "
20 8 2 320	" " " "
82 8 6 3936	" Rocky corner to 7 th mile
50 8 4 1600	" " " "
70864	Leaves over

185	8	3	3720	Brought forward		
45	8	2	680	From Rocky Corner to 7 th mile		
60	8	6	2880	" " " "		
40	8	4	1280	" 7 th mile to 7 th Nallah		
212	8	3	5088	" " " "		
100	8	9	7200	" " " "		
20	8	3 1/2	560	" " " "		
36	8	4	1152	" 7 th mile Nallah to end Coffey		
30	8	4 1/2	1080	" " " "		
38	8	2	608	" " " "		
90	8	3	2160	" end of Coffey to 8 th mile		
45	8	4	1440	" " " "		
70	8	5	2800	" " " "		
90	8	4	2880	" " " "		
90	8	4	2880	" 8 th mile to 8 th mile Nallah		
38	8	3	912	" " " "		
69	8	2 1/2	1380	" " " "		
60	8	7 1/2	3600	" 8 th mile Nallah to Cullah boundary		
43	8	3	1032	" Cullah boundary to Big Rock		
60	8	4 1/2	2160	" " " "		
40	8	6	1920	" Big Rock to 9 th mile		
43	8	6	2064	" 9 th mile to Nallah boundary		
34	8	8	2176	" Nallah boundary to end Kansas boundary		
20	8	5	800	" " " "		
20	8	4	640	" " " "		
50	8	4	1600	" end Kansas boundary to 10 th mile		
50	8	7 1/2	3000	" " " "		
30	8	4 1/2	1080	" Meager's tree castle to 18 th Nallah		
20	8	2	320	" 19 th Nallah to bluestone Rock		
79	8	7 1/2	4740	" " " "		

131816 Carried over

20	8	4	640	Brought forward		
50	8	6	2400	" " " "		
50	8	6	2400	" bluestone Rock to 12 th mile		
15	8	2 1/2	300	" 1 st to 2 nd angle N:2 highway		
30	8	4	960	" " " "		
90	8	4	2880	" 2 nd angle to 2 nd highway to Big Nallah		
130	8	5	6000	" " " "		
122	8	7 1/2	6980	" Leage Nallah to 13 th mile		
42	8	15	1680	" " " "		
115	8	3 1/2	1260	" " " "		
60	8	6	2880	" 13 th mile to Leage Nallah		
100	8	7 1/2	6000	" " " "		
114	8	4	3648	" " " "		
84	8	6	1132	" " " "		
50	8	3	1200	" Nallah to 14 th mile		
35	8	2 1/2	700	" " " "		
42	8	2	672	" " " "		
119	8	3 1/2	3652	" " " "		
58	8	4	1856	" " " "		
60	8	4 1/2	2160	" 14 th mile to Leage Rock		
57	8	4	1824	" " " "		
50	8	3	1200	" " " "		
35	8	3 1/2	980	" Leage Rock to 1 st angle N:2 highway		
35	8	3 1/2	980	" " " "		
35	8	3	840	" 1 st angle N:2 highway to 15 th mile		
25	8	3	600	" " " "		
35	8	4	1120	" " " "		
104	8	3	4416	" " " "		
15	8	2 1/2	300	" " " "		
70	8	7 1/2	4200	" 15 th mile to 2 nd angle N:2 highway		
35	8	6	1120	" " " "		
183	8	3	4392	" " " "		
15	8	2 1/2	300	" " " "		
70	8	7 1/2	4200	" 2 nd angle N:2 highway to drain		
60	8	4	1920	" " " "		
25	8	3 1/2	800	" 16 th mile to Nallah		
101	8	3	2400	" " " "		
85	8	5	3400	" " " "		
28	8	7	1568	" Nallah to drain		
44	8	5	1760	" " " "		
148	8	4	4736	" " " "		
45	8	3	1080	" " " "		
40	8	4 1/2	1440	" drain to 17 th mile		
95	8	4	3040	" " " "		
238952				Carried over		

9181 Cypds Earthfilling

Rocky comes to 7th grade
Carries over

Lo, amis Over

201673 Brought forward

144	5	12	8660	From 13 mile to Leap Nullah
51	4	8	1632	"
63	5	8	2520	"
100	6	15	9000	"
50	4	6	1200	"
109	4	7	3032	Nullah to 14 mile
35	3	5	525	"
42	3	4	504	"
58	4	8	1856	"
57	4	8	1844	"
50	4	6	1200	"
60	5	9	2700	"
35	4	7	980	"
35	4	7	980	Leap Rock to 1st Angle No. 2 bridge
35	4	7	980	"
25	4	6	600	" 1st Angle No. 2 bridge to 15 mile
184	4	6	4416	" 15 mile to 2nd Angle No. 2 bridge
35	4	8	1120	"
15	4	5	300	"
70	6	15	6300	"
60	4	8	1920	" 2nd Angle No. 2 bridge to drain
25	4	6	600	"
28	6	14	2352	" 16 mile to Nullah
100	4	6	2400	"
85	5	10	4250	"
148	4	8	6736	Nullah to drain
45	4	6	1080	"
95	4	8	3040	drain to 17 mile
40	5	9	1800	"
50	5	10	2500	"
37	5	10	1850	" 17 mile to bridge
25	3	5	300	"
30	4	7	840	"
30	4	7	840	"
192	4	8	6144	" 18 mile to foot of shaft
106	3	5	1590	"
20	5	8	800	"
78	3	6	1404	"

290568 left

107612 beyond Rough Stonework

Rough Stonework to Bridge 37

14.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</
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63 2 5 2520 From Rodman's Bridge to junction with New Trace

6	3	3	54	Junction with new trace to 1st Nullah
118	8	6	4710	2nd Nullah to 2nd mile
45	8	3	1080	2nd mile to 3rd Nullah
24	8	3	576	3rd to 5th Nullah
62	8	3	16188	5th to 6th Nullah
45	8	3	1080	6th Nullah to 1st crossing
48	3	3	432	1st crossing to 3rd mile
60	3	3	567	3rd mile to 7th Nullah
69	8	3	621	7th to 8th Nullah
39	3	2	238	8th to 9th Nullah
151	8	6	4832	9th Nullah to 4 mile
71	8	6	3408	4 mile to Leap Rock
100	8	4	3200	Leap Rock to shut rock
45	3	3	405	shut rock to 10th Nullah
51	3	5	765	10th to 11th Nullah
45	8	3	1080	11th Nullah to 5 mile
27	6	5	810	5 mile to 2nd crossing
400	2	1/2	400 1/2	2nd to 3rd crossing
123	6	3	2214	" do do
247	8	3	5940	3rd crossing towards Leap Rock
124	8	3	2916	" do do
270	8	3	6480	" do do
17	7 1/2	2	405	" do do
46231 1/2 to arrive over				

46231^{1/2} Brought forward

29 8 3 696 From 30th crossing towards Lone Rock

392 8 3 9408

108 6 1/2 2916

7 3 1 21

113 7 1/2 2 1695

207 6 3 3726

81 1/2 2 729

47 6 2 564

126 6 8 6048

9 4 1 36

120 6 6 4320

310 8 1/2 11860

290 6 6 10440

50 7 1/2 2 750 Lone Rock to Coopers pathway

54 6 3 972

145 7 1/2 2 2175

58 4 3 696

24 1 1 24

140 8 3 3360

81 8 3 1944

126 6 2 1512

55 7 1/2 2 825

27 2 2 27

55 10 8 4400 Below Rock towards pathway at Rocky point

30 8 12 2880

8 4 2 64

62 8 4 1984

145 8 2 2320

72 8 3 1728

6 2 2 24

101 8 4 3232 To Coopers Pathway

4 3 1 12 From Coopers do to Meango Tree

40 4 2 320

18 8 3 432

6 2 2 24

165 6 3 2970

99 6 2 1188

57 7 1/2 2 855

128 8 2 2048

135256^{1/2} Carried over

135256^{1/2} Brought forward

207 1 2 2008 From Coopers Pathway to Meango Tree

20 8 3 480

92 6 2 1104

8 5 1 40

108 6 3 1944

57 8 3 1368

28 7 1/2 2 570

15 8 3 360

49 2 1/2 49

60 8 2 960

56 6 2 672

7 1/2 4 1/2 15

87 3 3 783 From Meango Tree saddle to 18th Nullah

87 3 3 783 18th Nullah to Leapputty boundary

52 5 6 960 11th mile to 19th Nullah

34 8 5 1360 19th Nullah to 6 tracts of Rocks

96 8 5 3840

164 8 8 4112

39 6 3 702 6 tracts of Rocks to 12th mile

50 8 3 1200 12th mile to 10th angle No. 1 high pass

118 4 4 1876 10th to 2nd angle No. 1 high pass

33 9 7 2079 2nd angle to Big Nullah

104 6 7 4368 Big Nullah to 13th mile

46 8 6 2208 13th mile to Nullah

36 7 5 1260

58 1/2 6 9 2997 Nullah to Nullah

24 6 3 482 do to 14th mile

108 5 4 2160 14th mile to Leap Rock

68 8 6 3264 Leap Rock to 1st angle No. 2 high pass

134 8 4 4288 1st angle No. 2 high pass to 16th mile

121 7 5 4235 15th mile to 2nd angle No. 2 high pass

100 9 3 2700 2nd angle to drain

88 8 3 2112 drain to 16th mile

107 7 4 2996 16th mile to Nullah

132 6 3 2316 Nullah to drain

126 4 3 1512 drain to 17th mile

87 6 3 1566 17th mile to Bridge

162 3 3 1458 Bridge to drain

49 4 4 784 drain to 18th mile

102 3 3 918 18th mile to foot of ghaat

207 5 3 3105

20804^{1/2} left

77032^{1/2} Beyond Blasting Newmills Rocks

Oakwood

8 19 1 3/4 114 Beams to 15 ft. Bridge
8 16 1 3/4 96 Do to 12 ft Do
8 18 1 3/4 108 Do to 14 ft Do
4 24 1 3/4 90 Do to 20 ft Do
508 Left of Oakwood wrought & put up.

Unmeasured

16 13 5 3 21.8.0 Short joists to 15 ft. Bridge
8 19 5 3 15.10.0 Long Do Do
14 13 5 3 18.11.6 Short Do to 12 ft Do
6 19 5 3 11.10.6 Long Do to Do
16 13 5 3 21.8.0 Short Do to 14 ft Do
8 19 5 3 15.10.0 Long Do to Do Do
12 13 5 3 16.3.0 Short Do to 20 ft Do
4 19 5 3 7.11.0 Long Do to Do Do
2 17 13 2 72.8.0 Flooring to 15 ft Bridge
2 14 13 2 60.8.0 Do to 12 ft do
2 16 13 2 69.4.0 Do to 14 ft do
1 22 13 2 47.8.0 Do to 20 ft do
16 3 1/2 4 3 4.8.0 Uprights to 15 ft do
12 3 1/2 4 3 3.6.0 Do to 12 ft do
16 3 1/2 4 3 4.8.0 Do to 14 ft do
10 3 1/2 4 3 2.11.0 Do to 20 ft do
24 4 4 3 8.0.0 Struts to 15 ft Bridge
20 4 4 3 6.8.0 Do to 12 ft Do
24 4 4 3 8.0.0 Do to 14 ft do
14 4 4 3 4.8.0 Do to 20 ft do
12 9 4 3 9.0.0 Cross Rails to 15 ft. Bridge
12 18 4 3 18.0.0 Do Do to 14 ft Do
12 16 4 3 16.0.0 Do Do to 12 ft Do
16 24 4 3 12.0.0 Do Do to 20 ft Do
14 15 9 6 78.9.0 Wall Plates to 7 Bridges

5586 Left of Unmeasured wrought & put up.

Drains

375 Leorning stones to set down drains
25 20' lead drains 10 ft long
132 Common drains 10 ft long

CG-12 Oct 1875
with 180

John. M. 1875

1875

1875

Specification

Earthwork - To be excavated 6 feet out of the solid.

Earthfilling - The whole of the Revetments to be filled in level with the top of the Rocks. All Rocks to be cleared full 8 feet the width of the road.

Revetments - To be built so as to give the road way over them the full width 12 feet inside parapets.

1st Class Drains - To be completely finished and made full 12 feet wide inside parapets.

2^d Class Drains - To be completed 8 feet wide inside parapets the width of road.

3^d Class Drains - To be constructed 8 feet wide inside parapets the width of Road.

Bridges - To be completed fully. Beams to be of Oak & the rest of Vengay wood with dry stone revetments.

for President & Co.

Comparative Statement of Expenditures and Revised Estimate of the Montgomery Grant New Post

Quantity in Pounds	Description of Works	Rate Per	Amount in Pounds	Remarks
58592 200 750 per cwt.	Reynolds Cartwork - Easy	1.00	58592	The rate for cartwork in the Revised Estimate averages 200 750 per cwt. There was more of the hard soil than was expected.
	Do. Do. Hard	1.00	96415	
	Do. Do. Cartwork		168	
	to foundations of Bridges	.40	22954	
	Do. Cartfilling	.40	94516	
	Do. Rough Stone Pavement	.40	3988	Additional 1st class drains were built.
	Do. Do. Do. to		19265	Additional rock was substituted between the 3rd & 11th miles.
	Do. Bleating & Removal of Rock	2.00	2420	Additional 1st class drains were built.
	Left Teakwood to Bridges	5.00	1674	Retaining walls failed the evening letter ex-plain this error.
	Do. - Vineyard to - Do. - Do.	3.00	1878	Proportionate to Estimate.
375	Coarse stones for drains	5.00	625	
	2d Class drains	15.00	792	
	Common drains	6.00	10818	
721	Recycle & rebuilding Pavement	1.00	84312	
3375	Do. Cartfilling to - Do. - Do.	.40	5362155	
	Indirecties at 10 per cent		5367.7	
	Total Estimate		59030	
	Reduced Sanctions Estimate			
	Excess Surplus		11720	

District Engineer's Office
 W. L. Cummings
 24 May 1875

Superintendent
 District Engineer

54050
 54012
 45

CB 12th October/75

W. B. E. D.

Aug 21 1877

100

1704

12/20/20

4. Feb 20 1900

The map shows the northern Adriatic coastline from Trieste in the north to the Gulf of Genoa in the south. Sampling stations are indicated by numbered dots (1-10) along the coast. Station 1 is near Trieste, and station 10 is near the Gulf of Genoa. The map includes latitude markings (45° 30' N, 45° 00' N, 44° 30' N) and longitude markings (13° 30' E, 13° 00' E, 12° 30' E). A scale bar at the bottom indicates a distance of 100 km.



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1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

... ..

2000

f.o. 8 March 1875. 229.
 f.o. 132. 15 Aug 74.
 f.o. 12 Dec 74. 234-235
 f.o. 15 Dec 74. 240

P. W. 1875 Sept.
 1875, No. 6512

Board of Revenue,

MADRAS.

Thrs' The Encl. Sept.

PROCEEDINGS, 25TH AUGUST 1875, No. 2,405.

Dep 3 Sept 75

Encl. 2

Received 14 Sept 75
 Paid 16 Oct 75

AUGUST.

No. 2,405.

Kotagerry Ghaut—in Nilgiri Local Fund Circle.—Report of President that — is now open for traffic and that it has cost Rupees 11,720 in excess of the original estimate, submitted to Government. Recommendation made that sanction be accorded for a grant from Provincial Funds of Rupees 5,036 required for the work in 1875-76.

Transferred

the President of the Local Fund Boards, Nilgiri Circle.

Copy to the District Engineer, Nilgiris.
 " to the Controller of Public Works Accounts.

Ed. A. S. Rodgers.

180
 6-10-75
 24-9-75
 27 Sept

Transferred to the Public Works
 for disbursement with reference to f.o. 132.
 9th May 75. No. 840. f.o. 132.
 Chief Secretary

No 29/4 Public Works Dept.

49

The Secretary has the honor to submit for approval another passing in lieu of the final pass. ordered to be emitted. A statement obtained from the District Engineer's Office shows the sum, of which the sum is denied, to be available -

With reference to N.S. the Governor's remark that he had reason to believe the sanction would be accorded, it is respectfully submitted

30 Nov 1874
21 Dec 1874 - 126-127

Ind 1874 Dept

Proceedings of the Board of Revenue

Dated 18 November 1874
Depd 13 - " - "
Recd 14 - " - "

Submitting for the orders of Govt with remarks letter from the President L. H. Board, N. H. C. C. requesting sanction to the diversion of funds proposed by the L. H. B.

of 15th May 1874, that the balance required to complete certain work

mitted that the only
intimation on the sub-
ject that was ever
received by the District
Engineer, is that con-
tained in his Dep. Let-
ter, herewith submitted,
limiting his demand
to 5 per cent on Rs 2200,
which was implied.

That letter was dated
9th June 1874; but
did not leave the Mtl
till Nov. 1874. The
District Provincial Order
got, here in October,
contained no intimation of
probable expense for the

No 2914 Public Works Dept.

51
did the Annual State-
ment of financial demands
due in February 1875.
Under these circum-
stances, it is respect-
fully submitted that
the working of the draft
is absolutely correct -

Ch. Walker, Engineer.
Sd/- Sd/- D.P.W.

6-10-75.

is proposed
convenient for Govt to
find the money as is
to complete certain
work

No 2914 Public Works Dept.
53

Proceedings of the Madras Government
Under date the 12 Oct. 1875
Read the following

Proc. of the Board of } Hb. N. 2405 of 25th Aug 75
Revenue }
the Ind. Dept.

Gp 12 October 75
No 2914

There is no doubt that Captain
Morant has acted very
irregularly and that he
must be censured. But
I would stop at this -
we can't in reason make
him pay 1000 £ out of
his pocket until it is
convenient for Govt to
find the money as it

The reference
of this subject for dis-
posal in the Public Works
Dept. is presumably
owing to a pledge given
in para 2 of Financial
Dept. Order N. 840
of 15th May 1874 that
the balance required
to complete certain
works

works alluded to in
para 15 of the Revenue
Boards Proceedings on
which it was passed,
would be provided
from Provincial Funds.
The Kotagerry Ghaut
however was fully pro-
vided for by the allot-
ment of Rs 8,000 made
in the Provincial Budget
of 1874-75 added to the
transfer of Rs 3,380 re-
commended in Revenue
Board Proceedings of
13th Nov. 1874. The
additional sum of Rs
2400 asked for by the
Board in the same
Proceedings and allu-
ded to in para 3 of
their

contemplated in this
draft. Captain Morant
is very provoking in dis-
regarding Standing
Orders. but he is not
pronounced incompetent
or idle - which is comforting -
He seems to have
rapidly finished a
very necessary Ghat
and to have done it
well. It is sufficiently
mortifying to him
to receive censure when
with a little more regularity
he might have expected praise
I would be satisfied
with censuring him for
irregularity. - R.E.

General Sir H. D. D. S. S. S.
The charge since the adjusted
later. I cannot say the adjusted
is a great improvement in the
the first cannot say the adjusted
is a great improvement in the
the first cannot say the adjusted
is a great improvement in the

25 Sep 75

their Proceedings now
under review, was
granted in P.W. Order
No 3489 of 12th Decr.
1874 (see also P.W. Order
No 86 of 7th Decr.).
2. Until the
present reference was
made therefore, all
demands had been
complied with, [and
the Govt. had not
the slightest reason
to suppose that any
further would be
made.] It was the
duty of the District
Eng. to include any
such for the current
year in his statement
of Surrenders
his account of the
is a great improvement in the

due in its last quarter,
and to include demands
for the following year
in his District Budget
due in the previous
Quarter. He has done
neither, but taken
upon himself to lay
out Rs 396 in excess
of his allotments for
1874-75, and to run in
debt to the extent of
Rs 5030 for the current
year. His conduct is
altogether ~~immoral and~~ ^{immoral and} ~~unbecom-
ing~~ <sup>unbecom-
ing</sup> ~~in the eyes of the~~ ^{in the eyes of the} ~~Government~~ ^{Government}
There need be no dif-
ficulty in accepting
his revised estimate
on the score of the
out-turn of work being
fully

1. At the end of the 13
pages, the estimate
of the work done
in the 1st quarter
of 1875

1. At the end of the 13
pages, the estimate
of the work done
in the 1st quarter
of 1875

Capt. Mervant has in
his report, stated that

Quint 1874

5710
fully worth its cost,
and the additional
work carried out having
been really needed, as
it is impossible to
estimate with complete
accuracy for such work
on so long a line of
road; and it is ac-
cordingly sanctioned.
But not in informing
the proper authorities
of the liabilities he
was incurring, ^{and}
in assuming a responsi-
bility which is strict-
ly forbidden by the
standing orders of the
Dept. [As he has
assumed it however,
he

as he will continue to
 as bear it, there being
 for no funds whatever
 at present at the dis-
 disposal of Govt. to en-
 able them to relieve
 him of it. He will
 therefore make his own
 arrangements to dis-
 charge the debts that
 he has incurred, and
 will report when they
 are all defrayed, re-
 fraining from enter-
 ing any expenditure
 on the works in his
 public accounts till
 the Govt. shall be in
 a position to reimburse
 him

his advances -
 G.M.W.

The charge of Rs. 5036
 against the grant
 of the current Gen.
 will be ~~settled~~
 adjusted by Arms.

No. 2. Revue from Pillow: per of Rs. 4000 from
 to Kintoor - Rs. 8000. Item No. 2, & Rs. 1000
 3. Petty New Work, from Item No. 3
 Rs. 2000. of the Milgherry
 Local Fund. Sec.
 set on either of
 which, it has been
 ascertained that
 any expenditure
 has yet been in-
 curred; these
 being subject to
 Provincial Fund
 control -

G.M.W.

O.S. Milgherry
 Com. & Acco -
 Bd of Revenue
 Revenue Dept
 Sindh Dept.
 10/11/05

3 - with Rs. 2137 to be paid
 14/11/05
 Office
 25-10-75

18/08/81