

Public Works (1896) Department.

RAILWAY BRANCH.

G.O., No. 1028 R

DATED 9th December

[Despatch Abstract.]

*Calicut - Cannanore Railway - Letter to the
Govt of India forwarding copy of
a revised estimate for the ~~line~~ together
with a note by the Consulting Engineer
for Railways*

BACK PAPERS.

[illegible]

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

MADRAS RAILWAY COMPANY.

CHIEF ENGINEER'S OFFICE,

MADRAS, 24th September 1896.

No. C/1223.

Proposed Calicut-Cannanore Extension.

Revised Estimate.

THE ACTING AGENT AND MANAGER.

DEAR SIR,

Referring to your letter, No. 8810/1725, of 19th February last, and the first para., page 3 of the accompanying Board's letter, I beg to forward herewith a statement showing the original and revised estimate figures under various conditions for the Calicut-Cannanore Branch Railway.

2. The revision has been chiefly done by Mr. Otto, and again gone through by Mr. Percy, and the results are as follows:—

Using the Madras-Railway type of Permanent-way and retaining fencing throughout, the total cost is reduced to Rs. 87,95,018, or a rate of Rs. 1,49,068 per mile.

3. If Government type Permanent-way with timber sleepers similar to that now being laid on the Madras-Bezawada Railway is adopted, the total cost will be Rs. 81,11,167, or per mile Rs. 1,37,478, and if in addition fencing be omitted, the cost will be still further reduced to Rs. 79,03,709, or Rs. 1,33,961.

4. I cannot recommend either of the reductions named in para. 3, if the line is to be made and worked by this Company, as if wooden sleepers be used, the renewals will be costly, and the line is sure to need fencing, running as it does through a densely-populated and well-cultivated country.

5. The accompanying detailed memorandum shows the manner in which each sub-head has been revised and reduced ; it will be observed that the width of cuttings has been taken at 20 feet, which is quite sufficient, instead of 26 feet, the Government of India standard width, by which a considerable reduction in earthwork and land has been effected.

6 The lengths of station loops have also been reduced to 1,200 feet and all accommodation cut down to a minimum, passenger platform being only 1 foot high above rail level. The cutting down has been carried if anything too far I think, and it is hardly safe to rely on a less expenditure than Rs. 1,50,000 a mile, so much will depend on the price of English materials and exchange at the time of construction.

Yours faithfully,

E. W. STONEY,

Ag: Chief Engineer.

Memorandum showing in detail the manner in which each item of Mr. Dallas' Original Estimate has been dealt with in the Revised Estimate of the Calicut-Cannanore Extension, Madras Railway.

I. Preliminary Expenses.—Preliminary expenses are unaltered. Original estimate was Rs. 30,884. Revised estimate is also Rs. 30,884.

II. Land.—The original land estimate was prepared with a ruling gradient of 1 in 150. The revised estimate has been prepared with a ruling gradient of 1 in 100; banks and cuttings have in consequence been greatly reduced and the land also is reduced. The original estimate was Rs. 12,33,128. Revised estimate is Rs. 10,74,972.

III. Earthwork.—The original earthwork estimate was prepared with cuttings 26-feet formation and slopes 2 to 1, banks 20-feet formation slopes 2 to 1, and ruling gradient of 1 in 150.

Rough stone-pitching and turfing for banks was also allowed. The revised estimate is prepared with a ruling gradient of 1 in 100, cuttings 20 feet wide, slopes $1\frac{1}{2}$ to 1 and banks 20 feet wide, slopes $1\frac{1}{2}$ to 1. Rough stone-pitching except in tanks and turfing is dispensed with. The original estimate was Rs. 23,41,734. The revised estimate is Rs. 16,37,714.

IV (1). Large Bridges.—The large bridges were originally designed on double 12 feet wells with 60 feet girders and provision for cart traffic at all bridges.

There were 66 spans of 60 feet each and 2 spans of 40 feet each. The rate of exchange was also Rs. 19 per pound sterling. In the revised estimate 11 spans of 60 feet each have been dispensed with: there is provision for cart traffic at two bridges only, and the rate of exchange has been taken at Rs. 17-8-0 per pound sterling. The original estimate was Rs. 16,75,407. The revised estimate is Rs. 11,53,754.

IV (2). Minor Bridges.—As the ruling gradient has been reduced to 1 in 100, the height of banks has been considerably reduced and minor bridges have in consequence been reduced.

The original estimate was Rs. 3,25,370. The revised estimate is Rs. 2,69,942.

V (1). Fencing.—The rate of exchange has been reduced from Rs. 19 to 17-8-0 per pound; original estimate was Rs. 1,90,446 and the revised estimate Rs. 1,75,705. If, however, the fencing along line be omitted and only placed round station yards, the cost for this item will be Rs. 20,213.

V (2). Road Crossings.—This item remains practically unaltered, the estimate being Rs. 1,34,433. If, however, the fencing be omitted except round station yards, the number of level-crossing gates will also be reduced and the estimate will be Rs. 82,467.

V (3). Miles and gradient posts remain the same; the cost Rs. 2,377.

VI. Electric Telegraph.—Remains unaltered, the estimate being Rs. 20,248.

VII. Ballast.—The revised estimate for ballast is prepared by reducing the length of station sidings from 9-104 miles to 7-213 miles, the length of through sidings being reduced from 1,600 to 1,200 feet (see tabular statement attached). The Madras Railway district rates for ballast, with a slight increase, have also been adopted, and the estimate has been reduced from Rs. 5,69,108 to revised estimate of Rs. 2,41,333.

VIII. Permanent-way.—In the revised estimate for permanent-way the rate of exchange has been reduced from Rs. 19 to 17-8-0 per pound.

The price of rails has increased fully £1 since the framing of the original estimate, and which increase has been allowed for in the revised estimate. The original estimate is Rs. 24,98,865 and the revised one Rs. 24,44,308. If, however, instead of the Madras Railway type of permanent-way, flat-footed steel rails weighing 75 lbs. per yard with timber sleepers (Government type of permanent-way as used on the Madras-Bezawada Railway) be used, the estimate for this item will be Rs. 17,60,457.

VIII (1). Station and Offices.—The figures for stations and offices have been carefully revised and only such buildings have been allowed as are absolutely necessary on the opening of the line for traffic; the passenger platform being 1' and goods platforms 3' 6" above rail level. A list is attached of existing types of Madras Railway stations and buildings taken as standard. The original estimate was Rs. 1,74,410 and the revised estimate is Rs. 1,01,366.

VIII (2). Workshops and Store Buildings.—Workshops and store buildings have been revised. The original estimate was Rs. 8,600 and the revised one Rs. 3,830.

VIII (3). Staff Quarters.—In this item only such buildings have been allowed for as will be absolutely necessary on the opening of the line for traffic. A statement is attached showing list of staff quarters at each station. Original estimate Rs. 81,480, revised estimate Rs. 48,071.

VIII (4). Station Machinery.—The station machinery estimate has been carefully revised, and only such items as are absolutely necessary have been retained. The original estimate was Rs. 1,39,075 and the revised estimate Rs. 1,04,508. A tabular statement is attached showing the machinery to be provided at each station.

IX (1). Engineering Plant.—In the original estimate no provision seems to have been made for engineering plant for the construction of large bridges. In the revised Rs. 1,50,000 has been allowed for this purpose and Rs. 50,000 for other engineering plant and tools generally. Original estimate Rs. 59,490, revised estimate Rs. 2,00,000.

X. Station and Office Furniture.—This estimate has been cut down from Rs. 15,350 to Rs. 8,234.

XI (1 and 2). Rolling-stock.—This item remains the same. Original estimate Rs. 6,77,200.

XII. General Charges.—General charges is a very small percentage of the whole estimate, and, as it has been carefully prepared, it remains unaltered. Original and revised estimates Rs. 4,66,139.

E. W. STONEY,
Ag. Chief Engineer.

24th September 1896.

General Abstract.

	Mr. Dallas' Original Estimate.	Present Revised Estimate.	Revised Estimate using Govt. type of permanent-way.	Revised Estimate using Govt. type of permanent-way and omitting Fencing.
	RS.	RS.	RS.	RS.
Preliminary Expenses	30,884	30,884	30,884	30,884
Land	12,33,128	10,74,972	10,74,972	10,74,972
Earthwork	23,41,734	16,37,714	16,37,714	16,37,714
Large Bridges	16,75,407	11,53,754	11,53,754	11,53,754
Minor Bridges	3,25,370	2,69,942	2,69,942	2,69,942
Fencing	1,90,446	1,75,705	1,75,705	20,213
Road Crossings	1,34,433	1,34,433	1,34,433	82,467
Mile and Gradient Posts	2,377	2,377	2,377	2,377
Electric Telegraph	20,248	20,248	20,248	20,248
Ballast	5,69,108	2,41,333	2,41,333	2,41,333
Permanent-way	24,98,865	24,44,308	17,60,457	17,60,457
Stations and Offices	1,74,410	1,01,366	1,01,366	1,01,366
Workshops and Store Buildings	8,600	3,830	3,830	3,830
Staff Quarters	81,480	48,071	48,071	48,071
Station Machinery	1,39,075	1,04,508	1,04,508	1,04,508
Engineering Plant	59,490	2,00,000	2,00,000	2,00,000
Station and Office Furniture	15,250	8,234	8,234	8,234
Rolling-stock	6,77,200	6,77,200	6,77,200	6,77,200
General Charges	4,66,139	4,66,139	4,66,139	4,66,139
Grand Total	106,43,767	87,95,018	81,11,167	79,03,709
Length of Line 59 miles—Rate per mile	1,80,403	1,49,068	1,37,478	1,33,961

E. W. STONEY,
Ag. Chief Engineer.

24th September 1896.

Statement showing original and reduced lengths of sidings in station yards.

Stations.								Original length of sidings in Miles.	Reduced length of sidings in Miles.
West Hill	...	...	...	...	...	...	...	0.488	0.337
Elathur	...	...	...	...	...	...	...	0.488	0.337
Quilandi	...	...	...	...	...	...	...	1.134	0.907
Trikodi	...	...	...	...	...	...	...	0.448	0.337
Badagara	...	...	...	...	...	...	...	1.134	0.907
Mahi	...	...	...	...	...	...	...	1.134	0.907
Tellicherry	...	...	...	...	...	...	...	1.688	1.385
Edakad...	...	...	...	...	...	...	...	0.127	0.127
Cannanore	...	...	...	...	...	...	...	2.423	1.969

JAMES M. EWING,
for Ag. Chief Engineer.

List showing number and description of Buildings provided for at Stations in Revised Estimate.

Description of Buildings.	Names of Stations.							
	West Hill.	Elathur.	Quilandi.	Trikodi.	Badagara.	Mahi.	Tellicherry.	Edakad.
Station buildings	1	1	1	1	1	1	1	1
Passenger platform	1	1	1	1	1	1	1	1
Road approaches	1	1	1	1	1	1	1	1
Native latrine	1	1	1	1	1	1	1	1
Goods platform	1	1	1	1	1	1	1	1
Goods sheds	1	1	1	1	1	1	1	1
Goods godowns	1	1	1	1	1	1	1	1
European latrine	1	1	1	1	1	1	1	1
Salt godown	1	1	1	1	1	1	1	1
Station Master's quarters	1	1	1	1	1	1	1	1
Asstt. do	1	1	1	1	1	1	1	1
Menials' quarters 3 units	1	1	1	1	1	1	1	1
Scavengers' huts	1	1	1	1	1	1	1	1
Driver's running room	1	1	1	1	1	1	1	1
Room for Native Firemen	1	1	1	1	1	1	1	1
Carriage Examiner's quarters	1	1	1	1	1	1	1	1
Locomotive Staff 6 units	1	1	1	1	1	1	1	1
P. W. Inspector's bungalow and office	1	1	1	1	1	1	1	1
Guard's Barracks	1	1	1	1	1	1	1	1
Do Running room	1	1	1	1	1	1	1	1
Signaller's quarters	1	1	1	1	1	1	1	1
Inspecting Locomotive Foremen's room attached running room	1	1	1	1	1	1	1	1
Driver's temporary quarters, Calicut	1	1	1	1	1	1	1	1

JAMES M. EWING,
for Ag. Chief Engineer.

List of Station Machinery provided for at each station. Revised Estimate.

NAME OF STATION.	Asphits.	8" dia. water columns.	8" dia. piping.	Water tank 1,000 c.ft. each.	WELLS.		Water-lifts.	POINTS AND CROSSINGS COMPLETE.		Scotch blocks.	Buffer stops.	Distant signals.	PLATFORM GOODS WEIGHING MACHINES.		Dating presses.	ENGINE SHED.			
					6' dia. 12' dia.	6' dia. 12' dia.		1 in 12. 1 in 8.	1 in 12. 1 in 8.				1 ton. 5 cwt.	1 ton. 5 cwt.		Arch.	Asphit.	Turn-table.	Hydrant.
West Hill	..	..	..	..	1	..	..	3	..	..	1	1	..	..	1	..	..	..	1
Elathur	..	..	..	..	1	..	..	3	..	..	1	1	..	..	1	..	..	..	1
Quilandi	..	..	..	..	1	..	..	8	..	2	2	1	..	..	1	..	..	..	1
Trikodi	..	..	..	..	1	..	..	3	..	..	1	1	..	..	1	..	..	..	1
Badagara	..	2	810 ft.	1	1	1	1	8	..	2	2	1	..	..	1	..	..	..	1
Mahi	..	..	..	..	1	..	..	8	..	..	2	1	1	1	1	..	..	..	1
Tellicherry	..	2	810 ft.	1	1	1	..	16	..	2	2	1	..	..	1	..	..	..	1
Edakad	..	..	..	..	1	..	..	1	..	..	1	1	..	..	1	..	..	..	1
Cannanore	..	2	810 ft.	1	1	1	..	6	15	4	3	1	..	..	1	..	..	..	1

JAMES M. EWING,
for Ag. Chief Engineer.

*List of existing types of Madras Railway Stations and Buildings
taken as standards for the Calicut-Cannanore Railway
Stations and Buildings. Revised Estimate.*

MADRAS RAILWAY TYPE.			Building for which types are used on Calicut-Cannanore Extension.	
		Rs.		
Station house, Mankurui, Plan No. 3101	...	...	Station buildings for West Hill, Elathur, Quilandi, Trikodi, Badagara, Mahi and Edakad.	6
Devankundi native latrine, Plan No. 3323	...	...	Native latrines for do. do. Badagara, Mahi, Tellicherry, Edakad and Cannanore.	
Goods platform, Ennur	...	...	Goods platforms for all the stations.	
Goods shed, Tadpatri, No. 2805	...	...	Goods sheds for Mahi, Tellicherry and Cannanore.	
Sulur Goods godown, No. 2456	...	...	Goods godowns for West Hill, Quilandi, Badagara, Salt godowns for Mahi and Cannanore.	
European latrine, Kamasamudram, No. 1984	...	...	European latrines for West Hill, Mahi, Tellicherry and Cannanore.	
Station Master's house, Edakkolam, No. 3338	...	...	Station Master's quarters for West Hill, Elathur, Trikodi, Mahi and Edakad.	
Double Station and Assistant Station Master's house, Nandalur	...	...	Station Master's quarters for Quilandi, Badagara and Tellicherry.	
Station Master's bungalow, Podanur, Plan No. 2148	...	...	Station and Assistant Station Master's quarters for Cannanore.	
Three huts for Policemen at Bangalore, No. 3638	...	...	Menials' quarters for West Hill, Elathur, Quilandi, Trikodi, Badagara, Mahi, Tellicherry, Edakad and Cannanore.	
Ennur running room	...	...	Guards' running room for Cannanore.	
Chuttram for Native Firemen, Nandalur	...	...	Chuttram for Native Firemen for Cannanore.	
Carriage Examiner's bungalow, Bowringpet, No. 3619 Revised	...	...	Carriage Examiner's quarters for Cannanore.	
Six Menials' quarters, Sankaridrug, No. 3651	...	...	Loco. Staff, 6 units for Cannanore.	
P. W. Inspector's bungalow, Calicut, No. 2229	...	...	P. W. Inspector's office and bungalow for Cannanore.	
Double Guard's Barracks, Podanur, No. 3620	...	...	Guards' barracks for Cannanore.	
Signalman's bungalow, Podanur, Plan, No. 2224	...	...	Signalman's quarters for Cannanore.	
Guard's and Driver's running room, Arcot-Kanipet survey	...	...	Drivers' temporary quarters for Cannanore.	
New Plans and Estimates by Mr. Olto.				
1st Class Station Building	...	19,713	Station building for Cannanore.	
2nd " "	...	6,323	Station building for Tellicherry.	
3rd " "	...	2,758		

JAMES M. EWING,
for Acting Chief Engineer.

(No. II.)

No. 945

10/10

MADRAS RAILWAY.

AGENT AND MANAGERS' OFFICE,

Madras, 13th November 1896.

SERIAL

No.

From

Ag. Agent and Manager.

M. P. Leary.

To

Ch. Consulting Engineer for Railways.

SIR,

Madras.

With reference to your letter No. 308 dated the 29th January 1896 and to the copy of the communication from the Government of India received therewith I have the honour to enclose 10 printed copies of the Ag. Chief Engineer's letters dated the 24th September and 16th October respectively, submitting revised estimates for the construction of the proposed Calicut-Cannanore & Choranur-Cochin Railways.

I have the honour to be,
Sir,

Your most obedient servant,

H. P. Leary

Ag. Agent & Manager.

En
10

Note on Revised Estimates of the
Calicut-Cannanore proposed Ry.

The principal reductions have
been effected as shown in the margin
in round numbers.

Calicut-Cannanore

		Cost in lakhs		Saving or addition
		Original Este:	Revised Este:	
Land	--	124	107	17
Earth work		23	16	7
Bridge work				
" Major		163	111	52
" Minor		34	23	11
Ballast	--	53	21	32
Permanent Way		25	171	71
Stations &c		13	1	12
Staff Qrs:		3	2	1
Stn:Machinery		14	1	13
Plant	--	3	2	1
Totals		106	81	25

2. The saving in land is due to grades
of 1/100 being adopted instead of --
1/150 to slopes of 1 1/2 instead of 2 -
to 1 being used, and to formation in
cuttings being reduced from 26 ft: to
20 ft: . Further reductions could be
made in area if the suggestions in -
para 3 were carried out, and in cost
by adopting the course proposed in
para 6 of the Consulting Engineer's
Note embodied in G.O.No.774 R., of
18-11-95, but it is impossible to --
state the amount of this further sa-
ving.

3. The reduction in earthwork has --
been arrived at by regrading the sec-
tion using 1/100 as a ruling gradient -
by eliminating "pitching" and "turfing"
by reducing formation in cuttings --
from 26 ft: to 20 ft: and by using -
1 1/2 to 1 instead of 2 to 1 for slopes
of banks and cuttings.

4. The minimum curvature of 19/10 has
been adhered to: by taking 1/100 as a
minimum the line could be doubtless
be more economically aligned.

5. The cuttings are stated in the --
report

MADRAS RAILWAYS

The Agent and Manager.

The Consulting Engineer

for Railways.

To
Recd.

4980
14/11/96

report on the survey and estimate of 1895 to be in hard laterite: side slopes of $\frac{1}{4}$ or $\frac{1}{2}$ to 1 instead of $\frac{1}{2}$ might safely be used in such material for cuttings. On the other hand it is not safe to assume that $\frac{1}{2}$ to 1 can be used throughout the lines for banks; but on the whole considerable further reduction may be expected - by using the steeper slopes proposed for cuttings, in spite of the occasional adoption of 2 to 1 for banks. Possibly some reduction might also be made in the cost of rock cutting

which is nearly half of the total estimate for earthwork. The rate is 50/- which is high for hard laterite.

6. Bridgework. No further economies can be made in this item. The rates are already too low and should be increased for large bridges as shown in margin. This will probably counterbalance the reduction in the number of spans, assuming that such reduction is desirable which is open to doubt.

7. Fencing. In such a densely populated country fencing will probably be necessary. No reduction is therefore recommended.

8. Road crossings, mile and gradient posts, electric telegraph no remarks.

9. Ballast. A further saving can be effected by reducing the section -- from 26 ft: section to 20 ft: or -- even

Dry excavation...	10	instead of	5
Wet "	100	"	25
Masonry in abutments	30	"	22
Masonry in Wells	40	"	20
" Piers	40	"	30
Concrete	20	"	15
Well sinking	25	"	20

even 18 ft: if flatfooted rails and wooden sleepers are used.

10. Permanent Way. No further reduction can be expected on the estimate "using Govt: type of permanent way."

11. Stations and offices, workshops and stores, station machinery, engineering plant, station and office furniture no further reductions seem advisable.

12. Rolling stock - the rate per mile of 11,478 in the original estimate has been adhered to. A large saving - is possible here by taking Rs. 5,000/ per mile which was the estimate for the Bezwada-Madras and which might suffice to begin with until traffic develops.

13. General charges - no reduction -- recommended.

14. Further savings therefore seem possible under Land, Earthwork, Ballast and Rolling stock against a probable increase in Bridgework, but it is impossible without further survey and detailed quantities to say what they will amount to: It would not be safe to count on more than 15% on the revised estimates. This would make the cost of the Calicut-Cannanore about Rs. 1,17,000/ per mile.

Madras
9.12.96

S. R.

Bf
No 1028 Radcl 9.12.96