Very Secret

Public Works (1899 ?) Department.

Brief Despatch

CONCERNS BOTH BRITISH INDIA AND INDIAN STATES.

RAILWAY BRANCH.

G.O., No. 335 Ry.

DATED 25th March 1899.

Includes:-

G. O. No. 1566 Ry. 21-12-98.

4

[Despatch Abstract.]

Shoranur-Cochin Railway.

Communicating to the Resident in Travancore & Cochin, Copy of letter from the Govt. of India conveying the provisional sanction to the construction of the — on the metre gauge at the Cost of the Cochin Durbar; and requesting that Govt. may be informed which agency, if any, is desired, should be adopted to construct the line.

—

W. 19. 1-9-21.

Indexed

RAILWAY.

Government {1899} of Madras.

PUBLIC WORKS.

Recd. } 1899. *Enclosures*

Regd. *Spare copies*

G.O., No. 335 Ry., 25th March 1899.

MARCH.

Shoranur-Cochin Railway

Communicating to the Resident in Travancore and Cochin, copy of letter from the Government of India conveying the provisional sanction to the construction of the —— on the metre gauge at the cost of the Cochin Durbar; and requesting that Government may be informed which agency, it is desired, should be asked to construct the line.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read again the following papers :—

G.O., No. 774–5 R., dated 18th November 1895.
G.O., No. 112 R., dated 20th February 1897.
G.O., No. 694 R., dated 20th September 1897.
G.O., No. 174 R., dated 1st February 1898.
G.O., No. 538 Ry , dated 6th April 1898.
G.O., No. 411, Political, dated 20th June 1898.

Read also the following papers :—

From—The Agent and Manager, Madras Railway.
To—The Consulting Engineer for Railways, Ootacamund.
Dated—Madras, 17th August 1898, No. 9097/762.

I have the honour to forward herewith a plan and section of the revised alignment of the first 30 miles of the proposed railway from Shoranur to Cochin on the metre gauge as prepared by Mr. C. R. Dallas, Executive Engineer, with an abstract of the estimate which amounts to Rs. 22,34,390, or Rs. 74,477 per mile.

2. The index map and section with another copy of the plan and section are under preparation and the detail estimate together with Mr. Dallas' report are in the hands of the printers and these will be forwarded as soon as they have been completed. These plans and estimates for the first 30 miles (Shoranur to Puducad) which is the limit to which the present survey extended, will be forwarded in this complete form to enable the construction of this section to be sanctioned in the event of this being found desirable.

3. The final location and revised alignment, for the metre gauge, of the remaining portion from Puducad to Ernacollam (35 miles) will be proceeded with as soon as the rains cease, when field operations will be resumed.

From—The Agent and Manager, Madras Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—24th September 1898, No. 9097/919.

In continuation of my letter No. 9097/762 of the 17th ultimo, I have the honour to forward herewith the plan and section of the first 30 miles of the proposed Shoranur-Cochin line together with 25 copies of the Report and Estimate.

Enclosure.

SHORANUR-COCHIN RAILWAY.

65 *Miles. Metre Gauge* (3′ 3⅜″).

General Abstract Estimate for the first 30 miles.

Main and sub-heads of account.	Total cost in rupees.			
	Sub-heads.		Main heads.	
	Total cost.	Rate per mile.	Total cost.	Rate per mile.
	Rs.	Rs.	Rs.	Rs.
I. Preliminary Expenses—				
1. Survey expenses	2,137	71	..	..
2. Plant	3,209	107	..	..
3. Establishment	10,682	356	16,028	534
II. Land—	..	..	3,43,540	11,451
III. Formation—				
1. Earthwork	..	..	4,77,896	15,929
2. Tunnels	..	..	..	..
IV. Bridgework—				
1. Large bridges	1,62,107	5,403	..	..
2. Minor bridges	58,911	1,964	2,21,018	7,367
V. Fencing—				
1. Fencing	14,465	482	..	..
2. Road crossings	21,887	729	..	..
3. Mile and gradient posts	1,241	42	37,593	1,253
VI. Electric Telegraph—				
VII. Ballast and Permanent-way—				
1. Ballast (including maintenance for 12 months) ..	79,200	2,640	..	..
2. Permanent way	5,41,165	18,039	6,20,365	20,678
VIII. Stations and Buildings—				
1. Stations and offices	32,790	1,093	..	..
2. Workshops and Store buildings	2,090	70	..	..
3. Staff quarters	9,135	304	..	..
4. Station machinery	81,686	2,723	1,25,701	4,190
IX. Plant—				
1. Engineering	15,908	530	..	..
2. Locomotive	..	..	..	..
3. Carriage and wagon	..	..	..	..
4. Station and office furniture	5,565	186	21,473	716
X. Ferries—				
1. Ferries	..	..	..	..
2. Floating Bridges	..	..	..	..
XI. Rolling stock—				
1. Locomotive	94,500	3,150	..	..
2. Carriage and wagon	1,63,500	5,450	2,58,000	8,600
XII. General Charges—				
1. Direction	..	..	..	..
2. Engineering	92,953	3,099	..	..
3. Stores	4,303	143	..	..
4. Audit and Accounts	13,026	434	..	..
5. Medical and sanitation	2,494	83	..	..
6. Locomotive	..	..	..	..
7. Traffic	..	..	1,12,776	3,759
Total ..	..	..	22,34,390	74,477

From—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
To—The Secretary to the Government of India, Public Works Department.
Dated—Madras, 21st December 1898, No. 1566 Ry.

With reference to correspondence ending with your letter No. 1418 R.C., dated the 31st August 1897 (subsequent correspondence relates to survey estimates only), I am instructed to forward a copy of this Government's Political Department's Proceedings, No. 411, dated 20th June 1898, on the subject of the financing of the Shoranur-Cochin Railway.

2. From these Proceedings it will be seen that His Highness the Rajah of Cochin proposes to provide the capital necessary for the construction of the railway on the metre gauge. The cost of the whole line seems likely not to exceed about 50 lakhs if constructed in a style suitable for the slow speeds with which its would-be-proprietor, His Highness the Rajah, expresses himself as content, and for the comparatively light traffic which the country served seems likely to afford.

3. A question which still remains unsettled is that of the most suitable terms for obtaining for Cochin the use of land for a length of about 16 miles in Travancore territory which it is inevitable that the railway must traverse if Cochin itself is to be reached. This question is at present under separate consideration.

4. Meanwhile the Madras Railway Company's survey party is still in the field, and a revised alignment suitable for a metre gauge line with 1 in 80 grades and reasonable curves has been secured throughout. There will doubtless in places be minor revisions of alignment, but these shall receive attention at the hands of this Government's Consulting Engineer.

5. On returning from the field for the monsoon recess the survey party prepared the accompanying plan, section and estimate of the northern 30 miles, of which they had then completed the survey. The plans, sections and estimates, however, of the remaining portion of the line cannot be ready for some little time. The latter is the part where the situation is somewhat complicated by the line having to traverse Travancore. No such complication, however, exists on the first 30 miles of which the plan and estimate are now enclosed.

6. His Highness the Rajah of Cochin has now expressed his anxiety that work should proceed at once on the northern 30 miles for which plans and sections are ready. The money is available, and no financial responsibility falls on the Government of India, so His Excellency the Governor in Council strongly supports His Highness the Rajah's request, and directs me to urge that it is very desirable that the current working season should, if possible, be availed of to make a start.

7. The Madras Railway Company made the earlier surveys on their own account, and have also made the recent metre gauge survey on account of His Highness the Rajah's project. They have also made the estimate now submitted, and are prepared to carry on the construction simultaneously with that of the Cannanore line, and later on to work it as a feeder to their own system, under an agreement the details of which there will probably be no difficulty in settling satisfactorily.

8. There will be no more objection to the Madras Railway Company working the branch on the metre gauge, even if the adoption of this Government's conversion scheme should not ultimately be sanctioned, than in the working of, say, the Kannia-Dharla Railway by the Eastern Bengal State Railway. The decision of His Highness the Rajah, therefore, to make his railway on a different gauge from that of the Madras Railway need cause no embarrassment, especially as the chances are greatly in favour of its subsequent extension to meet the Travancore Railway on the same gauge at Quilon.

9. The estimate now submitted for the first 30 miles does not pretend to have been as thoroughly criticised as will, in due course, be the complete estimate of the entire line of which this forms only a part. It was really prepared with a view to forming a general opinion on the financial question of His Highness the Rajah's ability or otherwise to effect the object which he has in view. It is, however, quite a sufficiently good estimate to allow of work being started, and the complete metre gauge estimate for the whole line will be submitted as soon as practicable. The Consulting Engineer states, for example, that it is quite possible, without materially affecting the estimate, to get rid of the 10°, and perhaps also of the 7° and 8° curves. All these matters shall continue to engage the Consulting Engineer's attention. They need not, in this Government's opinion, delay the grant by the Government of India of sanction to the Madras Railway Company's starting work at the cost of His Highness the Rajah of Cochin, on the northern 30 miles.

From—The Secretary to the Government of India, Public Works Department.
To—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
Dated—Calcutta, 23rd February 1899, No. 051 R.C.

I am directed to acknowledge the receipt of your letter No. 1566 Ry., dated the 21st December 1898, forwarding a copy of correspondence on the subject of the financing of the Shoranur-Cochin Railway by His Highness the Rajah of Cochin, together with plans and estimates for the construction on the metre gauge of the first 30 miles of the same, and strongly urging the immediate commencement of work thereon at the cost of His Highness and by the agency of the Madras Railway Company.

2. It is observed that His Highness the Rajah of Cochin is prepared to provide the capital necessary for the construction of the railway on the metre gauge, that the money is available and that no financial responsibility falls on the Government of India for its construction or subsequent working.

It is further observed that the estimate submitted amounting to Rs. 22,34,390 for the first 30 miles is of a preliminary nature, having been prepared with a view to forming a general opinion on the financial question of His Highness the Rajah's ability or otherwise to provide the necessary capital, and that a complete estimate for the construction of the whole line on the metre gauge will be prepared and submitted for sanction as soon as practicable.

3. In reply, I am to communicate the provisional sanction of the Government of India, subject to confirmation by the Secretary of State for India, to the construction of the Shoranur-Cochin Railway on the metre gauge, at the cost of His Highness the Rajah of Cochin. I am to say that the question of the joint works required to effect a junction at Shoranur, and the half mile or so of line in British territory, as well as the question of the portion of the line which runs through Travancore territory, may be settled by the Government of Madras.

4. As regards the agency to be employed for the construction of the railway, I am to remark that it is open to the Government of His Highness the Rajah to ask either the Madras or the South Indian Railway to make it, or to ask the Railway Department of the Government of India to do so.

5. I am to forward herewith, for information and consideration, a copy of a note by the Director of Railway Construction on the project as submitted, for the first 30 miles of the Railway.

—

Enclosure.

Note dated 7th January 1899 *by the Director, Railway Construction, on the first 30 miles of the latest Shoranur-Cochin Railway (metre gauge) Project.*

1. This project purports to be for a cheap metre gauge line to be built at the expense of His Highness the Rajah of Cochin, to carry a light traffic; yet it works out to an average of Rupees 74,477 per mile, of which no less than Rs. 15,929 per mile is for earthwork alone. It traverses very undulating country (described in the report as "very rough") yet only about 16 per cent. of the total length of line is curved, and straights of one and two miles in length are common. The rainfall amounts to 124 inches per annum, yet the cuttings are seldom less than a quarter of a mile and often as much as half a mile in length without outlet for the drainage. The soil is "chiefly laterite with occasional hard rock," and the estimated rate for cutting averages Rs. 15 per 1,000 cubic feet against Rs. 6 for bank, yet the grading has been so arranged that the quantity of cutting is 212 lakhs of cubic feet costing Rs. 3,22,376, while the quantity of bank is only 171 lakhs costing Rs. 1,19,811. Moreover very little of the spoil from the cuttings can be used in bank.

2. The information on the plan is very meagre, but such as it is it points to the distinct possibility of a very large economy being effected if the alignment is largely altered for the purpose, and if the Engineers concerned can only be induced to relinquish their evident love of long straights and to locate the line with the fixed intention of saving money to its owners instead of trouble to themselves. This they would have to do in undulating country in England, and they should be made to do it in difficult country here. It is inconceivable that the country described can really be so rough that a line cannot be laid out through it with 1 in 80 grades and 573 feet curves, with very much less earthwork and rise and fall than that shown in the project submitted; and it is certain that economy in these directions should be attained so far as it is possible to attain it.

3. Taking sheet by sheet of the plans, the following suggestions show how improvement seems to be possible from the meagre topographical information given :—

(*a*) *Miles* 1—3.—The line might perhaps be curved further to the west and the long cutting at mile 3 said to be unavoidable be eased by avoiding the fall into low ground.

(*b*) *Miles* 3—6.—The grading in places is susceptible of improvement so as to shorten the cutting and get a better drained formation.

(*c*) *Miles* 6—9.—This has been re-aligned but no section is given. The alteration is an obvious improvement, and may perhaps be still further improved by more careful location.

(*d*) *Miles* 9—12.—The line through many of the small cuttings 12 and 13 feet in depth can be lifted in grading. Probably, also, much work may be saved by more careful location and the freer use of curvature.

(*e*) *Miles* 12—15.—The grading is too low and the line can be lifted out of many of the cuttings altogether. The deeper cuttings may probably be avoided by the introduction of more curvature.

(*f*) *Miles* 15—18.—At mile 16 the alignment probably would be better thrown further west. It is doubtful if the whole length from mile 15 to mile 20 should not be pushed further west and so take the drainage where it is more collected (see Index Plan).

(*g*) *Miles* 18—21.—A few easy curves in place of the long straights, would save work.

(*h*) *Miles* 21—24.—Appear capable of improvement in location. As graded one mile is bank of about 11 feet and the remaining 2 miles cutting 13 to 18 feet in depth. The freer use of curvature would certainly save much work here.

(*i*) *Miles* 24—27.—The same conditions prevail. At mile 25 there is a cutting 4,600 feet in length and 11 to 18 feet in depth. A revised grading is suggested raising the line 5 feet. The location can, however, probably be altered with advantage.

(*j*) *Miles* 27—30.—The cutting at mile 2$\frac{1}{4}$—24 feet deep can probably be avoided by a better alignment and the station site of Puducad improved.

Order—No. 335 Ry., dated 25th March 1899.

A copy of the Government of India's letter, No. 051 R.C., dated the 23rd February 1899, will be forwarded through the Political Department to the Resident in Travancore and Cochin, for communication to the Cochin Durbar, with a request that Government may be informed which agency, *i.e.*, of the Madras Railway Company or of the South Indian Railway Company, it is desired should be asked to construct the line, or whether it is preferred that the Government of India should be asked to make it. This Government recommends that the agency of the Madras Railway Company should be availed of.

2. A copy of these Proceedings will be forwarded to the Consulting Engineer for Railways for information and for the issue to the Madras Railway Company of such instructions as he may consider necessary.

3. The Resident in Travancore and Cochin should report how it is proposed to keep the construction agency in funds.

4. The Consulting Engineer will report in regard to the Shoranur junction, and the best arrangement for the piece of line in British territory.

(True Extract.)

Francis J. E. Spring,
Joint Secretary.

To the Resident in Travancore and Cochin,
through the Political Department.
,, Agent and Manager, Madras Railway Company.
,, Consulting Engineer for Railways, Madras.
,, Government Examiner, Guaranteed Railway Accounts, Madras.

Exd. T. K. Narayana Aiyangar.

(No. I.)

No. 9097
762

Print.

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

Madras, 17th August 1898.

SERIAL No. 47

From

The Agent and Manager.
Madras Railway.

To

The Consulting Engineer for Railways.
Madras.

Sir,

I have the honor to forward herewith a plan and section (in book form) of the revised alignment of the first 30 miles of the proposed Railway from Shoranur to Cochin on the metre gauge as prepared by Mr C. R. Dallas, Executive Engineer, with an abstract (in triplicate) of the Estimate which amounts to Rs 22,34,390 or Rs 74,477 per mile.

2. The index map and section with another copy of the plan and section are under preparation and the detail estimate together with Mr Dallas' report are in the hands of the printers and these will be forwarded as soon as they have been completed. These plans and estimates

2. Estimates for the first 30 miles (Chorairer to Puducad) which is the limit to which the present survey extended, will be forwarded in this complete form to enable the construction of this section to be sanctioned in the event of this being found desirable.

3. The finial location and revised alignment for a metre gauge of the remaining portion from Puducad to Ernacollum (35 miles) will be proceeded with as soon as the rains cease, when field operations will be resumed.

I have the honor to be,
Sir,
Your most obedient servant.

Agent and Manager.

C.S.C.

Encl 1 plan in book form
1 Abstract Estimate
(in triplicate)

MADRAS RAILWAY.

SHORANUR-COCHIN EXTENSION.

65 Miles Metre Gauge (3′ 3⅜″.)

Estimate

GENERAL ABSTRACT FOR FIRST 30 MILES.

MAIN AND SUB-HEADS OF ACCOUNT.	Total Cost in Rupees.			
	Sub-Heads.		Main-Heads.	
	Total cost.	Rate per Mile.	Total cost.	Rate per Mile.
	Rs.	Rs.	Rs.	Rs.
I. Preliminary Expenses.				
1. Survey Expenses	2,137	71	...	...
2. Plant	3,209	107	...	...
3. Establishment	10,682	356	16,028	534
II. Land.	...	...	3,43,540	11,451
III. Formation				
1. Earthwork	...	...	4,77,896	15,929
2. Tunnels	...	...	...	...
IV. Bridgework.				
1. Large Bridges	1.62,107	5,403	...	...
2. Minor Bridges	58,911	1,964	2,21,018	7,367
V. Fencing				
1. Fencing	14,465	482	...	...
2. Road crossings	21,887	729	...	...
3. Mile and gradient posts	1,241	42	37,593	1,253
VI. Electric Telegraph				
VII. Ballast and Permanent way.				
1. Ballast (including Maintenance for 12 months)	79,200	2,640	...	...
2. Permanent way	5,41,165	18,039	6,20,365	20,678
VIII. Stations and Buildings				
1. Stations and Offices	32,790	1,093	...	...
2. Workshops and store buildings	2,090	70	...	...
3. Staff Quarters	9,135	304	...	...
4. Station Machinery	81,686	2,723	1,25,701	4,190
IX. Plant.				
1. Engineering	15,908	530	...	...
2. Locomotive	...	...	...	...
3. Carriage and wagon	...	...	...	...
4. Station and office furniture	5,565	186	21,473	716
X. Ferries.				
1. Ferries	...	...	...	...
2. Floating Bridges	...	...	...	...
XI. Rolling Stock.				
1. Locomotive	94,500	3,150	...	...
2. Carriage and wagon	1,63,500	5,450	2,58,000	8,600
XII. General Charges.				
1. Direction	...	...	...	...
2. Engineering	92,953	3,099	...	...
3. Stores	4,303	143	...	...
4. Audit and Accounts	13,026	434	...	...
5. Medical and Sanitation	2,494	83	...	...
6. Locomotive	...	...	...	...
7. Traffic	...	...	1,12,776	3,759
Total ...	...	...	22,34,390	74,477

HENRY C. WEST,
Chief Engineer,
Madras Railway.

CHARLES R. DALLAS,
Ex: Engineer,
S. C. Survey.

Madras,
8th August 1898.

Enclosure to Agent's
letter 9097/762 dt 17.8.98.

(No. L)

No. 9097
919

SERIAL 53

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

Madras, 24th September 1898.

CONSULTING ENGINEER FOR RAILWAYS MADRAS. RECEIVED 26 SEP. 1898

4449
26.9.98

From

The Agent and Manager.
Madras Railway.

To

The Consulting Engineer for Railways.
Madras.

SIR,

In continuation of my letter
No. 9097/762 of the 17th ultimo, SN°47
to forward herewith the plan and section
of the first 30 miles of the proposed
Chorasur-Cochin Line (metre gauge)
together with 25 copies of the Report and
Estimate. Will you please inform
me how many additional copies of
the latter you require?

I have the honor to be,
Sir,
Your most obedient servant,
A. Edwards.
Agent and Manager.

No. 1 in sending this up to Offg. Dy. Chf. Engr. We are not going to begin the Railway until we get the entire survey. Submit in duplicate.
7/11
11/18

gauge. The cost of the whole line

Urgent.

No. 1566 Ry

Government of Madras,

PUBLIC WORKS DEPARTMENT,

RAILWAY BRANCH.

SERIAL No. 59

To

THE Secretary to the

Government of India.

P. W. Deptt

Madras 21st Dec 1898.

SIR,

With reference to correspondence ending with your letter No. 1418 R.C. dated the 31st August 1897 (subsequent correspondence relates to survey estimates only.) I am instructed to forward a copy of this Government's Political Department's Proceedings, No. 411, dated 20th June 1898 on the subject of the financing of the Shoranur-Cochin Railway.

2. From these Proceedings it will be seen that His Highness the Rajah of Cochin proposes to provide the Capital necessary for the construction of the Railway on the metre gauge. The cost of the whole line,

seems likely not to exceed about 50 lakhs, if constructed in a style suitable for the slow speeds with which its would-be-proprietor, His Highness the Rajah, expresses himself as content, and for the comparatively light traffic which the country served seems likely to afford.

3. A question which still remains unsettled is the most suitable terms for obtaining for Cochin the use of land for a length of about 16 miles in Travancore territory which it is inevitable that the railway must tra-verse if Cochin itself is to be reached. This question was referred by this Government, demi-officially, through its Chief Secretary, Politi-cal Department, to the Government of India's Foreign Secretary, on the 22nd September last, but a reply to that reference has not yet been received.

This question is at present under separate consideration

3. Meanwhile the Madras Railway Com-pany's survey party is still in the field, and a revised alignment suitable for a metre gauge line with 1 in 80 grades and reasonable curves has been secured throughout. There will doubtless in places be minor revi-sions of alignment, but these shall receive attention at the hands of this Government's Consulting Engi-neer.

4. On returning from the field for the monsoon recess the survey party prepared the accompanying plan, sec-tion and estimate of the northern 30 miles, of which they had then completed the survey. The plans, sections and estimates how-ever of the remaining portion of the line cannot be ready for some little time. The latter is the part where the situation is somewhat com-plicated by the line having to tra-verse Travancore. No such complica-tion however exists on the first 30 miles of which the plans and esti-mates are now enclosed.

5. His Highness the Rajah of Cochin has now expressed his anxiety that

work should proceed at once on the northern 30 miles for which plans and sections are ready. The money is available, and no financial responsi-
-bility falls on the Government of India, so His Excellency the Governor in Council strongly supports His High-
-ness the Rajah's request, and directs me to urge that it is very desirable that the current working season should if possible be availed of to make a start.

6. The Madras Railway Company made the earlier surveys on their own ac-
-count, and have also made the recent metre gauge survey on account of His Highness the Rajah's project. They have also made the estimate now submitted and are prepared to carry on the con-
-struction simultaneously with that of the Cannanore line, and later on to work it as a feeder to their own system, under an agreement the details of which there will probably be no difficulty in settling satisfactorily.

7. There will be no more objection to the Madras Railway Company work-
-ing the branch on the metre gauge, even if the adoption of this Govern-
-ment's conversion scheme should not ultimately be sanctioned, than in the working of say the Kannia-Dharla Railway by the Eastern Bengal State Railway. The decision of His Highness the Rajah, therefore, to make his Railway on a different gauge from that of the Madras Railway need cause no embarrassment, especially as the chances are greatly in favour of its subsequent extension to meet the Tra-
-vancore Railway on the same gauge at Quilon.

8. The estimate now submitted for the first 30 miles does not pretend to have been as thoroughly criticised as will, in due course, be the com-
-plete estimate of the entire line of which this forms only a part. It was really prepared with a view to forming a general opinion on the

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the Rajah's ability or otherwise to

effect the object which he has in

view. It is however quite a sufficient-

-ently good estimate to allow of work

being started, and the complete metre

gauge estimate for the whole line

will be submitted as soon as practicable.

~~For example~~ The Consulting Engineer states, for example,

~~that~~ that it is quite possible, without

-out materially affecting the estimate,

to get rid of the 10°, and perhaps

also of the 7° and 8° curves. All

these matters shall continue to engage

the Consulting Engineer's attention.

They need not, in this Government's

opinion, delay the grant by the Govern-

-ment of India of sanction to the Madras

Railway Company's starting work at the

cost of His Highness the Rajah of

Cochin, on the northern 30 miles.

Documents accompanying:—
(1) Copy of Political Departt. Proc: No. 4118 of 20-6-98.
(2) Plan & Section
(3) Report & Estimate.

J.W.S.

R.

19/12/98

19/12/98

1054

Note by the Director, Railway Construction, on the first 30 miles of the latest Shoranur-Cochin Railway (metre gauge) Project.

(1) This project purports to be for a cheap metre gauge line to be built at the expense of His Highness the Rajah, Cochin, to carry a light traffic; yet it works out to an average of Rs. 74,477 per mile, of which no less than Rs. 15,929 per mile is for earthwork alone. It traverses very undulating country (described in the report as "very rough") yet only about 16 per cent. of the total length of line is curved, and straights of one and two miles in length are common. The rainfall amounts to 124 inches per annum, yet the cuttings are seldom less than a quarter of a mile and often as much as half a mile in length without outlet for the drainage. The soil is "chiefly laterite with occasional hard rock," and the estimated rate for cutting averages Rs. 15 per 1,000 cubic feet against Rs. 6 for bank, yet the grading has been so arranged that the quantity of cutting is 212 lakhs of cubic feet costing Rs. 3,22,376, while the quantity of bank is only 171 lakhs costing Rs. 1,19,811. Moreover very little of the spoil for the cuttings can be used in bank.

(2) The information on the plan is very meagre, but such as it is it points to the distinct possibility of a very large economy being effected if the alignment is largely altered for the purpose, and if the Engineers concerned can only be induced to relinquish their evident love of long straights and to locate the line with the fixed intention of saving money to its owners instead of trouble to themselves. This they would have to do in undulating country in England, and they should be made to do it in difficult country here. It is inconceivable that the country described can really be so rough, that a line cannot be laid out through it with 1 in 80 grades and 573 feet curves with very much less earthwork and rise and fall than that shown in the project submitted, and it is certain that economy in these directions should be attained so far as it is possible to attain it.

(3) Taking sheet by sheet of the plans, the following suggestions show how improvement seems to be possible from the meagre topographical information given:—

(*a*) *Miles 1—3.*—The line might perhaps be curved further to the west and the long cutting at mile 3 said to be unavoidable be eased by avoiding the fall into low ground.

(*b*) *Miles 3—6.*—The grading in places is susceptible of improvement so as to shorten the cutting and get a better drained formation.

(*c*) *Miles 6—9.*—This has been realigned but no section is given. The alteration is an obvious improvement, and may perhaps be still further improved by more careful location.

(*d*) *Miles 9—12.*—The line through many of the small cuttings 12 and 13 feet in depth can be lifted in grading. Probably also much work may be saved by more careful location and the freer use of curvature.

(*e*) *Miles 12—15.*—The grading is too low and the line can be lifted out of many of the cuttings altogether. The deeper cuttings may probably be avoided by the introduction of more curvature.

(*f*) *Miles 15—18.*—At mile 16 the alignment probably would be better thrown further west. It is doubtful if the whole length from mile 15 to mile 20 should not be pushed further west and so take the drainage where it is more collected (see Index Plan).

(*g*) *Miles 18—21.*—A few easy curves in place of the long straight would save work.

(*h*) *Miles 21—24.*—Appear capable of improvement in location. As graded one mile is bank of about 11 feet and the remaining 2 miles cutting 13 to 18 feet in depth. The freer use of curvature would certainly save much work here.

(*i*) *Miles 24—27.*—The same conditions prevail. At mile 25 there is a cutting 4,600 feet in length and 11 to 18 feet in depth. A revised grading is suggested raising the line 5 feet.

The location can, however, probably be altered with advantage.

(*j*) *Miles 27—30.*—The cutting at mile 29¼—24 feet deep—can probably be avoided by a better alignment and the station site of Pudukad improved.

7th January 1899. C. W. HODSON.

E.I. Portuguese 303/99

G. C. Press, Simla.—No. 1942 P. W. D.—7-2-99—6.

Works

Public (1899) Department.

Railway

CURRENT No. 303

Have we got a copy of the plans? JH 3.3.99

From The Govt of India

Order

No. 051 R.C.

Dated 23rd February 1899

Received } 1.3.99

Registered }

Enclosures

Spare copies

SUBJECT.

Shoranur Co-chin Railway

—

Sanctioning with remarks the construction of the — on the Metre gauge at the cost of His Highness the Rajah of Cochin.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

REPLY TO SIMLA

All communications should be addressed to the Secretary.

JOINT SECRETARY TO GOVT. OF MADRAS RYS. RECEIVED 1 MAR 1899

No. 051 R.C.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY CONSTRUCTION.

9P

To

The Joint Secretary to the Government of Madras,

Public Works Department, Railway Branch.

Calcutta, the 23rd February 1899.

Sir,

559

I am directed to acknowledge the receipt of your letter No.1566 Railway, dated the 21st December 1898, forwarding a copy of correspondence on the subject of the financing of the Shoranur-Cochin Railway by His Highness the Rajah of Cochin, together with plans and estimates for the construction on the metre gauge of the first 30 miles of the same, and strongly urging the immediate commencement of work thereon at the cost of His Highness and by the agency of the Madras Railway Company.

2. It is observed that His Highness the Rajah of Cochin is prepared to provide the Capital necessary for the construction of the railway on the metre gauge, that the money is available and that no financial responsibility falls on the Government of India for its construction or subsequent working.

It is further observed that the estimate submitted amounting to Rs.22,34,390 for the first 30 miles is of a preliminary nature, having been prepared with a view to forming a general opinion on the financial question of His Highness the Rajah's ability or otherwise to provide the necessary Capital, and that a complete estimate for the construction of the whole line on the metre gauge will be prepared and submitted for sanction as soon as practicable.

3.

REPLY TO SIMLA

3. In reply, I am to communicate the provisional sanction of the Government of India, subject to confirmation by the Secretary of State for India, to the construction of the Shoranur-Cochin Railway on the metre gauge, at the cost of His Highness the Rajah of Cochin, I am to say that the question of the Joint Works required to effect a junction at Shoranur, and the half mile or so of line in British territory, as well as the question of the portion of the line which runs through Travancore territory, may be settled by the Government of Madras.

4. As regards the agency to be employed for the construction of the railway, I am to remark that it is open to the Government of His Highness the Rajah to ask either the Madras or the South Indian Railway to make it, or to ask the Railway Department of the Government of India to do so.

5. I am to forward herewith, for information and consideration, a copy of a note by the Director of Railway Construction on the project as submitted, for the first 30 miles of the railway.

I have the honour to be

Sir,

Your most obedient servant,

F. Prescott

Secretary.

24-2-99

Documents accompanying:-

Note by Director, Railway Construction

referred to.

(With 9 Spare Copies)

H.C.C.

Urgent

Papers & enclosures in Proceedings..

G.O. No. 774-5 R dy 18.11.95 Draft

" 694 R dy 20.5.97.

" 174 R dy 1.2.98

" 538 R dy 6.4.98

" 411 Political dy 20.6.98

Letter from the Agent Madura R dy No. 762 dy 17.8.98. with enclosure.

" 919 dy 24-9-98.

Print Do

Letter to the Govt of India No. 1566 R dy 21.12.98

" from " No. 057 RC dy 23.2.99 with enclosure.

Press

Please send back to Sec.

Shoranur Cochin R.C. 14/3

3rd Proof Recd 18.3.99

Very Urgent

110/4

RAILWAY.

Government {1899} of Madras.

PUBLIC WORKS.

H. E. and circ.

Through Pol Dept. for c.c:

Urgent because I shall be inspecting the Cochin line very soon.

FWS.

18/3/99

Recd. } 1899. Enclosures

Regd. } Spare copies

Appd. 22.3.99

G.O., No. 335 Ry, 25th March 1899.

Press Point-II 800

MARCH.

P. Abbas 21.3.99.

RB 24.3.99

AR

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read again the following papers:—

G.O., No. 774–5 R., dated 18th November 1895.
G.O., No. 112 R., dated 20th February 1897.
G.O., No. 694 R., dated 20th September 1897.
G.O., No. 174 R., dated 1st February 1898.
G.O., No. 538 Ry, dated 6th April 1898.
G.O., No. 411, Political, dated 20th June 1898.

Read also the following papers:—

From—The Agent and Manager, Madras Railway.
To—The Consulting Engineer for Railways, Ootacamund.
Dated—Madras, 17th August 1898, No. 9097/762.

I have the honour to forward herewith a plan and section of the revised alignment of the first 30 miles of the proposed railway from Shoranur to Cochin on the metre gauge as prepared by Mr. C. R. Dallas, Executive Engineer, with an abstract of the estimate which amounts to Rs. 22,34,390, or Rs. 74,477 per mile.

2. The index map and section with another copy of the plan and section are under preparation and the detail estimate together with Mr. Dallas' report are in the hands of the printers and these will be forwarded as soon as they have been completed. These plans and estimates for the first 30 miles (Shoranur to Puducad) which is the limit to which the present survey extended, will be forwarded in this complete form to enable the construction of this section to be sanctioned in the event of this being found desirable.

3. The final location and revised alignment, for the metre gauge, of the remaining portion from Puducad to Ernacollam (35 miles) will be proceeded with as soon as the rains cease, when field operations will be resumed.

From—The Agent and Manager, Madras Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—24th September 1898, No. 9097/919.

In continuation of my letter No. 9097/762 of the 17th ultimo, I have the honour to forward herewith the plan and section of the first 30 miles of the proposed Shoranur-Cochin line together with 25 copies of the Report and Estimate.

ENCLOSURE.

SHORANUR-COCHIN RAILWAY.

65 *Miles*. *Metre Gauge* (3′ 3⅜″).

General Abstract Estimate for the first 30 miles.

Main and sub-heads of account.	Total cost in rupees.			
	Sub-heads.		Main heads.	
	Total cost.	Rate per mile.	Total cost.	Rate per mile.
	Rs.	Rs.	Rs.	Rs.
I. Preliminary Expenses—				
1. Survey expenses	2,137	71	..	..
2. Plant	3,209	107	..	..
3. Establishment	10,682	356	16,028	534
II. Land—	..	..	3,43,540	11,451
III. Formation—			4,77,896	15,929
1. Earthwork	..	..	..	..
2. Tunnels	..	..	..	..
IV. Bridgework—				
1. Large bridges	1,62,107	5,403	..	..
2. Minor bridges	58,911	1,964	2,21,018	7,367
V. Fencing—				
1. Fencing	14,465	482	..	..
2. Road crossings	21,887	729	..	..
3. Mile and gradient posts	1,241	42	37,593	1,253
VI. Electric Telegraph—				
VII. Ballast and Permanent-way—				
1. Ballast (including maintenance for 12 months)	79,200	2,640	..	..
2. Permanent way	5,41,165	18,039	6,20,365	20,678
VIII. Stations and Buildings—				
1. Stations and offices	32,790	1,093	..	..
2. Workshops and Store buildings	2,090	70	..	..
3. Staff quarters	9,135	304	..	..
4. Station machinery	81,686	2,723	1,25,701	4,190
IX. Plant—				
1. Engineering	15,908	530	..	..
2. Locomotive	..	..	..	..
3. Carriage and wagon	..	..	..	..
4. Station and office furniture	5,565	186	21,473	716
X. Ferries—				
1. Ferries	..	..	..	..
2. Floating Bridges	..	..	..	..
XI. Rolling stock—				
1. Locomotive	94,500	3,150	..	..
2. Carriage and wagon	1,63,500	5,450	2,58,000	8,600
XII. General Charges—				
1. Direction	..	..	..	..
2. Engineering	92,953	3,099	..	..
3. Stores	4,303	143	..	..
4. Audit and Accounts	13,026	434	..	..
5. Medical and sanitation	2,494	83	..	..
6. Locomotive	..	..	..	..
7. Traffic	..	..	1,12,776	3,759
Total	..	..	22,34,390	74,477

From—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
To—The Secretary to the Government of India, Public Works Department.
Dated—Madras, 21st December 1898, No. 1566 Ry.

With reference to correspondence ending with your letter No. 1418 R.C., dated the 31st August 1897 (subsequent correspondence relates to survey estimates only), I am instructed to forward a copy of this Government's Political Department's Proceedings, No. 411, dated 20th June 1898, on the subject of the financing of the Shoranur-Cochin Railway.

2. From these Proceedings it will be seen that His Highness the Rajah of Cochin proposes to provide the capital necessary for the construction of the railway on the metre gauge. The cost of the whole line seems likely not to exceed about 50 lakhs if constructed in a style suitable for the slow speeds with which its would-be-proprietor, His Highness the Rajah, expresses himself as content, and for the comparatively light traffic which the country served seems likely to afford.

3. A question which still remains unsettled is that of the most suitable terms for obtaining for Cochin the use of land for a length of about 16 miles in Travancore territory which it is inevitable that the railway must traverse if Cochin itself is to be reached. This question is at present under separate consideration.

4. Meanwhile the Madras Railway Company's survey party is still in the field, and a revised alignment suitable for a metre gauge line with 1 in 80 grades and reasonable curves has been secured throughout. There will doubtless in places be minor revisions of alignment, but these shall receive attention at the hands of this Government's Consulting Engineer.

5. On returning from the field for the monsoon recess the survey party prepared the accompanying plan, section and estimate of the northern 30 miles, of which they had then completed the survey. The plans, sections and estimates, however, of the remaining portion of the line cannot be ready for some little time. The latter is the part where the situation is somewhat complicated by the line having to traverse Travancore. No such complication, however, exists on the first 30 miles of which the plan and estimate are now enclosed.

6. His Highness the Rajah of Cochin has now expressed his anxiety that work should proceed at once on the northern 30 miles for which plans and sections are ready. The money is available, and no financial responsibility falls on the Government of India, so His Excellency the Governor in Council strongly supports His Highness the Rajah's request, and directs me to urge that it is very desirable that the current working season should, if possible, be availed of to make a start.

7. The Madras Railway Company made the earlier surveys on their own account, and have also made the recent metre gauge survey on account of His Highness the Rajah's project. They have also made the estimate now submitted, and are prepared to carry on the construction simultaneously with that of the Cannanore line, and later on to work it as a feeder to their own system, under an agreement the details of which there will probably be no difficulty in settling satisfactorily.

8. There will be no more objection to the Madras Railway Company working the branch on the metre gauge, even if the adoption of this Government's conversion scheme should not ultimately be sanctioned, than in the working of, say, the Kannia-Dharla Railway by the Eastern Bengal State Railway. The decision of His Highness the Rajah, therefore, to make his railway on a different gauge from that of the Madras Railway need cause no embarrassment, especially as the chances are greatly in favour of its subsequent extension to meet the Travancore Railway on the same gauge at Quilon.

9. The estimate now submitted for the first 30 miles does not pretend to have been as thoroughly criticised as will, in due course, be the complete estimate of the entire line of which this forms only a part. It was really prepared with a view to forming a general opinion on the financial question of His Highness the Rajah's ability or otherwise to effect the object which he has in view. It is, however, quite a sufficiently good estimate to allow of work being started, and the complete metre gauge estimate for the whole line will be submitted as soon as practicable. The Consulting Engineer states, for example, that it is quite possible, without materially affecting the estimate, to get rid of the 10°, and perhaps also of the 7° and 8° curves. All these matters shall continue to engage the Consulting Engineer's attention. They need not, in this Government's opinion, delay the grant by the Government of India of sanction to the Madras Railway Company's starting work at the cost of His Highness the Rajah of Cochin, on the northern 30 miles.

From—The Secretary to the Government of India, Public Works Department.
To—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
Dated—Calcutta, 23rd February 1899, No. 051 R.C.

I am directed to acknowledge the receipt of your letter No. 1566 Ry., dated the 21st December 1898, forwarding a copy of correspondence on the subject of the financing of the Shoranur-Cochin Railway by His Highness the Rajah of Cochin, together with plans and estimates for the construction on the metre gauge of the first 30 miles of the same, and strongly urging the immediate commencement of work thereon at the cost of His Highness and by the agency of the Madras Railway Company.

2. It is observed that His Highness the Rajah of Cochin is prepared to provide the capital necessary for the construction of the railway on the metre gauge, that the money is available and that no financial responsibility falls on the Government of India for its construction or subsequent working.

It is further observed that the estimate submitted amounting to Rs. 22,34,390 for the first 30 miles is of a preliminary nature, having been prepared with a view to forming a general opinion on the financial question of His Highness the Rajah's ability or otherwise to provide the necessary capital, and that a complete estimate for the construction of the whole line on the metre gauge will be prepared and submitted for sanction as soon as practicable.

3. In reply, I am to communicate the provisional sanction of the Government of India, subject to confirmation by the Secretary of State for India, to the construction of the Shoranur-Cochin Railway on the metre gauge, at the cost of His Highness the Rajah of Cochin. I am to say that the question of the joint works required to effect a junction at Shoranur, and the half mile or so of line in British territory, as well as the question of the portion of the line which runs through Travancore territory, may be settled by the Government of Madras.

4. As regards the agency to be employed for the construction of the railway, I am to remark that it is open to the Government of His Highness the Rajah to ask either the Madras or the South Indian Railway to make it, or to ask the Railway Department of the Government of India to do so.

5. I am to forward herewith, for information and consideration, a copy of a note by the Director of Railway Construction on the project as submitted, for the first 30 miles of the Railway.

—

Enclosure.

Note dated 7th January 1899 by the Director, Railway Construction, on the first 30 miles of the latest Shoranur-Cochin Railway (metre gauge) Project.

1. This project purports to be for a cheap metre gauge line to be built at the expense of His Highness the Rajah of Cochin, to carry a light traffic; yet it works out to an average of Rupees 74,477 per mile, of which no less than Rs. 15,929 per mile is for earthwork alone. It traverses very undulating country (described in the report as "very rough") yet only about 16 per cent. of the total length of line is curved, and straights of one and two miles in length are common. The rainfall amounts to 124 inches per annum, yet the cuttings are seldom less than a quarter of a mile and often as much as half a mile in length without outlet for the drainage. The soil is "chiefly laterite with occasional hard rock," and the estimated rate for cutting averages Rs. 15 per 1,000 cubic feet against Rs. 6 for bank, yet the grading has been so arranged that the quantity of cutting is 212 lakhs of cubic feet costing Rs. 3,22,376, while the quantity of bank is only 171 lakhs costing Rs. 1,19,811. Moreover very little of the spoil from the cuttings can be used in bank.

2. The information on the plan is very meagre, but such as it is it points to the distinct possibility of a very large economy being effected if the alignment is largely altered for the purpose, and if the Engineers concerned can only be induced to relinquish their evident love of long straights and to locate the line with the fixed intention of saving money to its owners instead of trouble to themselves. This they would have to do in undulating country in England, and they should be made to do it in difficult country here. It is inconceivable that the country described can really be so rough that a line cannot be laid out through it with 1 in 80 grades and 573 feet curves, with very much less earthwork and rise and fall than that shown in the project submitted; and it is certain that economy in these directions should be attained so far as it is possible to attain it.

3. Taking sheet by sheet of the plans, the following suggestions show how improvement seems to be possible from the meagre topographical information given:—

(*a*) *Miles* 1—3.—The line might perhaps be curved further to the west and the long cutting at mile 3 said to be unavoidable be eased by avoiding the fall into low ground.

(*b*) *Miles* 3—6.—The grading in places is susceptible of improvement so as to shorten the cutting and get a better drained formation.

(*c*) *Miles* 6—9.—This has been re-aligned but no section is given. The alteration is an obvious improvement, and may perhaps be still further improved by more careful location.

(*d*) *Miles* 9—12.—The line through many of the small cuttings 12 and 13 feet in depth can be lifted in grading. Probably, also, much work may be saved by more careful location and the freer use of curvature.

(*e*) *Miles* 12—15.—The grading is too low and the line can be lifted out of many of the cuttings altogether. The deeper cuttings may probably be avoided by the introduction of more curvature.

(*f*) *Miles* 15—18.—At mile 16 the alignment probably would be better thrown further west. It is doubtful if the whole length from mile 15 to mile 20 should not be pushed further west and so take the drainage where it is more collected (see Index Plan).

(*g*) *Miles* 18—21.—A few easy curves in place of the long straights, would save work.

(*h*) *Miles* 21—24.—Appear capable of improvement in location. As graded one mile is bank of about 11 feet and the remaining 2 miles cutting 13 to 18 feet in depth. The freer use of curvature would certainly save much work here.

(*i*) *Miles* 24—27.—The same conditions prevail. At mile 25 there is a cutting 4,600 feet in length and 11 to 18 feet in depth. A revised grading is suggested raising the line 5 feet. The location can, however, probably be altered with advantage.

(*j*) *Miles* 27—30.—The cutting at mile 29¼—24 feet deep can probably be avoided by a better alignment and the station site of Puducad improved.

ORDER—No. 335 Ry., dated 25th March 1899.

A copy of the Government of India's letter, No. 051 R.C., dated the 23rd February 1899, will be forwarded to His Highness the Rajah of Cochin through the Political Department, with a request that Government may be informed which agency, *i.e.*, of the Madras Railway Company or of the South Indian Railway Company, it is desired should be asked to construct the line, or whether it is preferred that the Government of India should be asked to make it. This Government recommends that the agency of the Madras Railway Company should be availed of.

2. A copy of these Proceedings will be forwarded to the Consulting Engineer for Railways for information and for the issue to the Madras Railway Company, of such instructions as he may consider necessary.

3. The Resident in Travancore and Cochin should report how it is proposed to keep the construction agency in funds.

4. The Consulting Engineer will report in regard to the Shoranur junction, and the best arrangement for the piece of line in British territory.

(True Extract.)

Under Secretary to Government.

To the Resident in Travancore and Cochin,
through the Political Department.
" Agent and Manager, Madras Railway Company.
" Consulting Engineer for Railways, Madras.
" Government Examiner, Guaranteed Railway Accounts, Madras.

Ed. T. K. Narayana Aiyangar.