

Public Works (1898) Department.

RAILWAY BRANCH.

G.O., No. 1451-52 R.

DATED 24th December 1898.

100/3/20/36

[Despatch Abstract.]

Calicut - Cannanore Railway.

Ordered that the note by the Can. Engr for Rygs. Madras, with the revised plans and sections of the 44th to the 70th mile of the _____, be forwarded to the Govt. of India.

Forwarding with remarks a note by the Can. Engr. for Rygs. Madras, with the revised plans & sections of the 44th to the 70th mile of the _____

Indexed

BACK PAPERS.

EK

Please say if
E.O. 1457 R may be
communicated to A.M., Ex
+ C.R. -

1/12/85

RAILWAY.

Government {1898} of Madras.
PUBLIC WORKS.

Recd.

Regd.

} 1898.

Enclosures

Spare copies

G.O., No. 1451 Ry., 24th November 1898.

NOVEMBER.

Calicut-Cannanore Railway

Ordered that the note by the Consulting Engineer for Railways, Madras, with the revised plans and sections of the 44th to the 70th mile of the —, be forwarded to the Government of India.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read again the following paper:—

G.O., Nos. 1061-62 Ry., dated 17th August 1898.

Read also the following papers:—

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—Simla, 25th October 1898, No. 1607 R.C.

With reference to correspondence ending with your letter, No. 1062 Ry., dated the 17th August 1898, forwarding a copy of the Proceedings of the Government of Madras, No. 1061 Ry., dated 17th August 1898, with a recommendation that permission be accorded for the commencement of work on the 26th to 44th mile of the Calicut-Cannanore extension of the Madras Railway, I am directed to refer you to the orders communicated in the marginally-noted letters, and to say that the Government of India will await the submission of the revised plans and sections.

Note by the Consulting Engineer for Railways, Madras.

With their No. 1070 R.C. of the 25th October 1894, the Government of India sanctioned this line being surveyed. We received the full results of the surveys so sanctioned, with Madras Railway Agent's letter No. 5490 W./966, dated 29th October 1895. In a note, dated 8th November 1895, the plans and estimates were reviewed by Mr. Upcott, the Consulting Engineer, Madras, who expressed the opinion that by the use of grades of 1 in 100 instead of 1 in 150, and of curves of 1,146 feet radius instead of 2,292 feet, great savings might be effected. In forwarding the project to the Government of India, with letter No. 775 R., dated 18th November 1895, this Government expressed the opinion that the cost of the line might be cut down, by adopting Mr. Upcott's suggestions, from Rs. 1,80,000 to perhaps Rs. 1,00,000 per mile. In their reply No. 1551 R.C., the Government of India agreed that very large reductions might be effected by regrading and sharp curving.

2. Before going further I may note that I shall treat here solely of the technicalities of plans and estimates and shall not refer to questions of the raising of capital.

3. We furnished the Madras Railway Company's Agent with a copy of the Government of India's letter with our No. 308, dated 29th June 1896, and in his reply, No. 9075-1010, dated 13th November 1896, the Agent submitted a revised estimate of the cost of the line at the rate of Rs. 1,49,068 per mile. From the Consulting Engineer's, Madras,—Mr. Upcott's—note dated 9th December 1896, it appears that this estimate was not based upon a new survey, but the old sections were taken and a grade of 1 in 100 was substituted thereon for a grade of 1 in 150, and a minimum curve of 1,910 feet radius was made use of in places; Mr. Upcott thought that it might be possible to reduce the estimate to Rs. 1,17,000 per mile. This estimate and the note were forwarded by this Government with letter No. 1028 R., dated the 9th December 1896, to the Government of India, who in their reply, No. 164 R.C. of the 27th January 1897, informed us that the Secretary of State's orders were awaited.

4. With Government of India's letter No. 1046 R.C., dated 19th June 1897, we learnt that terms had been arranged with the Madras Railway Company for the financing of the line, and we were asked for an estimate of the cost of final location. But, meanwhile, the Madras Railway Company had had a survey party in the field who

had effected several important improvements in alignment, with the result that a revised estimate, based on these improvements and embodying generally the results of the Consulting Engineer's suggestions, reached us under cover of the Agent's letter, No. 9075-702, dated 24th July 1897. This estimate came to Rs. 1,39,042 per mile.

5. In his report which accompanied that letter the Chief Engineer, Madras Railway, was careful to explain the reasons why it appeared to him to be unwise to make use of a 1 in 100 grade, viz., that the interest on the saving thereby to be effected, some 1 $\frac{3}{4}$ lakhs, would be more than eaten up every two or three years in enhanced cost of extra train mileage, owing to reduction of engine loads. In forwarding this estimate to the Government of India with letter No. 506 R., dated the 27th July 1897, this Government said that their Consulting Engineer would shortly be going over the ground, and would then be in a better position to report on the matter. In their reply No. 1352 R.C., dated the 17th August 1897, the Government of India expressed the opinion that for the preparation of a suitably revised estimate a careful re-location on the ground with grades of 1 in 100 and 1,100 feet radius would be necessary. They added that no revised estimate would be considered until this fresh location had been made and an estimate based on the result submitted.

6. The promised inspection on the ground was made by the Consulting Engineer for Railways, Madras, on the 21st-24th August 1897, and his report (my report), dated 28th August 1897, was submitted to the Government of India with this Government's endorsement No. 696 R., dated 21st September 1898. During the course of that inspection I pointed out that numerous very heavy cuttings might be improved or avoided; and, with the help of old Secretariat records and after an interview with the French colonial authorities at Mahé, I showed how some miles of distance might be saved. During the working season of 1897-98 the Madras Railway Engineers occupied themselves in effecting the improved location, with the very important results that, instead of reaching Cannanore on a length of 59 miles, that place has been reached at mile 55 $\frac{1}{2}$, and a length of 59 $\frac{3}{4}$ miles brings the railway to a terminus at Baliapatam, a busy and populous town frequented by sea-going native craft, and situated at the head of an extensive system of navigable waters extending some 30 miles up into South Canara. Moreover, while the 1 in 150 grading has been adhered to, a saving has been effected in earthwork, of the 59 $\frac{3}{4}$ over that of the 59 miles, of about 3 $\frac{3}{4}$ million cubic feet. At the same time, owing chiefly to the substitution of cheap banks for expensive cuttings on the revised alignment, the earthwork estimate has been reduced by nearly 25 per cent. The saving of earthwork up to Cannanore only is 22 million cubic feet.

7. The sections which are now available show that, as the effect of the diversions, the country from Calicut to within 5 miles of Cannanore appears to be a natural 1 in 150 country, instead of requiring 1 in 100 grading as would appear from the earlier section. The section might of course be graded at 1 in 100, or at 1 in 80, for the sake of further economy in earthwork; but to do so would in my opinion be bad engineering and I cannot recommend it; for the country traversed is an exceedingly rich one; there will, I believe, very soon be full train loads, especially when the rails reach Baliapatam; and it would be folly to enhance train mileage for ever for the sake of saving a capital sum whose interest would certainly not cover the excess in working expenses.

8. On the 5 miles, however, south of Cannanore no material improvement of the earlier alignment has been found practicable. At the time of my inspection I believed that a realignment nearer the sea face might be feasible. This is referred to in full detail in paragraph 10 of my inspection report. But the result of careful and extensive cross sectioning and trial-lining, of the country lying between the earlier alignment and the sea, has been to convince me that the former must be adhered to. Indeed the seashore route, though a mile shorter than the other, proved not only far heavier but even more expensive from point to point, while the inland route has the advantage of tapping a greater extent of country. This inland route, for the five miles south of Cannanore, was one of the places where the Government of India believed that a better location might be found if sharper curves and grades were used; it contains one of the three long spurs running right down to the sea which are referred to in paragraphs 4 and 5 of my Inspection Report, dated 28th August 1897. For the reasons given in those paragraphs, I am satisfied that no advantage in location is to be got in this particular place by the use of worse curving or grading, though

economy of earthwork would undoubtedly at one or two places be effected by worse grading. I would not however advise that the worse grading be introduced between mile 50 and Calicut, because for the remainder of the mileage between Calicut and Cannanore the country has proved to be a 1 in 150 country. The saving in capital cost would undoubtedly be more than counterbalanced by heavier train mileage. The sections therefore have been graded at 1 in 150 throughout, and it is for the Government of India to decide, after perusal of what has been recorded on the subject, whether they desire that the grades should be sharpened to one in 100 or not.

9. Beyond Cannanore to Baliapatam however, there is more to be said for the use of steeper grading. Train loads will probably be lighter on these four miles than elsewhere, for while the destination of Baliapatam timber will chiefly be the Kolar Gold Fields, many vehicle loads both of passengers and goods will have Cannanore for their origin or destination. Moreover on these four miles the work is of a very heavy character, so much so that the saving in earthwork from the adoption of the stiffer grade has been estimated at Rs. 94,000. The Railway however is almost certain sooner or later to be extended to Mangalore, especially if the metre gauge, giving a saving of Rs. $\frac{1}{4}$ lakh per mile, is decided on. The distance from the engine-homing station of Podanur to Mangalore is about 252 miles, so that Cannanore, which is only about 72 miles from Mangalore, will not be the running-shed station. If, as I hear is the case, the physical character of the country north of Baliapatam is very similar to that of the Calicut-Cannanore country, that is if it is a natural 1 in 150 country for the most part, it would be a pity to spoil an engine-run by inserting a short bit of stiff grade in the middle of it, that is between Cannanore and Baliapatam, for the sake of a saving of under a lakh.

10. The revised broad gauge earthwork estimate which, as stated in paragraph 6, amounts to Rs. $17\frac{1}{2}$ lakhs, has been based on precisely the same data, in the matter of breadth and slopes of banks and cuttings, as was the former $23\frac{1}{2}$ lakhs estimate prepared on the unrevised alignment; so that for the purpose of arriving at a decision as to whether the latest alignment shall or shall not be sanctioned, the Government of India are in possession of fair data.

11. The plans and sections of the unaltered miles, 0 to 26, are amongst those which went up to the Government of India with this Government's letter No. 775 R., dated 18th November 1895. We sent up revised plans and sections of miles 26 to 44 with our letter to the Government of India, No. 1062 Ry., dated 17th August 1898. We are now in a position to send up the plans and sections of the remaining mileage, 44 to 70, with an alternative section for the stiffer grading of the terminal four miles.

12. It will not be necessary for the Government of India to decide just yet in regard to the large subject of gauge. But once they are in possession of the sections now to be forwarded, they can at least pass orders whether land may be acquired throughout, and whether collection of materials and a commencement of earthwork, and of the construction of the less important culverts, as well as of staff quarters, and of anything else which will not prejudice the gauge question, may not at once be put in hand, as has been done on the first 26 miles.

MADRAS,
15th November 1898.

FRANCIS J. E. SPRING,
Consulting Engineer for Railways.

ORDER—No. 1451 Ry., dated 24th November 1898.

The Government of India will be addressed.

[Here enter No. 1452 Ry., dated 24th November 1898.]

(True Extract.)

FRANCIS J. E. SPRING,
Joint Secretary.

To the Agent and Manager, Madras Railway.
„ Consulting Engineer for Railways.
„ Examiner, Railway Accounts, Madras.

Exd. T. K. Narayana Aiyangar.

RAILWAY.

Government {1898} of Madras. PUBLIC WORKS.

Recd.

Enclosures

Regd.

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Letter, No. 1452 Ry., 24th November 1898.

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Calicut-Cannanore Railway

Forwarding with remarks, a note by the Consulting Engineer for Railways, Madras, with the revised plans and sections of the 44th to the 70th mile of the —.

PUBLIC WORKS DEPARTMENT.

Railway.

LETTER—from

FRANCIS J. E. SPRING, Esq., C.I.E.,
*Joint Secretary to the Government of Madras,
 Public Works Department,
 Railway Branch,*

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
 PUBLIC WORKS DEPARTMENT.

SIR,

I am directed to acknowledge the receipt of your letter No. 1607 R.C., dated the 25th October 1898, and in reply to enclose a note by this Government's Consulting Engineer for Railways, and also the revised plans and sections of the 44th to the 70th mile of the Calicut-Cannanore Railway, with an alternative 1 in 100 graded section for the final 4 miles.

2. I am to express the hope that, in the light of the information now before them, the Government of India may find themselves able to approve of the revised alignment, which appears to be the best obtainable, and to pass final orders in regard to grading, so that there may be no further delay in putting things in train for the acquisition of the land, for the collection of some material, and for the commencement of so much of the construction as will not prejudice the gauge question.

I have the honour to be,
 Sir,
 Your most obedient servant,

FRANCIS J. E. SPRING,
 Joint Secretary.

FORT ST. GEORGE,
 24th November 1898.

Exd. T. K. Narayana Aiyangar.

No. 1607 R.C.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY CONSTRUCTION.

To

The Joint Secretary to the Government of Madras,
 Public Works Department, Railway Branch.

Simla, the 25th October 1898.

Sir,

With reference to correspondence ending with your letter No. 1062 Railway., dated the 17th August 1898 forwarding a copy of the Proceedings of the Government of Madras No. 1061 Railway., dated 17th August 1898, with a recommendation that permission be accorded for the commencement of work on the 26th to 44th mile of the Calicut Cannanore Extension of the Madras Railway, I am directed
 -----x
 Public Works Department No. 1781 R.C., : to refer you
 dated 27th October 1897 paragraphs :
 3 and 7. : to the orders
 Public Works Department No. 1352 R.C., :
 dated 17th August 1897 paragraph 2. : communicated
 Public Works Department No. 706 R.C., :
 dated 31st May 1898 paragraph 5. : in the marginal-
 -----x
 ly noted letters, and to say that the Government of India will await the submission of the revised plans and sections.

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

Francis J. E. Spring

Secretary.

Documents accompanying :-

Nil.

All communications
 should be addressed
 to the Secretary.



Printed in 1898-1899
1452 Ry.
24-11-98

page 85/1058
page 7 of 5/1036
page 15-8/1036

under gauge
padding

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36

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100
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20

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MADRAS,
15th November 1898.

(Signed) FRANCIS J. E. SPRING,
Consulting Engineer for Railways.

ORDER—No. 1451 Ry., dated 24th November 1898.

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(True Extract.)

FRANCIS J. E. SPRING,
Joint Secretary.

Exd. T. K. Narayana Aiyangar.

PUBLIC WORKS DEPARTMENT.

Railway.

LETTER—from

FRANCIS J. E. SPRING, Esq., C.I.E.,

Joint Secretary to the Government of Madras,

Public Works Department,

Railway Branch,

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THE SECRETARY TO THE GOVERNMENT OF INDIA,

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Your most obedient servant,

Joint Secretary.

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Despatched on 25/11/98

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