GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read again the following paper:—

G.O., dated 7th June 1890, No. 792 R., Public Works.

Read again the following papers:—

G.O., dated 21st February 1890, No. 276 R., Public Works.

Read again the following paper:—

G.O., dated 24th January 1890, Nos. 140-41 R., Public Works.

Read also the following paper:—

From the Government of India, Public Works Department, dated 15th Febiary 1890, No. 140 A.R.

I am directed to acknowledge the receipt of your No. 141 R., o the 24th January 1890, forwarding the capital revised and budget estimates of the Villupuram-Guntakal State Railway for 1889-90 and 1890-91 respectively, and with regard to the allusion made in the notes to the adjustment of the old famine relief ependiture incurred on the Hindupur extension, I am to say that the question should b taken up separately as it cannot be conveniently considered in connection with te budget estimate.

Order—dated 21st February 1890, No. 276 R., Public Works.

Communicated to the Consulting Engineer for Railways with referene to his endorsement No. 52, dated 22nd January 1890.

(True Extract.)

(Signed) C. J. SMITH, Colonel, R.E,
Joint Secy. to Govt., P.W.D.,
Railway Branch.

G.O., dated 11th April 1890, No. 494 R., Public Works

From the Consulting Engineer for Railways, dated Madras, 3rd March 1890, No. 151.

Office note from the Examiner, Guaranteed Railway Accounts, to the Consulting Engineer for Railways, dated Madras, 1st March 1890.

In my reply to your office note No. 73 on the Villupuram-Guntakal State Railway budgets, I noted that it was desirable to obtain orders as to what was to be done with the expenditure charged off to famine relief which had been incurred on the Hindupur extension.

2. India their No. 140 A.R., dated 15th February 1890, to the Madras Government, desire at this question be referred for orders as a separate question as it is not convenient to consider it in connection with the budget estimate.

3. The question that requires to be decided between the local Government and the Government of India is whether the amount so expended (or any portion of it) and charged ofnally against famine relief by the local Government, shall be transferred to Imperia and debited against the Villupuram-Guntakal State Railway undertaking.

4. The estimates for the Hindupur extension that have been submitted for sanction are based o Mr. Geoghegan's original estimates and naturally provide for the cost of earthwork. A certain portion of this earthwork had been completed some time ago as a famine relief work and forms the subject of this reference.

5. Th total expenditure appears from Madras G.O., No. 558 R., to be Rs. 2,85,3 -1-7 inclusive of establishment charges and plant.

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2. Te Examiner, Guaranteed Railway Accounts, will be requested to give particulars of he expenditure and how much of it is normal value.

(True Extract.)

(Signed) SIDNEY SMITH, Major, R.E.,
Under-Secy. to Govt., P.W.D.,
Railway Branch.

G.O., dæd 14th April 1890, No. 495 R., Public Works.

From the Consulting Engineer for Railways, dated Madras, 25th March 1890, No. 216.

From the Agent, South Indin Railway, to the Consulting Engineer for Railways, dated Tricinopoly, 15th March 1890, No. 392.

I forward herewith a provisional estimate, and note thereon, of the cost of the Dharmavaram-Guntakal secton of the Villupuram-Guntakal State Railway, and I solicit the sanction of Government to audit against the amount therein shown, viz., Rs. 44,76,082.

2. In forwarding to me these papers the Chief Engineer has thus reported :—

"I have the pleasure to foward a note and abstract of estimate for the portion of the Villupuram-Guntakal State Railway which originally formed a part of the Hindupur Extension project.

"At present the work is beig carried on without an estimate of any kind which is of course objectionable, and I have therefre prepared the enclosed provisional estimate of the probable cost in anticipation of the regula estimates which will take time to prepare.

"The mileage rate comes to Rs. 71,049, and agrees very closely with the result obtained on the Villupuram-Pakal estimate. Comparing this estimate with the estimate framed by the Engineer-in-Chief, Madras State Railway Surveys, in December 1886, the mileage rate is practically the same except under the item major bridges where there is a very large increase of nearly 13,000 per mile. From the list furnished in the note it will be seen that in the project the major waterways were largely under-estimated.

"I shall be obliged if you will obtain provisional sanction to this estimate so that expenditure may be duly audited.

"Exchange figures have been taken at Rs. 14·65 per £ 1 sterling."

ENCLOSURES.

PROVISIONAL Estimate of Villupuram-Guntakal State Railway section from Dharmavaram to Guntakal, 63 miles.

		RS.
I. Preliminary expenses		63,000
II. Land, 500 per mile		31,500
III. Construction of Line—		
(1) Earthwork		2,28,955
(2) Bridgework—		
(*a*) Minor bridges		3,87,280
(*b*) Major bridges		13,53,147
(3) Tunnels		...
(4) Level-crossings		50,400
(5) Fencing		18,900
(6) Electric telegraph		6,300
IV. Ballast and Permanent-way—		
(1) Ballasting		1,05,000
(2) Permanent-way		14,00,000
V. Stations and Buildings—		
(1) Stations and offices (2) Workshops and Store buildings (3) Staff quarters (4) Station machinery		3,27,600
VI. Plant—		
(1) Engineering		63,000
(2) Locomotive		31,500
(3) Carriage and wagon		18,900
(4) Station and office furniture		12,600
VII. Steam ferries		...
VIII. Rolling-stock—		
(1.) Locomotive (2.) Carriage and wagon stock.		63,000
IX. Establishment		3,15,000
	Total ...	44,76,082

$\frac{44,76,082}{63}$ = Rs. 71,049 per mile

TRICHINOPOLY, 11th March 1890.

(Signed) W. S. BETTS, Agent.

(Signed) D. LOGAN, Chief Engineer.

NOTE on the Section of Hindupur Extension between miles 0 and 62½, being the portion included in the Villupuram-Guntakal State Railway.

Alignment.—The result of the investigation shows that the alignment can be adopted except as noted below.

(*a*) *From mile* 10 *to* 12.—The alignment here consists of numerous sharp curves limited by a radius of 600 feet and on a grade of 1 in 100. On the remainder of the Villupuram-Guntakal Railway the limiting curve is 1,146 radius and it appears unwise to hamper the working of this section by the introduction of sharper curves, especially as investigations have shown that this can be avoided practically without extra expense.

(*b*) There are at other points of the line 5 curves which are of less radius than the existing ruling curve, and it is believed that these can be flattened without any undue expense.

(*c*) As the Pannamairoo river, 46 mile, the crossing proposed on the original project requires and appears to be capable of improvement, investigations are in progress and will very

shortly be submitted which it is thought will show that a crossing higher up the river will enable us to guard against the submergency of a large area of cultivated land, which lies on the right bank at a lower level on the valley than the bed of the river, which submergence if not avoided would necessitate the provision of another bridge in addition to that over the Pannamairoo.

(*d*) An alteration is required near mile 41, the line at present runs up the bed of a nullah and it will be cheaper to divert the centre line.

(*e*) An alteration of alignment is required near the junction with the Dharmavaram section in order to obtain a better crossing of the Dhadalur nullah and also to place the Dharmavaram station on better ground and position with regard to the town.

The whole of these alterations which aggregate nearly 6 miles are expected to conduce to economy in constructing and working.

Earthwork.—The earthwork, executed some years ago as a famine relief work, has as a whole stood fairly well; in places it has been washed away and some alterations are necessary in the gradients. These are shown in the progress section.* They are mostly unimportant, the principal ones being near Kaderpet station, mile 20, where the existing bank was topped and at 2013 where it is considered advisable to raise formation 4 feet. As already advised the difficult portion of the earthwork, chiefly in rock or hard cutting, has not been executed. The total quantity of earthwork done on the whole of the Hindupur extension is recorded as 29,211,215 cubic feet, and taking out the portions done between Dharmavaram and Hindupur I arrive at 21,653,737 cubic feet as quantity done between Guntakal and Dharmavaram. With reference to the estimate rate I have valued this at Rs. 4 in place of Rs. 7-1-2 shown in completion report in G.O., No. 411 R., dated 10th May 1886, and the difference should be accordingly added to the estimate. Owing to the alteration proposed in alignment some of the work done in miles 46, 47 and 48 (Pannamairoo) and miles 60, 61 and 62 (Dhadalur) will be abandoned, but this will be duly considered when proposals are forwarded for sanction. The average rate for earthwork in Mr. Geoghegan's estimate is accepted subject to the alterations noted for the work done.

* See tracing.

Minor Bridges.—The result of the investigation into the minor bridges provided in the estimate is that although changes will have to be made in the location yet the total provision will suffice. The project figures are accepted.

Major Bridges.—The major bridges have all been investigated; proposals have been submitted for the Pennar bridge. The following table shows the waterway provided in estimate and now proposed and sanctioned.

Chain.	Name.	Mile.	On project.	Now proposed.
440	....	9	1—40 feet.	1—40 feet.
582	....	11½	1—60 ,,	3of 15 ,,
601	....	12	5—20 ,,	2—20 ,,
656	....	13	5—20 ,,	4—10 ,,
731	....	14¼	1—40 ,,	2—15 ,,
804	....	15½	5—20 ,,	2—25 ,,
1003	Kaderpet	19½	5—20 ,,	5—20 ,,
1210	....	23½	1—60 ,,	2—40 ,,
1250	Pennar	24	15—100 ,,	13 of 150 ,,
1807	Lawlar	34¾	5—40 ,,	4—40 ,,
2098	Thaulkulairoo	40	12—40 ,,	8—64 ,,
2138	Nuddum-Vanka ..	41	3—60 ,,	4—64 ,,
2416	....	46	3—20 ,,	1—40 ,,
2432	Pannamairoo	46½	12—40 ,,	14—64 ,,
2569	Kandukúr	49	3—20 ,,	3—40 ,,
2899	Chickerla	55½	3—20 ,,	3—20 ,,
3082	Dhuplet	59	5—40 ,,	3—64 ,,
3143	....	60	1—20 ,,	1—40 ,,
3221	Dhadalur	61½	7—40 ,,	11—40 ,,
..	Palacoonta	62	....	3—20 ,,

Some of these spans may be varied on further investigations, but it appears certain that the lineal feet of waterway will be required; this amounts to 5,191 in place of 3,440 lineal feet provided in project; in the project there are included under the minor bridges 3 of 40 feet and 1 of 60 feet which reduces the difference by 180 feet; the rate in the project for major bridges is Rs. 252 per lineal foot. On the Villupuram-Pakal estimate they were found to cost Rs. 227 and that rate is accepted in this provisional estimate. The bridges noted have been fixed on the average area, a discharge obtained therefrom by Dicken's formula with the velocities and depth permissible as estimated on the ground.

Level-crossings.—The estimate rate in Villupuram-Pakal estimate is Rs. 796¼ per mile, for the purpose of this estimate it is assumed as 800 per mile.

Fencing.—The amount in the project is accepted.

Electric telegraph—Is omitted except for cost of temporary line, say Rs. 100 per mile.

Ballast.—This has been assumed at Rs. 1,500 per mile.

Permanent-way.—The permanent-way adopted is the same as that provided for the Villupuram-Pakal estimate. Mr. Geoghegan's estimate of Rs. 20,000 per mile is accepted. This is higher than Villupuram-Pakal estimate, but the rates at home have risen from £4-10 to £7 per ton.

Stations Buildings.—The project estimate shows provision for watering arrangements on the section at Kaloor and Anantapur, but no weighing machines, turn-table, dating press, goods shed or engine shed. In short makes no provision for any goods traffic or for any accommodation whatever at Guntakal station. The amount provided including Dharmavaram station is Rs. 3,31,335. Dharmavaram station is included in the Kadiri extension and Hindupur projects; now that all become one railway the double provision is unnecessary and the amount thus set free will meet all the deficiencies noted. The mileage rate of Rs. 5,200 per mile is accepted.

Plant Engineering.—The works on this short length are heavy. A sum of Rs. 1,000 per mile is entered for plant.

Plant Locomotive.—A mileage rate of Rs. 500 per mile is entered as in Villupuram-Pakal estimate.

Plant Carriage and Wagon.—A mileage rate of Rs. 300 as in Villupuram-Pakal estimate.

Plant Station and Office furniture.—Mileage rate Rs. 200.

Establishment.—As per Mr. Geoghegan's estimate Rs. 5,000 per mile.

TRICHINOPOLY,
14th March 1890.

(Signed) D. LOGAN,
Chief Engineer.

Submitted to Government for transmission to the Government of India.

2. The estimate is submitted in its present incomplete form with a view to regularize the expenditure now being incurred on the work. There is a heavy increase of, under major bridges, Rs. 13,000 per mile over the estimate framed by the Engineer-in-Chief, Madras State Railway Surveys, in December 1886. This question is now under consideration, and on receipt of fuller information will be thoroughly investigated.

3. The estimate will be effected by the cost of the earthwork executed as a famine relief work. This was paid for at an average rate of Rs. 7-1-2 per 1,000 cubic feet, while in the present estimate it is only valued and entered at the normal rate of Rs. 4. The Government of India in its letter No. 140 A.R., dated 15th February 1890, desired that the whole question of the famine relief work expenditure might be referred to them as a separate question, consequently the earthwork rate entered in the estimate is that for which the work could now be done, and has no reference to the price actually paid. The estimate amounts to Rs. 44,76,082 or Rs. 71,049 per mile.

Order—dated 14th April 1890, No. 495 R., Public Works.

Ordered to be forwarded to the Government of India who will be separately addressed regarding the adjustment of the famine relief expenditure.

(Here enter No. 496 R., dated 14th April 1890.)

(True Extract.)

(Signed) SIDNEY SMITH, Major, R.E.,
Under-Secy. to Govt., P.W.D.,
Railway Branch.

Endorsement—dated 14th April 1890, No. 496 R., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Joint Secy. to Govt., P.W.D.

Read also the following papers :—

From the Consulting Engineer for Railways, dated Madras, 17th April 1890, No. 264.

Office note from the Examiner, Guaranteed Railway Accounts, to the Consulting Engineer for Railways, dated Madras, 16th April 1890, No. 153 V.G.

With reference to G.O., No. 494 R., dated 1st April 1890, I hear from the Government Examiner at Trichinopoly that there is nothing to show that any classification between "Normal" or "Famine" was ever made. According to the completion reports this expenditure is recorded as "Normal," and consequently, under the Madras Famine Code, it should have been charged wholly to the Public Works Department.

2. The expenditure has, however, been charged wholly to the *Civil Department*—*vide* G.O., No. 108 R., dated 5th February 1886.

Submitted to Government with reference to para. 2 of G.O., No. 494 R., dated 11th April 1890.

2. The expenditure incurred on the Hindupur extension seems to be normal, and chargeable under the provisions of the Famine Code (paras. 138, 139, chapter IV) to the Public Works Department.

G.O., dated 28th April 1890, No. 328, Financial.

Read—G.O., dated 11th April 1890, No. 494 R., Public Works.

Order—dated 28th April 1890, No. 328, Financial.

The report called for in para. 2 will be awaited as well as particulars of the expenditure over that portion of the extension which has not yet been handed over to the Villupuram-Guntakal State Railway.

(True Extract.)

(Signed) J. F. PRICE,
Chief Secretary.

Order—dated 7th June 1890, No. 792 R., Public Works.

Ordered that the Government of India be addressed.

(Here enter No. 793 R., dated 7th June 1890.)

(True Extract.)

(Signed) SIDNEY SMITH, Major, R.E.,
Under-Secy. to Govt., P.W.D.,
Railway Branch.

From the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, to the Secretary to the Government of India, Public Works Department, dated 7th June 1890, No. 793 R.

In continuation of endorsement No. 496 R., dated 14th April 1890, I am directed to address you in connection with the claim of the Provincial Government to be reimbursed the amount spent from provincial revenues on earthwork on the Villupuram-Guntakal Railway between Guntakal and Dharmavaram.

2. I am to say that the Madras Government claims reimbursement in full of the sums then spent on work done between these places, together with percentages for establishment and tools and plant as debited in 1886.

3. In the note accompanying the provisional estimates forwarded with the above endorsement, the Chief Engineer, Villupuram-Guntakal Railway, proposes to deduct from the recorded quantities of work done such portions as are not utilized, owing to change of alignment, in the line as now under construction and to allow for the balance only 4 Rs. per 1,000 cubic feet instead of the rate Rs. 7-1-2 recorded in the completion reports in G.O., dated 19th May 1886, No. 411 R., of which copy is enclosed. A reference to those reports will show that the figures dealt with in the Chief Engineer's note refer to the third completion report recorded in that order, and that he makes no mention of the other two items, the first of which, that for training banks, &c., at the site of the Pennér bridge, undoubtedly covers work done between Guntakal and Dharmavaram. Work between Dharmavaram and Hindupur is of course properly deducted.

4. With regard to exclusion of claim for work discarded on account of change of alignment, I am to submit that the provincial claim is not affected. The work was done in 1886 on sanctioned estimates and alignment and by the Government of India Engineers; and those of the present day, if a change of alignment seems to them good, must take into consideration in deciding as to its advisability, the cost of abandoning the work already done. The Provincial Government cannot fairly be put to loss because Engineer's differ, nor can the Government of India with justice refuse to carry out its promise to repay so far as the work done was in accordance with the sanctioned surveys and estimates. The same argument applies to the work done at the Pennér bridge site.

5. With regard to the rate I am to point out that that given in the completion report is recorded specifically as being the normal rate at the time, and that the fact, if it be a fact, that the work can be done now 5 years later, at Rs. 4 per 1,000 cubic feet, does not affect at all the provincial claim. The Government of India is bound by the certificate of its then Engineer-in-Chief. The normal cost which was agreed to be repaid was ascertained and recorded at the time in anticipation of the present case; and I am to submit that the Provincial Government is entitled to repayment in accordance with the record then made.

Read also the following paper :—

From the Secretary to the Government of India, Public Works Department (Railway Construction), to the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, dated Simla, 14th August 1890, No. 719 R.C.

I am directed to acknowledge the receipt of your letter No. 793 R., dated 7th June 1890, regarding the claim of the Government of Madras to be reimbursed the amount spent from Provincial funds in 1884-85 and 1885-86 on earthwork on the Villupuram-Guntakal Railway between Guntakal and Dharmavaram.

2. It is observed that the refund claimed amounts to Rs. 2,23,943, and is made up of the following items :—

		RS.
(1)	Pennér training works, 4,214,838 cubic feet at Rs. 5-14-7 per 1,000 cubic feet ... ... =	24,918
(2)	Collection of ballast, 141,541 cubic feet at Rs. 1-4-4 per 100 cubic feet ... ... =	1,801
(3)	Earthwork, 29,211,215 cubic feet *less* 7,557,478 cubic feet (presumably) used on Dharmavaram-Hindupur section, 21,653,737 cubic feet at Rs. 7-1-2 per 1,000 cubic feet ... =	1,53,155
(4)	Percentage for establishment (23) and plant ($1\frac{1}{2}$) ... ... =	44,069

3. The Government of India is prepared to refund to the Government of Madras the value of the entire work on the railway between Guntakal and Dharmavaram, which was borne by Provincial funds in the first instance, in accordance with Revenue and Agricultural Department telegram, dated 28th January 1885, but considers that the amount to be reimbursed should be calculated on the rates at which work could

have been done at in time of plenty and not on the normal rates prevailing at a time of famine. It is thought therefore that, in the absence of any reason for supposing that the cost of labor has considerably decreased since 1886, the amount to be refunded should be based on the present actual value of the work, any increase in cost due to the employment of unskilled or famine labor being borne by the Provincial Government.

4. Calculated on the above basis the sum which the Government of India proposes to refund to the Government of Madras in satisfaction of its claim is Rs. 1,31,067. This amount is arrived at as follows :—

		Rs.
(1)	Pennér training works, 4,214,838 cubic feet at Rs. 4 per cent. ...	= 16,859
(2)	Collection of ballast, 141,541 cubic feet at Rs. 1-4-4 per cent. ...	= 1,801
(3)	Earthwork, 21,653,737 cubic feet at Rs. 4 per cent. ...	= 86,615
(4)	Percentage for establishment and plant at 24½ per cent. ...	= 25,792

ORDER—dated 9th September 1890, No. 1341 R., Public Works.

Communicated to the Consulting Engineer for Railways with reference to his endorsements as under :—

No. 151, dated 4th March 1890.
„ 216, „ 25th „ „
„ 264, „ 17th April „

2. The Government accepts the offer of the Government of India to reimburse the sum of Rs. 1,31,067, being a portion of the amount expended from Provincial funds in 1884-85 and 1885-86 on earthwork on the Villupuram-Guntakal Railway between Guntakal and Dharmavaram.

3. The Financial Department will arrange to finally debit the Provincial Government with the balance of the claim (viz., Rs. 92,876) made by this Government in Proceedings Nos. 792-93 R., dated 7th June 1890.

(True Extract.)

(Signed) T. GRACEY, Lieut.-Colonel, R.E.,
Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.
„ Examiner, Guaranteed Railway Accounts.
„ Examiner, Public Works Accounts.
„ Financial Department.

Exd. J. Moses.
Spare Copies

RAILWAY.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated September, 9th.

Read. *Encl.*

G.O., 9th Sept. 1890, No. 1341 R.

SEPTEMBER.

Villupuram-Guntakal State Railway

Proposal of the Government of India to refund Rs. 1,31,067 of the amount spent from Provincial funds on earthwork on the — between Guntakal and Dharmavaram, communicated with remarks to the Consulting Engineer for Railways.

GOVERNMENT OF MADRAS.

FINANCIAL DEPARTMENT.

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G.O., dated 24th January 1890, Nos. 140-41 R., Public Works.

Read—also the following paper :—

From the Government of India, Public Works Department, dated 15th February 1890, No. 140 A.R.

I am directed to acknowledge the receipt of your No. 141 R., of the 24th January 1890, forwarding the capital revised and budget estimates of the Villupuram-Guntakal State Railway for 1889-90 and 1890-91, respectively, and with regard to the allusion made in the notes to the adjustment of the old famine relief expenditure incurred on the Hindupur extension, I am to say that the question should be taken up separately as it cannot be conveniently considered in connection with the budget estimate.

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Communicated to the Consulting Engineer for Railways with reference to his endorsement No. 52, dated 22nd January 1890.

(True Extract.)

(Signed) C. J. SMITH, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Railway Branch.

G.O., dated 11th April 1890, No. 494 R., Public Works.

From the Consulting Engineer for Railways, dated Madras, 3rd March 1890, No. 151.

Office-note from the Examiner, Guaranteed Railway Accounts, to the Consulting Engineer for Railways, dated Madras, 1st March 1890.

In my reply to your office-note No. 73 on the Villupuram-Guntakal State Railway budgets, I noted that it was desirable to obtain orders as to what was to be done with the expenditure charged off to famine relief which had been incurred on the Hindupur extension.

2. India in their No. 140 A.R., dated 15th February 1890, to the Madras Government, desire that this question be referred for orders as a separate question as it is not convenient to consider it in connection with the budget estimate.

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5. The total expenditure appears from Madras G.O., No. 558 R., to be Rupees 2,85,327-1-7 inclusive of establishment charges and plant.

6. If no charge is to be made for this, the extension estimates could be relieved to that extent.

7. It is believed that some of this expenditure has been incurred upon the portion of the extension that has not yet been handed over to the Villupuram-Guntakal State Railway. A rateable reduction will have to be made on this account if the transfer takes place.

Submitted for the orders of Government with reference to Proceedings of Government, No. 276 R., of 21st February 1890.

Order—dated 11th April 1890, No. 494 R., Public Works.

Communicated to the Financial Department with the remark that the Hindupur extension having been started as an Imperial State Railway, the outlay upon it from Provincial Funds has to be recouped and the estimate therefore cannot be relieved as proposed.

2. The Examiner, Guaranteed Railway Accounts, will be requested to give particulars of the expenditure and how much of it is normal value.

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(Signed) SIDNEY SMITH, Major, R.E.,
Under Secy. to Govt., P.W.D.,
Railway Brnnch.

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I forward herewith a provisional estimate, and note thereon, of the cost of the Dharmavaram-Guntakal section of the Villupuram-Guntakal State Railway, and I solicit the sanction of Government to audit against the amount therein shown, viz., Rs. 44,76,082.

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"I have the pleasure to forward a note and abstract of estimate for the portion of the Villupuram-Guntakal State Railway which originally formed a part of the Hindupur Extension project.

"At present the work is being carried on without an estimate of any kind which is of course objectionable, and I have therefore prepared the enclosed provisional estimate of the probable cost in anticipation of the regular estimates which will take time to prepare.

"The mileage rate comes to Rs. 71,049, and agrees very closely with the result obtained on the Villupuram-Pakal estimate. Comparing this estimate with the estimate framed by the Engineer-in-Chief, Madras State Railway Surveys, in December 1886, the mileage rate is practically the same except under the item major bridges where there is a very large increase of nearly 13,000 per mile. From the list furnished in the note it will be seen that in the project the major waterways were largely under-estimated.

"I shall be obliged if you will obtain provisional sanction to this estimate so that expenditure may be duly audited.

"Exchange figures have been taken at Rs. 14·65 per £1 sterling."

Enclosures.

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(5) Fencing	18,900
(6) Electric telegraph	6,300
IV. Ballast and Permanent-way—	
(1) Ballasting	1,05,000
(2) Permanent-way	14,00,000
V. Stations and Buildings—	
(1) Stations and offices (2) Workshops and store buildings (3) Staff quarters (4) Station machinery	3,27,600
VI. Plant—	
(1) Engineering	63,000
(2) Locomotive	31,500
(3) Carriage and wagon	18,900
(4) Station and office furniture	12,600
VII. Steam ferries	..
VIII. Rolling-stock—	
(1) Locomotive (2) Carriage and wagon stock	63,000
IX. Establishment	3,15,000
Total	44,76,082

$$\frac{44,76,082}{63} = \text{Rs. } 71,049 \text{ per mile.}$$

Trichinopoly, 11*th March* 1890.

(Signed) W. S. BETTS, *Agent.*

(Signed) D. LOGAN, *Chief Engineer.*

Note on the Section of Hindupur Extension between miles 0 and 62½, being the portion included in the Villupuram-Guntakal State Railway.

Alignment.—The result of the investigation shows that the alignment can be adopted except as noted below:—

(*a*) *From mile* 10 *to* 12.—The alignment here consists of numerous sharp curves limited by a radius of 600 feet and on a grade of 1 in 100. On the remainder of the Villupuram-Guntakal Railway the limiting curve is 1,146 radius and it appears unwise to hamper the working of this section by the introduction of sharper curves, especially as investigations have shown that this can be avoided practically without extra expense.

(*b*) There are at other points of the line 5 curves which are of less radius than the existing ruling curve, and it is believed that these can be flattened without any undue expense.

(*c*) As the Pannamairoo river, 46 miles the crossing proposed on the original project requires and appears to be capable of improvement, investigations are in progress and will very

shortly be submitted which it is thought will show that a crossing higher up the river will enable us to guard against the submergency of a large area of cultivated land, which lies on the right bank at a lower level on the valley than the bed of the river, which submergence if not avoided would necessitate the provision of another bridge in addition to that over the Pannamairoo.

(*d*) An alteration is required near mile 41, the line at present runs up the bed of a nullah and it will be cheaper to divert the centre line.

(*e*) An alteration of alignment is required near the junction with the Dharmavaram section in order to obtain a better crossing of the Dhadalur nullah and also to place the Dharmavaram station on better ground and position with regard to the town.

The whole of these alterations, which aggregate nearly 6 miles, are expected to conduce to economy in constructing and working.

Earthwork.—The earthwork, executed some years ago as a famine relief work, has as a whole stood fairly well; in places it has been washed away and some alterations are necessary in the gradients. These are shown in the progress section.* They are mostly unimportant, the principal ones being near Kaderpet station, mile 20, where the existing bank was topped and at 2013 where it is considered advisable to raise formation 4 feet. As already advised the difficult portion of the earthwork, chiefly in rock or hard cutting, has not been executed. The total quantity of earthwork done on the whole of the Hindupur extension is recorded as 29,211,215 cubic feet, and taking out the portions done between Dharmavaram and Hindupur I arrive at 21,653,737 cubic feet as quantity done between Guntakal and Dharmavaram. With reference to the estimate rate I have valued this at Rs. 4 in place of Rs. 7-1-2 shown in completion report in G.O., No. 411 R., dated 10th May 1886, and the difference should be accordingly added to the estimate. Owing to the alteration proposed in alignment some of the work done in miles 46, 47 and 48 (Pannamairoo) and miles 60, 61 and 62 (Dhadalur) will be abandoned, but this will be duly considered when proposals are forwarded for sanction. The average rate for earthwork in Mr. Geoghegan's estimate is accepted subject to the alterations noted for the work done.

* See tracing.

Minor Bridges.—The result of the investigation into the minor bridges provided in the estimate is that although changes will have to be made in the location yet the total provision will suffice. The project figures are accepted.

Major Bridges.—The major bridges have all been investigated; proposals have been submitted for the Pennar bridge. The following table shows the waterway provided in estimate and now proposed and sanctioned:—

Chain.	Name.	Mile.	On project.	Now proposed.
440	....	9	1—40 feet.	1—40 feet.
582	....	11½	1—60 ,,	3of 15 ,,
601	....	12	5—20 ,,	2—20 ,,
656	....	13	5—20 ,,	4—10 ,,
731	....	14¼	1—40 ,,	2—15 ,,
804	....	15¾	5—20 ,,	2—25 ,,
1003	Kaderpet	19¼	5—20 ,,	5—20 ,,
1210	....	23½	1—60 ,,	2—40 ,,
1250	Pennar	24	15—100 ,,	13of 150 ,,
1807	Lawlar	34¾	5—40 ,,	4—40 ,,
2098	Thaulkulairoo	40	12—40 ,,	8—64 ,,
2138	Nuddum-Vanka	41	3—60 ,,	4—64 ,,
2416	....	46	3—20 ,,	1—40 ,,
2432	Pannamairoo	46½	12 —40 ,,	14—64 ,,
2569	Kandukúr	49	3—20 ,,	3—40 ,,
2899	Chickerla	55½	3—20 ,,	3—20 ,,
3082	Dhuplet	59	5—40 ,,	3—64 ,,
3143	....	60	1—20 ,,	1—40 ,,
3221	Dhadalur	61½	7—40 ,,	11—40 ,,
..	Palacoonta	62	..	3—20 ,,

Some of these spans may be varied on further investigations, but it appears certain that the lineal feet of waterway will be required; this amounts to 5,191 in place of 3,440 lineal feet provided in project; in the project there are included under the minor bridges 3 of 40 feet and 1 of 60 feet which reduces the difference by 180 feet; the rate in the project for major bridges is Rs. 252 per lineal foot. On the Villupuram-Pakal estimate they were found to cost Rs. 227 and that rate is accepted in this provisional estimate. The bridges noted have been fixed on the average area, a discharge obtained therefrom by Dickens' formula with the velocities and depth permissible as estimated on the ground.

Level-crossings.—The estimate rate in Villupuram-Pakal estimate is Rs. 796½ per mile, for the purpose of this estimate it is assumed as 800 per mile.

Fencing.—The amount in the project is accepted.

Electric telegraph.—Is omitted except for cost of temporary line, say Rs. 100 per mile.

Ballast.—This has been assumed at Rs. 1,500 per mile.

Permanent-way.—The permanent-way adopted is the same as that provided for the Villupuram-Pakal estimate. Mr. Geoghegan's estimate of Rs. 20,000 per mile is accepted. This is higher than Villupuram-Pakal estimate, but the rates at home have risen from £4-10-0 to £7 per ton.

Station Buildings.—The project estimate shows provision for watering arrangements on the section at Kaloor and Anantapur, but no weighing machines, turn-table, dating press, goods shed or engine shed. In short, makes no provision for any goods traffic or for any accommodation whatever at Guntakal station. The amount provided including Dharmavaram station is Rs. 3,31,335. Dharmavaram station is included in the Kadiri extension and Hindupur projects; now that all become one railway the double provision is unnecessary and the amount thus set free will meet all the deficiencies noted. The mileage rate of Rs. 5,200 per mile is accepted.

Plant Engineering.—The works on this short length are heavy. A sum of Rs. 1,000 per mile is entered for plant.

Plant Locomotive.—A mileage rate of Rs. 500 per mile is entered as in Villupuram-Pakal estimate.

Plant Carriage and Wagon.—A mileage rate of Rs. 300 as in Villupuram-Pakal estimate.

Plant Station and Office furniture.—Mileage rate Rs. 200.

Establishment.—As per Mr. Geoghegan's estimate Rs. 5,000 per mile.

Trichinopoly,
14*th March* 1890.

(Signed) D. LOGAN,
Chief Engineer.

Submitted to Government for transmission to the Government of India.

2. The estimate is submitted in its present incomplete form with a view to regularize the expenditure now being incurred on the work. There is a heavy increase of, under major bridges, Rs. 13,000 per mile over the estimate framed by the Engineer-in-Chief, Madras State Railway Surveys, in December 1886. This question is now under consideration, and on receipt of fuller information will be thoroughly investigated.

3. The estimate will be effected by the cost of the earthwork executed as a famine relief work. This was paid for at an average rate of Rs. 7-1-2 per 1,000 cubic feet, while in the present estimate it is only valued and entered at the normal rate of Rs. 4. The Government of India in its letter No. 140 A.R., dated 15th February 1890, desired that the whole question of the famine relief work expenditure might be referred to them as a separate question, consequently the earthwork rate entered in the estimate is that for which the work could now be done, and has no reference to the price actually paid. The estimate amounts to Rs. 44,76,082 or Rs. 71,049 per mile.

Order—dated 14th April 1890, No. 495 R., Public Works.

Ordered to be forwarded to the Government of India who will be separately addressed regarding the adjustment of the famine relief expenditure.

(Here enter No. 496 R., dated 14th April 1890.)

(True Extract.)

(Signed) SIDNEY SMITH, Major, R.E.,
Under Secy. to Govt., P.W.D.,
Railway Branch.

Endorsement—dated 14th April 1890, No. 496 R., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Joint Secy. to Govt., P.W.D.

Read—also the following papers:—

From the Consulting Engineer for Railways, dated Madras, 17th April 1890, No. 264.

Office-note from the Examiner, Guaranteed Railway Accounts, to the Consulting Engineer for Railways, dated Madras, 16th April 1890, No. 153 V.G.

With reference to G.O., No. 494 R., dated 1st April 1890, I hear from the Government Examiner at Trichinopoly that there is nothing to show that any classification between "Normal" or "Famine" was ever made. According to the completion reports this expenditure is recorded as "Normal," and consequently, under the Madras Famine Code, it should have been charged wholly to the Public Works Department.

2. The expenditure has, however, been charged wholly to the *Civil Department*—*vide* G.O., No. 108 R., dated 5th February 1886.

Submitted to Government with reference to para. 2 of G.O., No. 494 R., dated 11th April 1890.

2. The expenditure incurred on the Hindupur extension seems to be normal, and chargeable under the provisions of the Famine Code (paras. 138, 139, chapter IV) to the Public Works Department.

G.O., dated 28th April 1890, No. 328, Financial.

Read—G.O., dated 11th April 1890, No. 494 R., Public Works.

Order—dated 28th April 1890, No. 328, Financial.

The report called for in para. 2 will be awaited as well as particulars of the expenditure over that portion of the extension which has not yet been handed over to the Villupuram-Guntakal State Railway.

(True Extract.)

(Signed) J. F. PRICE,
Chief Secretary.

Order—dated 7th June 1890, No. 792 R., Public Works.

Ordered that the Government of India be addressed.

(Here enter No. 793 R., dated 7th June 1890.)

(True Extract.)

(Signed) SIDNEY SMITH, Major, R.E.,
Under Secy. to Govt., P.W.D., Railway Branch.

Letter—From the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, to the Secretary to the Government of India, Public Works Department, dated 7th June 1890, No. 793 R.

In continuation of endorsement No. 496 R., dated 14th April 1890, I am directed to address you in connection with the claim of the Provincial Government to be reimbursed the amount spent from Provincial revenues on earthwork on the Villupuram-Guntakal Railway between Guntakal and Dharmavaram.

2. I am to say that the Madras Government claims reimbursement in full of the sums then spent on work done between these places, together with percentages for establishment and tools and plant as debited in 1886.

3. In the note accompanying the provisional estimates forwarded with the above endorsement, the Chief Engineer, Villupuram-Guntakal Railway, proposes to deduct from the recorded quantities of work done such portions as are not utilized, owing to change of alignment, in the line as now under construction and to allow for the balance only 4 rupees per 1,000 cubic feet instead of the rate Rs. 7-1-2 recorded in the completion reports in G.O., dated 19th May 1886, No. 411 R., of which copy is enclosed. A reference to those reports will show that the figures dealt with in the Chief Engineer's note refer to the third completion report recorded in that order, and that he makes no mention of the other two items, the first of which, that for training banks, &c., at the site of the Pennér bridge, undoubtedly covers work done between Guntakal and Dharmavaram. Work between Dharmavaram and Hindupur is of course properly deducted.

4. With regard to exclusion of claim for work discarded on account of change of alignment, I am to submit that the Provincial claim is not affected. The work was done in 1886 on sanctioned estimates and alignment and by the Government of India Engineers; and those of the present day, if a change of alignment seems to them good, must take into consideration in deciding as to its advisability, the cost of abandoning the work already done. The Provincial Government cannot fairly be put to loss because Engineers differ, nor can the Government of India with justice refuse to carry out its promise to repay so far as the work done was in accordance with the sanctioned surveys and estimates. The same argument applies to the work done at the Pennér bridge site.

5. With regard to the rate, I am to point out that that given in the completion report is recorded specifically as being the normal rate at the time, and that the fact, if it be a fact, that the work can be done now 5 years later, at Rs. 4 per 1,000 cubic feet, does not affect at all the Provincial claim. The Government of India is bound by the certificate of its then Engineer-in-Chief. The normal cost which was agreed to be repaid was ascertained and recorded at the time in anticipation of the present case; and I am to submit that the Provincial Government is entitled to repayment in accordance with the record then made.

Read—also the following paper:—

From the Secretary to the Government of India, Public Works Department (Railway Construction), to the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, dated Simla, 14th August 1890, No. 719 R.C.

I am directed to acknowledge the receipt of your letter No. 793 R., dated 7th June 1890, regarding the claim of the Government of Madras to be reimbursed the amount spent from Provincial funds in 1884-85 and 1885-86 on earthwork on the Villupuram-Guntakal Railway between Guntakal and Dharmavaram.

2. It is observed that the refund claimed amounts to Rs. 2,23,943, and is made up of the following items:—

		RS.
(1)	Pennér training works, 4,214,838 cubic feet, at Rs. 5-14-7 per 1,000 cubic feet .. .. =	24,918
(2)	Collection of ballast, 141,541 cubic feet, at Rs. 1-4-4 per 100 cubic feet .. .. =	1,801
(3)	Earthwork, 29,211,215 cubic feet, *less* 7,557,478 cubic feet (presumably) used on Dharmavaram-Hindupur section, 21,653,737 cubic feet, at Rs. 7-1-2 per 1,000 cubic feet .. =	1,53,155
(4)	Percentage for establishment (23) and plant ($1\frac{1}{2}$) .. .. =	44,069

3. The Government of India is prepared to refund to the Government of Madras the value of the entire work on the railway between Guntakal and Dharmavaram, which was borne by Provincial funds in the first instance, in accordance with Revenue and Agricultural Department telegram, dated 28th January 1885, but considers that the amount to be reimbursed should be calculated on the rates at which work could have been done at in time of plenty and not on the normal rates prevailing at a time

of famine. It is thought therefore that, in the absence of any reason for supposing that the cost of labor has considerably decreased since 1886, the amount to be refunded should be based on the present actual value of the work, any increase in cost due to the employment of unskilled or famine labor being borne by the Provincial Government.

4. Calculated on the above basis, the sum which the Government of India proposes to refund to the Government of Madras in satisfaction of its claim is Rs. 1,31,067. This amount is arrived at as follows:—

	Rs.
(1) Pennér training works, 4,214,838 cubic feet, at Rs. 4 per cent.	= 16,859
(2) Collection of ballast, 141,541 cubic feet, at Rs. 1-4-4 per cent.	= 1,801
(3) Earthwork, 21,653,737 cubic feet, at Rs. 4 per cent.	= 86,615
(4) Percentage for establishment and plant, at 24½ per cent. ..	= 25,792

Order—dated 9th September 1890, No. 1341 R., Public Works.

Communicated to the Consulting Engineer for Railways with reference to his endorsements as under:—

No. 151, dated 4th March 1890.
„ 216 „ 25th „ „
„ 264 „ 17th April „

2. The Government accepts the offer of the Government of India to reimburse the sum of Rs. 1,31,067, being a portion of the amount expended from Provincial funds in 1884-85 and 1885-86 on earthwork on the Villupuram-Guntakal Railway between Guntakal and Dharmavaram.

3. The Financial Department will arrange to finally debit the Provincial Government with the balance of the claim (viz., Rs. 92,876) made by this Government in Proceedings Nos. 792-93 R., dated 7th June 1890.

(True Extract.)

(Signed) SIDNEY SMITH, Major, R.E.,
Under Secy. to Govt., P.W.D., Railway Branch.

To the Consulting Engineer for Railways.
„ Examiner, Guaranteed Railway Accounts.
„ Examiner, Public Works Accounts.
„ Financial Department.

ORDER—dated 15th October 1890, No. 720, Financial.

Communicated to the Accountant-General who will take credit for the payment from Imperial funds, amounting to 1·31 lakh, in the revised estimate under *I. Land Revenue—Adjustments.*

2. The remainder of the original debit to Provincial funds will hold good.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Accountant-General.
„ Public Works Department (Railways).

ENDORSEMENT—dated 15th October 1890, No. 720A, Financial.

Copy to the Government of India, Department of Finance and Commerce.

J. F. PRICE,
Chief Secretary.

Exd. P. L. Pereira.

Order No 1752 R 11th Nov/90.

Communicated to the Consulting Engineer for Railways for information with reference to Pros. No 1541 R, dated 9th Sept/90.

J. G.
Offg: R.

Govt. of {1890} Madras.

FINANCIAL.

Issued

Recd. Encl.

G.O., &c., 15th October 1890,
Nos. 720, 720A.

OCTOBER.

1892

Villupuram-Guntakal State Railway.

Communicating to the Accountant-General, with instructions, Public Works Department proceedings communicating, with remarks, to the Consulting Engineer for Railways, proposal of the Government of India to refund Rs. 1,31,067 of the amount spent from Provincial funds on earthwork on the — between Guntakal and Dharmavaram.

To The Consulting Engr for Rys:
" Exam: Guard Rly: accts
" — Do. P. W. accts:

27TH NOVEMBER 1890, No. 1892 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper :—

G.O., dated 18th November 1890, No. 831, Financial.

From the Accountant-General, Madras, dated 31st October 1890, No. 2492.

With reference to Proceedings of Government, No. 720, dated the 15th October 1890, in which I am asked to take credit for the payment from Imperial funds of Rs. 1,31,000 in my revised estimate, under I. Land Revenue, Adjustments, against expenditure met from Provincial revenues in 1884-85 and 1885-86 on earth-work in the Villupuram-Guntakal Railway, I have the honor to report that on receipt of the Government of India sanction to the refund, communicated to me by the Department of Finance and Commerce, in No. 4512 of the 19th September 1890, I carried out the adjustment in my appropriation report on the accounts of 1889-90, as the accounts of that year had not been finally closed and the appropriation report is intended to be as complete as possible.

Order—dated 18th November 1890, No. 831, Financial.

Recorded.

(True Extract.)

(Signed) A. BUTTERWORTH,
Ag. Assistant Secretary.

ORDER—dated 27th November 1890, No. 1892 R., Public Works.

Communicated to the Consulting Engineer for Railways with reference to Proceedings No. 1752 R., dated 11th November 1890.

(True Extract.)

(Signed) T. GRACEY, Lieut.-Colonel, R.E.,
Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.
" Examiner, Guaranteed Railway Accounts.

Exd. J. Moses.
Spare Copies

RAILWAY.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated November, 27th.

Recd. *Encl.*

G.O., 27th Nov. 1890, No. 1892 R.

NOVEMBER.

Villupuram-Guntakal State Railway

Proceedings in the Financial Department recording letter from the Accountant-General reporting the adjustment in his appropriation report of 1889-90 of the amount credited from Imperial funds against expenditure in 1884-85 and 1885-86 on earth-work on the —, communicated to the Consulting Engineer for Railways.

Financial Department.

CHIEF SECRETARIAT. MADRAS.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following paper:—

From the Accountant General, Madras, dated 31st October 1890 No. 2492.

With reference to proceedings of Government No. 720, dated the 15th October 1890, in which I am asked to take credit for the payment from Imperial funds of Rs. 1,31,000 in my Revised Estimate, under I Land Revenues. Adjustments, against expenditure met from Provincial revenues in 1884-85 and 1885-86 on earthwork in the Villupuram-Guntakal Railway, I have the honor to report that on receipt of the Government of India sanction to the refund, communicated to me by the Department of Finance and Commerce, in No. 4512, of the 19th September 1890, I carried out the adjustment in my appropriation Report on the accounts of 1889-90, as the Accounts of that year had not been finally closed, and the Appropriation Report is intended to be as complete as possible.

Order 18th November 1890 No. 831

Recorded

(True Extract)

A. Huthwaite

Asst. Secretary

To
The P. W. (Ry.) Dept.
& Accountant General

[61]

Govt. of {18 } Madras.

To

The P.W. Dept

Proceedings, dated 18—11—1890
No. 831

Subject.

A No 1892 Rd/27 Revs' 90

Communicated to the Consulting Engineer for Railways with reference to Progs: No: 1752 R dt 11th November 1890.

Recording letter from the A.G. reporting the adjustment in his appropriation report of 1889-90 of the amount credited from Imperial funds against certain expenditure in 1884/85

A. No 1892 Rd/27 Revs' 90.

No. 1752 R dt 11-11-90
" 1341 R dt 9-9-90

2o The Comptroller for Rep
-ort Govt Accts.

C No. 11103

Govt. of 1890 Madras.

PUBLIC WORKS.

Dated

Rcd. Encl.

G.O., 27. XI. 1890, No. 1892 R.

Villupuram - Cuddalore State Railway

[illegible] sup in the Financial dept recording letter from the Accountant Genl reporting the adjustment in his appropriation account upto 89-90 of the amount credited from Imperial funds against ~~certain~~ expenditure in 1884-85 & 1885-86 on earthwork in the command to the C. Exn Ry

All E.J.C. 28/11/90

5TH MAY 1888, No. 370 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

READ—the following paper :—

From the Consulting Engineer for Railways, dated Madras, 17th April 1888, No. 116.

STATEMENT of late trains on the Madras Railway for the years 1886 and 1887.

Description.	JANUARY 1886.									FEBRUARY 1886.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	62	..	3	..	..	..	3	71	4·8	56	..	..	1	..	..	1	35	1·8
Salem and Coimbatore mixed	62	..	..	..	..	..	..	..	..	56	..	..	..	..	..	..	..	..
Pódanúr and Beypore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Through passenger	62	..	..	..	1	..	1	75	1·6	56	1	1	..	..	..	2	45	3·6
Madras and Arkónam mixed	62	2	2	..	..	..	4	77	6·4	56	1	4	1	..	..	6	144	10·7
Arkónam and Vellore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North-west line mail	62	..	..	..	..	1	1	155	1·6	56	..	..	..	..	..	..	..	..
Arkónam and Cuddapah mixed	62	..	2	..	..	..	2	42	3·2	56	..	..	..	..	..	..	..	..
Madras and Cuddapah do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do. and Rénigunta do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuddapah and Raichur do.	62	..	1	1	..	..	2	51	3·2	56	..	1	..	..	..	1	20	1·8
Bellary mixed	62	..	1	..	..	..	1	18	1·6	56	..	..	..	..	..	..	..	..
Do. mail	62	..	..	..	..	..	..	..	..	56	1	..	1	..	..	2	53	3·6
Bangalore branch mail	62	..	..	..	..	..	..	..	..	56	..	2	..	..	..	2	46	3·6
Do. do. mixed	62	..	2	..	..	..	2	34	3·2	56	1	..	2	..	..	3	79	5·3
Nílgiri do. mail	62	..	1	1	..	..	2	53	3·2	56	1	2	1	..	..	4	110	7·2
Total ..	744	2	12	2	1	1	18	576	2·4	672	5	10	6	..	..	21	532	3·1

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	MARCH 1886.									APRIL 1886.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	62	..	..	1	..	..	1	33	1·6	60	..	1	..	..	..	1	20	1·6
Salem and Coimbatore mixed	62	1	..	..	..	..	1	15	1·6	60	1	..	..	..	..	1	15	1·6
Pódanúr and Beypore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Through passenger	62	..	4	4	..	1	9	404	14·5	60	3	1	..	..	..	..	..	..
Madras and Arkónam mixed	62	..	5	1	..	..	6	143	9·6	60	1	4	1	2	1	7	231	11·6
Arkónam and Vellore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	145	10·0
North-west line mail	62	1	1	..	..	..	2	35	3·2	60	1	..	..	..	1	..	..	..
Arkónam and Cuddapah mixed	62	1	3	2	1	..	7	222	11·3	60	1	1	..	..	..	3	302	5·0
Madras and Cuddapah do.	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	35	3·3
Do. and Rénigunta do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuddapah and Raichur do.	62	1	..	1	1	..	3	123	4·8	60	1	2	..	..	..	3	65	5·0
Bellary mixed	62	..	3	..	..	..	3	65	4·8	60	2	5	2	..	..	9	207	15·0
Do. mail	62	..	1	3	..	..	4	165	6·4	60	..	1	2	1	..	4	177	6·6
Bangalore branch mail	62	2	2	..	..	..	4	80	6·4	60	..	1	..	..	..	1	28	1·6
Do. do. mixed	62	1	3	1	2	..	7	268	11·3	60	1	1	..	..	..	2	34	3·3
Nilgiri do. mail	62	..	..	1	..	..	1	40	1·6	60	1	1	..	..	..	2	43	3·3
Total ..	744	7	22	14	4	1	48	1,593	6·4	720	12	18	7	3	1	41	1,302	5·7

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	MAY 1886.									JUNE 1886.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	62	1	..	..	..	..	1	15	1·6	60	..	4	3	1	..	8	292	13·3
Salem and Coimbatore mixed	62	..	..	..	..	..	..	..	..	60	..	1	1	1	..	3	155	5·0
Pódanúr and Beypore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Through passenger	62	2	5	3	1	..	11	338	17·7	60	2	..	6	6	2	4	1,081	33·3
Madras and Arkónam mixed	62	3	9	3	1	..	16	444	25·8	60	..	11	3	..	..	14	386	23·3
Arkónam and Vellore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North-west line mail	62	..	2	5	..	..	7	248	11·3	60	..	2	..	..	..	2	38	3·3
Arkónam and Cuddapah mixed	62	..	9	3	..	..	12	316	19·3	60	1	9	2	..	..	12	277	20·0
Madras and Cuddapah do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do. and Rénigunta do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuddapah and Raichur do.	62	4	1	2	1	..	8	255	12·9	60	1	1	3	2	..	7	284	11·6
Bellary mixed	62	..	1	4	..	..	5	173	8·0	60	1	6	4	1	..	12	380	20·0
Do. mail	62	..	3	..	1	..	4	138	6·4	60	1	11	5	..	..	17	490	28·3
Bangalore branch mail	62	..	2	..	..	..	2	45	3·2	60	..	1	..	1	..	2	83	3·3
Do. do. mixed	62	2	5	5	..	..	12	325	19·3	60	1	9	6	2	2	20	811	33·3
Nilgiri do. mail	62	..	..	1	..	..	1	43	1·6	60	..	..	2	3	..	5	334	8·3
Total ..	744	12	37	26	4	..	79	2,340	10·6	720	7	61	35	13	6	122	4,611	17·0

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	JULY 1886.									AUGUST 1886.								
	Number of trains.	Late minutes.						Percentage of late trains.	Total minutes late.	Number of trains.	Late minutes.						Percentage of late trains.	Total minutes late.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	62	1	3	2	..	..	6	155	9·6	62	4	3	1	..	..	8	193	12·9
Salem and Coimbatore mixed	62	1	1	..	..	..	2	45	3·2	62	..	..	2	..	..	2	69	3·2
Pódanúr and Beypore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Through passenger	62	2	6	5	1	..	14	486	22·6	62	..	6	7	..	1	14	572	22·6
Madras and Arkónam mixed	62	3	4	2	..	..	9	230	14·5	62	..	4	..	..	..	4	85	6·4
Arkónam and Vellore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North-west line mail	62	1	3	2	..	..	6	193	9·6	62	..	1	2	2	1	6	345	9·6
Arkónam and Cuddapah mixed	62	..	..	..	..	..	..	..	..	62	..	1	..	..	..	2	130	3·2
Madras and Cuddapah do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do. and Rénigunta do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuddapah and Raichur do.	62	..	5	5	1	3	14	792	22·6	62	3	1	3	..	2	9	404	14·5
Bellary mixed	62	3	3	2	..	1	9	292	14·5	62	..	1	3	..	..	4	109	6·4
Do. mail	62	..	3	4	1	..	8	295	12·9	62	..	5	..	..	..	5	116	8·0
Bangalore branch mail	62	..	1	1	..	..	2	72	3·2	62	..	1	2	..	..	3	117	4·8
Do. do. mixed	62	2	3	4	1	..	10	345	16·1	62	..	2	2	1	1	6	355	9·6
Nilgiri do. mail	62	..	3	..	1	..	4	141	6·4	62	..	1	..	1	..	2	89	3·2
Total ..	744	13	35	27	5	4	84	3,046	11·3	744	7	26	22	4	6	65	2,584	8·7

Statement of late trains on the Madras Railway for the years 1886 and 1887—*(continued)*.

Description.	SEPTEMBER 1886.									OCTOBER 1886.								
	Number of trains.	Late minutes.						Percentage of late trains.	Total minutes late.	Number of trains.	Late minutes.						Percentage of late trains.	Total minutes late.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	60	..	..	1	..	..	1	35	1·6	62	..	2	..	1	..	3	125	4·8
Salem and Coimbatore mixed	60	..	..	..	..	..	..	..	..	62	..	2	1	2	..	5	228	8·0
Pódanúr and Beypore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Through passenger	60	1	2	2	1	1	7	336	11·6	62	2	3	3	2	..	10	387	16·0
Madras and Arkónam mixed	60	3	2	..	..	..	5	87	8·3	62	..	..	..	..	..	..	..	..
Arkónam and Vellore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North-west line mail	60	..	3	2	..	..	5	174	8·3	62	..	..	..	1	..	1	70	1·6
Arkónam and Cuddapah mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madras and Cuddapah do.	60	1	..	..	..	..	1	15	1·6	62	..	1	..	..	..	1	20	1·6
Do. and Rénigunta do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuddapah and Raichur do.	60	..	1	..	..	2	3	224	5·0	62	..	..	1	1	..	2	102	3·2
Bellary mixed	60	1	2	1	..	..	4	116	6·6	62	..	2	2	..	..	4	110	6·4
Do. mail	60	..	6	2	1	..	9	274	15·0	62	1	2	..	..	1	4	184	6·4
Bangalore branch mail	60	..	1	..	..	..	1	27	1·6	62	..	4	1	..	..	5	120	8·0
Do. do. mixed	60	..	4	2	..	..	6	159	10·0	62	1	2	3	..	1	7	400	11·3
Nilgiri do. mail	60	1	1	..	..	..	2	33	3·2	62	..	1	..	1	..	2	87	3·2
Total ..	720	7	22	10	2	3	44	1,480	6·1	744	4	19	11	8	2	44	1,833	5·9

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	NOVEMBER 1886.									DECEMBER 1886.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	60	2	2	1	..	..	5	135	8·3	62	..	3	1	1	1	6	327	9·6
Salem and Coimbatore mixed	60	1	2	1	..	..	4	92	6·6	62	..	2	..	..	1	3	257	4·8
Pódanúr and Beypore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Through passenger	60	2	2	3	6	..	13	664	21·6	62	2	4	6	4	..	16	725	25·8
Madras and Arkónam mixed	60	2	5	8	2	..	17	758	28·3	62	1	8	..	3	..	12	408	19·3
Arkónam and Vellore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North-west line mail	60	1	3	5	2	14	25	5,060	41·6	62	..	..	..	1	..	2	265	4·8
Arkónam and Cuddapah mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madras and Cuddapah do.	60	..	8	8	3	3	22	1,257	36·6	62	3	2	1	..	..	6	125	9·6
Do. and Rénigunta do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuddapah and Raichur do.	60	2	1	1	1	2	7	588	11·6	62	1	3	..	2	..	6	226	9·6
Bellary mixed	60	..	5	1	..	1	7	304	11·6	62	..	7	1	..	1	9	280	14·5
Do. mail	60	..	2	..	2	2	6	409	10·0	62	..	2	1	..	..	3	84	4·8
Bangalore branch mail	60	..	1	..	1	..	2	79	3·3	62	..	2	..	1	..	3	131	4·8
Do. do. mixed	60	..	2	3	1	..	6	250	10·0	62	..	5	6	3	..	14	572	22·6
Nilgiri do. mail	60	..	..	..	..	..	..	..	..	62	..	..	..	..	..	1	..	..
Total ..	720	10	33	31	18	22	114	9,596	16·0	744	7	38	17	14	5	81	3,400	10·9

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	JANUARY 1887.									FEBRUARY 1887.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	62	..	2	1	..	..	3	100	4·8	56	1	1	..	..	..	2	45	3·6
Salem and Coimbatore mixed	62	..	2	..	..	..	2	38	3·2	56	..	..	..	..	..	..	..	..
Pódanúr and Beypore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Through passenger	62	..	4	10	..	..	14	566	22·6	56	1	5	5	..	1	12	442	21·4
Madras and Arkónam mixed	62	1	..	..	..	..	1	15	1·6	56	1	..	..	..	..	1	15	1·8
Arkónam and Vellore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North-west line mail	62	..	..	1	..	..	1	38	1·6	56	..	1	2	..	..	3	137	5·3
Arkónam and Cuddapah mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madras and Cuddapah do.	62	1	..	1	..	..	2	70	3·2	56	1	2	..	..	..	3	67	5·3
Do. and Rénigunta do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuddapah and Raichur do.	62	..	1	1	..	..	2	82	3·2	56	2	..	..	..	..	2	30	3·6
Bellary mixed	62	..	..	..	..	..	..	..	..	56	1	2	..	..	..	3	53	5·3
Do. mail	62	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bangalore branch mail	62	2	2	1	..	..	5	114	8·0	56	..	1	..	..	..	1	30	1·8
Do. do. mixed	62	1	7	9	2	1	20	768	32·2	56	1	4	7	..	..	12	342	21·4
Nilgiri do. mail	62	..	2	1	..	..	3	101	4·8	56	1	1	..	..	..	2	35	3·6
Total ..	744	5	20	25	2	1	53	1,892	7·1	672	9	17	14	..	1	41	1,196	6·1

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	MARCH 1887.									APRIL 1887.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	62	..	2	2	1	1	6	421	9·6	60	..	2	3	..	..	5	177	8·3
Salem and Coimbatore mixed	62	..	4	..	..	..	4	87	6·4	60	2	2	..	..	..	4	72	6·6
Pódanúr and Beypore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Through passenger	62	..	5	8	3	1	17	775	27·4	60	..	9	2	1	1	13	487	21·6
Madras and Arkónam mixed	62	1	..	2	..	..	3	90	4·8	60	..	3	..	..	..	3	70	5·0
Arkónam and Vellore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North-west line mail	62	1	4	..	1	..	6	170	9·6	60	4	5	5	..	1	15	505	25·0
Arkónam and Cuddapah mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madras and Cuddapah do.	62	1	..	..	..	..	1	15	1·6	60	1	2	..	..	..	3	56	5·0
Do. and Rénigunta do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuddapah and Raichur do.	62	..	6	1	1	..	8	273	12·9	60	3	5	6	1	1	16	671	26·6
Bellary mixed	62	2	1	1	..	..	4	83	6·4	60	2	11	4	..	1	18	590	30·0
Do. mail	62	..	3	2	1	..	6	210	9·6	60	1	13	4	2	..	20	599	33·3
Bangalore branch mail	62	1	1	1	..	..	3	73	4·8	60	..	2	..	..	..	2	53	3·2
Do. do. mixed	62	2	8	7	1	1	19	682	30·6	60	2	14	10	..	..	26	713	43·3
Nilgiri do. mail	62	..	6	..	1	..	7	219	11·3	60	..	4	2	..	1	7	277	11·6
Total ..	744	8	40	24	9	3	84	3,098	11 3	720	15	72	36	4	5	132	4,270	18·0

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	MAY 1887.									JUNE 1887.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	62	..	..	2	..	..	2	102	3·2	60	..	2	1	1	..	4	158	6·6
Salem and Coimbatore mixed	62	2	..	..	..	..	2	30	3·2	60	2	3	2	..	..	7	181	11·6
Pódanúr and Beypore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Through passenger	62	3	11	5	..	..	19	523	30·6	60	3	9	10	4	1	27	1,095	45·0
Madras and Arkónam mixed	62	..	2	..	..	..	2	46	3·2	60	4	12	1	..	..	17	367	28·3
Arkónam and Vellore do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North-west line mail	62	2	6	7	1	1	17	718	27·4	60	2	8	9	10	2	31	1,664	51·6
Arkónam and Cuddapah mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madras and Cuddapah do.	62	1	2	1	..	..	4	108	6·4	60	1	15	6	..	..	22	603	36·6
Do. and Rénigunta do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuddapah and Raichur do.	62	2	6	7	5	3	23	1,344	39·1	60	..	4	6	6	12	28	2,742	46·6
Bellary mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do. mail	62	2	6	7	..	..	15	596	65·5	..	..	..	..	..	..	..	..	..
Bangalore branch mail	29	..	11	8	..	..	19	520	43 0	..	..	..	..	..	..	..	..	..
Do. do. mixed	28	..	4	7	1	..	12	138	8·0	60	1	2	2	..	..	5	162	8·3
Nílgiri do. mail	62	2	1	2	..	..	5	891	37·1	60	3	10	6	1	..	20	606	33·3
	62	1	8	9	5	..	23	137	4·8	60	..	1	..	..	..	1	27	1·6
	62	..	2	..	1	..	3									162	7,605	27·0
Total ..	677	13	53	48	13	4	131	5,153	19·3	600	16	66	43	22	15			

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	JULY 1887.									AUGUST 1887.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	62	1	1	1	..	..	3	68	4·8	62	..	..	..	..	..	..	..	..
Salem and Coimbatore mixed	62	2	3	..	..	..	5	89	8·0	62	3	1	1	1	..	6	193	9·6
Pódanúr and Beypore do.	62	1	5	5	..	..	11	345	17·7	62	4	..	3	..	..	7	200	11·3
Through passenger	62	1	6	11	1	3	22	1,070	35·5	62	..	9	3	1	1	14	551	22·6
Madras and Arkónam mixed	31	..	4	1	..	..	5	147	16·1	31	..	3	3	..	..	6	171	19·4
Arkónam and Vellore do.	62	6	10	19	1	3	39	1,517	62·9	62	1	15	12	3	1	32	1,206	51·6
North-west line mail	62	2	7	3	3	..	15	568	24·2	62	1	7	3	1	2	14	643	22·6
Arkónam and Cuddapah mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madras and Cuddapah do.	62	2	7	1	..	..	10	228	16·0	62	1	5	..	..	..	6	121	9·6
Do. and Rénigunta do.	62	2	7	2	..	..	11	276	17·6	62	1	4	6	..	..	11	340	17·7
Cuddapah and Raichur do.	62	2	4	10	5	10	31	2,547	50·0	62	2	5	3	2	1	13	615	20·9
Bellary mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do. mail	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bangalore branch mail	62	..	..	1	..	..	1	40	1·6	62	..	1	..	1	..	2	105	3·2
Do. do. mixed	62	..	10	5	..	..	15	396	24·2	62	2	5	..	..	..	7	132	11 3
Nílgiri do. mail	62	..	2	..	..	..	2	43	3·2	62	..	2	..	..	..	2	44	3·2
Total ..	775	19	66	59	10	16	170	7,334	21·9	775	15	57	34	9	5	120	4,321	15·5

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	SEPTEMBER 1887.									OCTOBER 1887.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	60	..	1	..	1	2	4	380	6·6	62	1	2	1	..	1	5	451	8·0
Salem and Coimbatore mixed	60	..	..	2	..	..	2	100	3·3	62	1	1	..	..	..	2	32	3·2
Pódanúr and Beypore do.	60	2	7	2	2	..	13	392	21·6	62	3	6	5	1	..	15	447	24·2
Through passenger	60	..	2	5	2	1	10	560	16·6	62	..	5	..	1	1	7	291	11·3
Madras and Arkónam mixed	30	..	3	1	..	..	4	101	13·3	31	1	2	..	..	..	3	67	9·7
Arkónam and Vellore do.	60	2	12	6	..	1	21	690	35·0	62	3	12	8	..	..	23	668	37·1
North-west line mail	60	..	..	6	7	1	14	887	23·3	62	..	6	3	1	..	10	323	16·1
Arkónam and Cuddapah mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madras and Cuddapah do.	60	1	2	..	..	..	3	63	5·0	62	..	3	..	..	..	3	65	4·8
Do. and Rénigunta do.	60	1	5	..	..	..	6	113	10·0	62	1	8	..	..	..	9	194	14·5
Cuddapah and Raichur do.	60	..	1	6	5	3	15	1,172	25·0	62	1	2	2	1	..	6	228	9·7
Bellary mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do. mail	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bangalore branch mail	60	..	..	..	..	2	2	383	3·3	62	..	2	1	1	..	4	155	6·4
Do. do. mixed	60	1	2	..	..	1	4	178	6·6	62	..	2	1	..	..	3	91	4·8
Nilgiri do. mail	60	..	2	1	..	1	4	230	6·6	62	..	1	..	..	1	2	405	3·2
Total ..	750	7	37	29	17	12	102	5,249	13·6	775	11	52	21	5	3	92	3,417	11·9

Statement of late trains on the Madras Railway for the years 1886 and 1887—*cont.*

Description.	NOVEMBER 1887.									DECEMBER 1887.								
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.		
South-west line mail	60	..	1	1	..	..	2	57	3·3	62	2	5	2	1	..	10	332	16·1
Salem and Coimbatore mixed	60	1	1	1	..	..	3	68	5·0	62	..	2	..	..	..	2	33	3·2
Pódanúr and Beypore do.	60	3	16	6	..	..	25	685	41·6	62	6	7	3	..	..	16	382	25·8
Through passenger	60	1	3	3	..	..	7	187	11·6	62	..	6	2	1	..	9	316	14·5
Madras and Arkónam mixed	30	..	1	2	..	..	3	95	10·0	31	..	4	2	..	..	6	167	19·3
Arkónam and Vellore do.	60	5	11	7	..	1	24	779	40·0	62	3	9	11	2	..	25	851	40·3
North-west line mail	60	..	..	1	..	..	1	40	1·6	62	..	9	4	3	4	20	1,211	32·2
Arkónam and Cuddapah mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madras and Cuddapah do.	60	1	..	..	..	..	1	15	1·6	62	..	1	..	..	..	1	29	1·6
Do. and Rénigunta do.	60	..	1	..	..	..	1	23	1·6	62	..	7	3	3	1	14	590	22·6
Cuddapah and Raichur do.	60	2	2	1	..	..	5	117	8·3	62	..	2	..	..	..	2	40	3·2
Bellary mixed	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do. mail	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bangalore branch mail	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do. do. mixed	60	..	1	..	..	..	1	23	1·6	62	..	5	1	1	..	7	249	11·3
Nilgiri do. mail	60	..	..	1	..	..	1	48	1·6	62	1	5	2	1	..	9	304	14·5
	60	..	..	..	..	..	..	..	..	62	..	2	..	1	1	4	231	6·4
Total ..	750	13	37	23	..	1	74	2,137	9·8	775	12	64	30	13	6	125	4,735	16·1

Submitted for the information of Government.

2. The subject of the punctual running of the trains is receiving the careful attention of the Agent and Manager, Madras Railway, and it is hoped that the time-table recently introduced will effect an improvement.

ORDER—dated 5th May 1888, No. 370 R., Public Works.

In future the late train return will be submitted quarterly for the orders of Government, and His Excellency the Governor in Council hopes that the periodical review of the working of the train service thus ensured will tend to secure better results than those recorded in the statement now submitted.

(True Extract.)

(Signed) C. J. SMITH, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.

Exd. P. L. Pereira.

RAILWAY.

Gobt. of {1888} Madras.

PUBLIC WORKS.

Dated May, 5th.

Recd. *Encl.*

G.O., 5th May 1888, No. 370 R.

1894

MAY.

Madras Railway

Statement of late trains.—Orders on the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper :—

From the Consulting Engineer for Railways, dated Madras, 19th November 1890, No. 821.

Statement of late Trains on the Madras Railway for the quarter ending 30th September 1890.

STATEMENT of late Trains on the Madras Railway for the quarter ending 30th September 1890.

Description.	JULY 1890.										AUGUST 1890.										SEPTEMBER 1890.									
	Number of trains.	Late minutes.						Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.							Total minutes late.	Percentage of late trains.	Number of trains.	Late minutes.							Total minutes late.	Percentage of late trains.
		15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.				15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.					15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.			
South-West Line .. (Mail)	62	..	..	..	..	..	..	..	..	62	..	..	..	..	..	..	..	..	60	..	..	..	..	..	..	..	..	..	..
Salem-Coimbatore .. (Mixed)	62	..	..	..	..	..	..	..	..	62	..	..	..	..	..	..	..	..	60	..	..	..	..	..	..	..	..	..	..
Pódanúr and Calicut .. (Do.)	62	..	..	1	..	..	1	45	1·61	62	..	1	..	..	..	1	114	3·22	60	..	1	..	..	..	1	27	1·66		
Tirúr and Calicut .. (Do.)	62	..	..	..	..	..	..	..	..	62	..	..	..	..	..	..	..	..	60	..	1	..	..	..	..	1	2	70	3·33	
Madras and Mettupálaiyam	62	..	..	4	1	..	8	321	12·90	62	..	1	4	..	..	6	312	9·68	60	..	..	..	2	..	3	167	5·00		
Madras and Káṭpádi .. (Mixed)	62	..	1	..	2	..	3	430	4·84	62	..	..	1	..	..	2	108	4·84	30	..	..	..	1	..	2	155	3·33		
Madras to Rénigunta .. (Do.)	31	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..	..	..	30	..	..	..	..	..	..	..	..		
North-West Line .. (Mail)	62	..	1	1	..	..	2	63	3·22	62	..	..	..	..	..	..	65	4·84	60	..	3	1	..	..	6	496	10·00		
Madras and Cuddapah .. (Mixed)	62	..	..	..	..	..	..	..	..	62	..	..	1	..	..	3	234	4·84	60	..	1	1	..	..	1	25	1·66		
Cuddapah and Raichur .. Do.	62	..	1	..	..	..	1	118	3·22	62	..	..	..	..	..	3	87	4·84	60	..	1	1	..	..	2	121	3·33		
Bangalore Branch .. (Mail)	62	..	..	..	1	..	2	65	1·61	62	..	..	..	..	..	..	..	..	60	..	..	..	..	..	..	..	..		
Do. do. .. (Passenger)	62	..	..	..	..	..	..	..	..	62	..	..	..	..	..	..	..	..	60	..	..	..	..	..	..	138	3·33		
Nilgiri do. .. (Mail)	62	..	..	1	..	..	1	60	1·61	62	..	..	..	..	..	..	..	..	60	..	..	..	..	..	..	..	..		
Total ..	775	..	6	7	2	3	18	1,102	2·32	775	..	8	4	..	..	12	920	2·58	750	..	7	5	3	4	19	1,199	2·53		

(Signed) SIDNEY SMITH, Major, R.E.,
for Offg. Consulting Engineer for Railways.

MADRAS,
19th November 1890.

Submitted for the information of Government with reference to G.O., No. 370 R., dated 5th May 1888.

2. During the quarter under review 2·5 per cent. of all the trains on the Madras Railway ran late, an improvement on the result of the preceding quarter which was about 3·6 per cent.

3. The most unpunctual train was the through passenger between Madras and Mettupálaiyam.

ORDER—dated 27th November 1890, No. 1891 R., Public Works.

Recorded.

(True Extract.)

Major, R.E.,
Under-Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.

Exd. J. Moses.
Spare Copies

RAILWAY.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated November, 27th.

Recd. *Encl.*

G.O., 27th Nov. 1890, No. 1891 R.

NOVEMBER.

Late Trains

Endorsement by the Consulting Engineer for Railways submitting, with remarks, the statement of — on the Madras Railway for the quarter ended the 30th September 1890, recorded.

STATEMENT of late Trains on the Madras Railway for the quarter ending 30th June 1890.

Description.	Number of trains.	Late minutes. 15 minutes.	Above 15 minutes.	Above 30 minutes.	Above 60 minutes.	Above 90 minutes.	Total.	Total minutes late.	Percentage of late trains.
South-West Line .. (Mail)	62	-	-	-	-	-	-	-	-
Salem-Coimbatore .. (Mixed)	62	-	-	-	-	-	-	-	-
Pôdanûr and Calicut .. (Do.)	62	-	1	-	-	-	1	48	1·61
Tirûr and Calicut .. (Do.)	62	-	3	4	-	-	8	321	12·90
Madras and Mettupâlaiyam .. (Mixed)	62	-	-	1	-	2	3	430	4·84
Madras and Kâtpâdi .. (Do.)	31	-	1	-	-	-	1	63	3·22
Madras to Rênigunta .. (Mail)	62	-	1	-	-	1	2	118	3·22
North-West Line .. (Mixed)	62	-	1	-	-	-	1	65	1·61
Madras and Cuddapah .. Do.)	62	-	-	1	-	-	1	66	1·61
Cuddapah and Raichûr .. Mail)	62	-	-	-	-	-	-	-	-
Bangalore Branch .. Do.)	62	-	-	-	-	-	-	-	-
Do. .. Mixed)	62	-	-	-	-	-	-	-	-
Nilgiri do. .. (Mail)	62	-	-	-	-	-	-	-	-
Total ..	775	-	6	7	2	3	18	1102	2·32

MADRAS,
19th August 1890.

(Signed) SIDNEY SMITH, Major R.E.,
for Offg. Consulting Engineer for Railways.

19TH AUGUST 1890, No. 1213 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper:—

From the Consulting Engineer for Railways, dated Madras, 12th August 1890, No. 556.

Statement of late trains on the Madras Railway for the quarter ended the 30th June 1890.

[Statement.

Form No. 2.

PUBLIC WORKS DEPARTMENT.

OFFICE OF CONSULTING ENGINEER FOR RAILWAYS,

Madras, 19th December 1890.

Statement of late trains on the Madras Railway for the quarters ending 30th September 1890

No. 821

SUBMITTED for the information of Government, with reference to G.O. No 370 R dated 8th May 1888.

2. During the quarter under review 2.5 per cent of all the trains on the Madras Railway ran late, an improvement on the result of the preceding quarter which was about 3.6 per cent.

3. The most punctual train was the Down passenger between Madras and Mettupalayam.

Sidney Smith
Major RE
For offg Consulting Engr for Rys

P.W. Cir. No. 11091.

Form No. 3.

A
No 1891 R of 27th Nov 90

Ltr 2nd 1/11/90 K
28/11
Recorded.

K
B.G.R

From

THE CONSULTING ENGINEER
FOR RAILWAYS,
MADRAS,

No. 821

Dated 19th } December 1890
Received 20 }

No. of Enclosures. 1

Subject.

Statement of Cate Traffic on the Madras Railway for the quarter ending 30th September 1890 -

No. 370 R of 5.5.88.

A
No 1891 R of 27th Nov 90.

2. The Comptroller for Rys.
D
5/12

Ltr 21.XI.90
R 26.XI.90

of famine. It is thought therefore that, in the absence of any reason for supposing that the cost of labor has considerably decreased since 1886, the amount to be refunded should be based on the present actual value of the work, any increase in cost due to the employment of unskilled or famine labor being borne by the Provincial Government.

4. Calculated on the above basis, the sum which the Government of India proposes to refund to the Government of Madras in satisfaction of its claim is Rs. 1,31,067. This amount is arrived at as follows:—

	Rs.
(1) Pennér training works, 4,214,838 cubic feet, at Rs. 4 per cent.	= 16,859
(2) Collection of ballast, 141,541 cubic feet, at Rs. 1-4-4 per cent.	= 1,801
(3) Earthwork, 21,653,737 cubic feet, at Rs. 4 per cent.	= 86,615
(4) Percentage for establishment and plant, at 24½ per cent. ..	= 25,792

Order—dated 9th September 1890, No. 1341 R., Public Works.

Communicated to the Consulting Engineer for Railways with reference to his endorsements as under:—

No. 151, dated 4th March 1890.
„ 216 „ 25th „ „
„ 264 „ 17th April „

2. The Government accepts the offer of the Government of India to reimburse the sum of Rs. 1,31,067, being a portion of the amount expended from Provincial funds in 1884-85 and 1885-86 on earthwork on the Villupuram-Guntakal Railway between Guntakal and Dharmavaram.

3. The Financial Department will arrange to finally debit the Provincial Government with the balance of the claim (viz., Rs. 92,876) made by this Government in Proceedings Nos. 792-93 R., dated 7th June 1890.

(True Extract.)

(Signed) SIDNEY SMITH, Major, R.E.,
Under Secy. to Govt., P.W.D., Railway Branch.

To the Consulting Engineer for Railways.
„ Examiner, Guaranteed Railway Accounts.
„ Examiner, Public Works Accounts.
„ Financial Department.

ORDER—dated 15th October 1890, No. 720, Financial.

Communicated to the Accountant-General who will take credit for the payment from Imperial funds, amounting to 1·31 lakh, in the revised estimate under *I. Land Revenue—Adjustments.*

2. The remainder of the original debit to Provincial funds will hold good.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Accountant-General.
„ Public Works Department (Railways).

ENDORSEMENT—dated 15th October 1890, No. 720A, Financial.

Copy to the Government of India, Department of Finance and Commerce.

J. F. PRICE,
Chief Secretary.

Exd. P. L. Pereira.

Order No 1752 R 11th Nov/90.

Communicated to the Consulting Engineer for Railways for information with reference to Pros. No 1541 R, dated 9th Sept/90.

J. G.
Offg: R.

Govt. of {1890} Madras.

FINANCIAL.

Issued

Recd. Encl.

G.O., &c., 15th October 1890,
Nos. 720, 720A.

OCTOBER.

1892

Villupuram-Guntakal State Railway.

Communicating to the Accountant-General, with instructions, Public Works Department proceedings communicating, with remarks, to the Consulting Engineer for Railways, proposal of the Government of India to refund Rs. 1,31,067 of the amount spent from Provincial funds on earthwork on the — between Guntakal and Dharmavaram.

To The Consulting Engr for Rys:
" Exam: Guard Rly: accts
" — Do. P. W. accts:

27TH NOVEMBER 1890, No. 1892 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper :—

G.O., dated 18th November 1890, No. 831, Financial.

From the Accountant-General, Madras, dated 31st October 1890, No. 2492.

With reference to Proceedings of Government, No. 720, dated the 15th October 1890, in which I am asked to take credit for the payment from Imperial funds of Rs. 1,31,000 in my revised estimate, under I. Land Revenue, Adjustments, against expenditure met from Provincial revenues in 1884-85 and 1885-86 on earth-work in the Villupuram-Guntakal Railway, I have the honor to report that on receipt of the Government of India sanction to the refund, communicated to me by the Department of Finance and Commerce, in No. 4512 of the 19th September 1890, I carried out the adjustment in my appropriation report on the accounts of 1889-90, as the accounts of that year had not been finally closed and the appropriation report is intended to be as complete as possible.

Order—dated 18th November 1890, No. 831, Financial.

Recorded.

(True Extract.)

(Signed) A. BUTTERWORTH,
Ag. Assistant Secretary.

ORDER—dated 27th November 1890, No. 1892 R., Public Works.

Communicated to the Consulting Engineer for Railways with reference to Proceedings No. 1752 R., dated 11th November 1890.

(True Extract.)

(Signed) T. GRACEY, Lieut.-Colonel, R.E.,
Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.
" Examiner, Guaranteed Railway Accounts.

Exd. J. Moses.
Spare Copies