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MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 10 34-1035	Press
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Dated	18

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
22nd April 1872.*

No. 324. Read the following letter from the Acting Consulting Engineer for Railways, to the Secretary to Government, Public Works Department, dated Madras, 22nd March 1872, No. 144 :—

WITH reference to G. O., No. 3,191 of the 18th December 1871, I have the honour to submit letters* from the Railway Agents, proposing a special rate for the conveyance of materials on construction account.

* Madras Railway, No. 125, dated 23rd February 1872, No. 165, dated 13th March 1872, with one enclosure.
Carnatic Railway, No. 138, dated 31st July 1871, No. 339, dated 12th February 1872.
Great Southern of India Railway, No. 4,316, dated 26th December 1871.

2. The Agent of the Madras Railway, in his letter of the 23rd February, considers that, owing to the miscellaneous character of the material, varying from heavy iron rails to scientific instruments, a rate must be fixed arbitrarily, and recommends the rate of 8 pies per ton per mile, which is at present the lowest ordinary rate for goods.

In reply to the above, I sent to the Agent the calculations that I had made from the Traffic Analysis, showing that the rate arrived at was nearly $5\frac{1}{2}$ pies per ton per mile. The Traffic Manager observes that the Traffic Analysis is no true guide as to the cost of a particular item of traffic, because the charges must be arbitrarily distributed where there are mixed trains of passengers and goods. But the Traffic Manager admits, as quoted in the Agent's letter of 23rd February, that in obtaining the average cost of carrying one ton gross per mile, and that of carrying one ton net, the real cost of hauling one ton net of goods per mile would be much less than the cost of hauling one ton net of passengers; hence, from such data as are obtainable, it appears to me that a rate of $5\frac{1}{2}$ pies per ton per mile fully represents the actual cost of conveyance, with a small margin for contingencies.

The Traffic Manager says that if the Government consider this rate to be sufficient, he presumes that the minimum charge for a waggon of material will be that for $6\frac{1}{4}$ tons. This, in other words, is a proposal for a premium to be given for running half-loaded waggons, and would entirely defeat the object of having one uniform rate.

3. The Traffic Manager quotes $6\frac{1}{4}$ tons as that taken by me to be the average load of a railway material waggon; but as an error was made in giving $6\frac{1}{4}$ instead of $6\frac{3}{4}$ tons, (although the result is very slightly affected,) I will submit my calculations (as corrected) in detail, in order that the Government may take into consideration the process by which the rate has been arrived at, as based on the figures given in the Revenue Analysis.

The quantity of scientific instruments now conveyed in the highest or 5th class can be but very small, in comparison with the mass of permanent-way materials, and may be left out of consideration, or treated as provided for under contingencies.

It is doubtless difficult, as the Traffic Manager observes, to ascertain the actual cost of carrying any particular item of traffic, but a tolerably accurate approximation can be obtained from the half-yearly Traffic Analysis prepared for the Government of India.

In calculating below the probable cost of hauling heavy material, the cost of hauling an average goods vehicle and load is taken as the basis from the analysis.

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22nd April 1872.*

It is assumed that waggons will be run with a full load of 9 tons; and as materials for construction are sent from the coast, while the preponderance of ordinary goods traffic is towards the coast, allowing for empties, the average load may be taken at three-fourths of the full load, or $6\frac{3}{4}$ tons.

A high-sided open goods waggon weighs on an average 5.325 tons, and the average weight of waggon and load of railway material together will be 12.075 tons. Now taking the working expenses in detail, the cost in the Maintenance and Locomotive Departments of hauling an average ordinary traffic goods waggon and load must be increased for a material goods waggon and load in the proportion in which 12.075 tons exceeds the weight of the former.

The carriage and waggon expenses may be increased by half that proportion, while the expenses in the other departments need not be altered.

In the half-year ended December 1870, the average weight of waggon and load is 8.739 tons, and the multiple for maintenance and locomotive charges becomes $\frac{12.075}{8.739} = 1.381$; also that for carriage and waggon expenses is $\frac{1.381+1}{2} = 1.190$.

Details.	Cost per average goods waggon.	Multiply by—	Resulting cost per material waggon.
Maintenance ...	8.07	1.381	11.144
Locomotive ...	10.42	1.381	14.390
Carriage and Waggon ...	1.48	1.190	1.761
Traffic ...	4.25	1	4.250
General ...	1.24	1	1.240
Special and Miscellaneous ...	1.86	1	1.860
Total...	...	...	34.645

Hence the actual cost of hauling a material waggon in that half-year would be 34.645 pies.

In the half-year ending June 1871, the average weight of waggon and ordinary load was 8.634 tons, and as above $\frac{12.075}{8.634} = 1.398$, also $\frac{1.398+1}{2} = 1.199$.

Details.	Cost per average goods waggon.	Multiply by—	Resulting cost per material waggon.
Maintenance ...	8.451	1.398	11.814
Locomotive ...	9.716	1.398	13.582
Carriage and Waggon ...	1.582	1.199	1.896
Traffic ...	4.018	1	4.018
General ...	1.300	1	1.300
Special and Miscellaneous ...	0.911	1	0.911
Total...	...	...	33.521

The actual cost of hauling a material waggon in this half-year will thus be 33.521 pies.

The average of the two half-years then is 34.083 pies, or adding 5 per cent. for contingencies 35.787.

Divide this by the average load in tons, 6.75 tons, and the result is 5.30 pies, the rate per ton per mile.

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22nd April 1872.*

4. The Agent of the Great Southern of India Railway proposes a rate of 9½ pies per ton per mile on the grounds that the cost of carrying a ton in the half-year ending the 30th June 1871 was 9 pies. This is correct, inasmuch as the average load of vehicles in that half-year was 2.27 tons, the average weight of the vehicles being 5.68 tons, and the cost 9.01 pies per ton per mile. But in the previous half-year ending 31st December 1870 average loads of only 1.25 tons of goods were carried on vehicles of an average weight of 5.85 tons at a cost of 16.20 pies per ton per mile.

Thus it is evident that the recorded cost of carriage of goods in one half-year with waggons conveying on an average a very light load, cannot be taken as determining the cost at which materials ought to be conveyed over the line.

5. Railway material will be carried almost entirely up the line from the coast, and the tendency of the present goods traffic is principally down towards the coast. This is shown by the returns of vehicle mileage for the two half-years ending 31st December 1870 and 30th June 1871, namely:—

	First half of 1871.	Second half of 1870.
Loaded—down ...	233.525	194.097
Open-sided and high-sided goods trucks—up ...	34.784	34.293
Empty—down ...	19.493	15.860
Do.—up ...	227.141	181.524

The heavy railway material will be carried chiefly in the high-sided and the open-sided goods waggons; the weight of the former is 5 tons 6 cwt., and that of the latter 4 tons 19 cwt; the average weight may then be taken as 5.2 tons, and the full load as 8 tons; also, making allowance for empty return waggons, it is assumed that the average load of all material waggons will be three-quarters of the full load, or 6 tons; hence the average weight of waggon and load of railway material together will be 11.20 tons.

Now the distributed cost of hauling a goods vehicle and load, 1 mile, was for the—

	HALF-YEAR ENDED		
	31st Dec. 1870.	30th June 1871.	Average.
	Pies.	Pies.	Pies.
Maintenance ...	5.30	4.16	4.73
Locomotive ...	7.82	8.19	8.00
Carriage and Waggon ...	1.19	1.55	1.37
Traffic ...	3.18	3.20	3.19
General ...	2.21	2.53	2.37
Special and Miscellaneous ...	.50	.79	.65
Total...	20.20	20.42	20.31
And the weight of vehicle ...	5.85	5.63	5.76
Do. of load ...	1.25	2.27	1.76
Total of vehicle and load...	7.10	7.95	7.52

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In order to obtain from the known cost of hauling a goods waggon and its load the probable cost of hauling a truck load of railway material, it is assumed that the maintenance and locomotive charges will be increased in proportion to the increased weight of waggon and load; that of the carriage and waggon expenses one-half only will be increased in the same proportion, and that the other charges will not increase. The following then becomes the probable distributed cost:—

		Pics.
Maintenance	$4.73 \times \frac{11.20}{7.62}$	= 7.05
Locomotive	$8.00 \times \frac{11.20}{7.62}$	= 11.91
Carriage and Waggon	$0.68 + 0.69 \times \frac{11.20}{7.62}$	= 1.71
Traffic	3.19×1	= 3.19
General	2.37×1	= 2.37
Special and Miscellaneous	0.65×1	= 0.65
		<hr/>
		26.88
Add 5 per cent for contingencies...		1.34
		<hr/>
Total...		28.22

Thus the cost of conveying 6 tons per mile being 28.22 pies, the cost for 1 ton will be 4.70 pies, or say 5 pies.

6. The Agent of the Great Southern of India Railway likewise proposes a rate of $27\frac{1}{2}$ annas per mile run for special material trains and $27\frac{1}{2}$ annas — 330 pies = 5 pies $\times$ 66.

There would thus appear to be no objection to this rate, provided it be charged only when not less than 66 tons are conveyed in the train.

7. The Agent of the Carnatic Railway suggests that an arbitrary round rate of Rupee 1 per ton be charged for railway stores and materials carried from Arconum to Conjeveram on construction account, the length being $18\frac{1}{2}$ miles, and the rate proposed is therefore about $10\frac{1}{2}$ pies per ton per mile.

The circumstances of this small line, however, are different from those of the other railways; no heavy material is conveyed by it, but only small miscellaneous consignments to the Engineers on the survey.

I think therefore the above rate may be adopted for the present, leaving the rate for material in general for the construction of the line southwards to be determined hereafter.

From the Agent and Manager of the Madras Railway Company, to the Acting Consulting Engineer for Railways, dated Madras, 23rd February 1872, No. 125.

In accordance with the request contained in your endorsement, No. 793, dated the 21st of December 1871, I have the honour to inform you that it is proposed to introduce on this Railway, in compliance with the orders of the Government of India, a special rate of 8 pies per ton per mile for the carriage of the Company's materials to be used on construction account, such rate to have effect, if approved by Government, from the 1st of January 1872.

2. The Traffic Manager points out that it is very difficult to say what the actual cost of carrying any particular item of traffic on this Railway is, as all trains are 'mixed,' composed of passenger and goods vehicles. Mr. Church observes—

"The average cost of carrying one ton gross per mile for the half-year ending 30th June 1871 was 2.513 pies, exclusive of superintendence, and the cost of carrying one ton net was

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22nd April 1872.*

9.064 pies per mile; but these figures do not facilitate a proper solution of the question inasmuch as the full load of a passenger carriage is only 3 tons, while that of a waggon is from 6 $\frac{1}{2}$ to 9 tons, and under ordinary circumstances, an engine would haul as many waggons fully loaded as it would haul carriages fully loaded, and in this way the cost of hauling one ton net of goods per mile would be much less than the cost of hauling one ton net of passengers."

3. The charge to be made for the conveyance of materials used on construction must therefore be arbitrarily fixed, and looking at the miscellaneous character of the traffic, ranging from iron rails in the first or lowest class to scientific instruments in the fifth or highest class, it has been considered that the wishes of the Government would be best met by the intermediate rate of 8 pies per ton per mile mentioned above.

From the Agent and Manager of the Madras Railway Company, to the Acting Consulting Engineer for Railways, dated Madras, 13th March 1872, No. 165.

With reference to your letter No. 148, of the 14th instant, I have the honour to enclose you the copy of a letter from the Traffic Manager, No. C/125-100, of the 6th idem, which I request you will be so good as to submit to the Government with my letter No. 125 of the 23rd ultimo, and your observations thereon.

From the Traffic Manager, to the Agent and Manager of the Madras Railway Company, dated Madras, 6th March 1872, No. C/125-100.

Rates for conveyance of Railway materials. Consulting Engineer's letter, No. 148, dated 4th March.

HOWEVER useful the Traffic Analysis, prepared in the Consulting Engineer's Office, may be for purposes of comparison with the working of other lines of Railway, I am still of opinion that it is no true guide in determining the cost of carrying of any particular item of traffic, simply because many of the charges must of necessity be arbitrarily distributed, where, as in the case of the Madras Railway, the traffic is conveyed by mixed trains of passengers and goods.

2. Should the Government, however, consider the rate proposed by the Consulting Engineer sufficient to cover the cost of carriage with only a small margin for contingencies, I presume that the minimum charge for a waggon of material will be that for 6 $\frac{1}{2}$ tons.

From the Agent and Manager of the Carnatic Railway Company, to the Acting Consulting Engineer for Railways, dated Madras, 31st July 1871, No. 138.

With reference to the circular letter of the India Office, dated 24th June, wherein the Secretary of State requests my Board to instruct me to place myself in communication with the Local Government for the purpose of arranging the rates for the conveyance of our own railway materials, such rates being only intended to cover the cost of conveyance, with a small margin for contingencies, but without leaving a profit upon the transaction.

2. I have the honour to suggest that, as the cost of working the goods traffic on this railway cannot be correctly arrived at, inasmuch as it is worked in mixed trains and without separate staff, that an arbitrary round rate of Rupees 1 per ton should be charged for all our railway stores and materials carried from Arconum to Conjeveram on construction account. A rate of this amount for goods of a miscellaneous character carried in small quantities cannot leave a margin of large profit to the credit of net revenue.

From the Agent and Manager of the Carnatic Railway Company, to the Acting Consulting Engineer for Railways, dated Madras, 12th February 1872, No. 339.

With reference to your letter No. 30, dated 8th instant, I have the honour to state that considering that the stores which have been or are likely to be carried on the open portion of this

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22nd April 1872.*

line consist of small parcels weighing a few pounds only, a less rate per ton than one rupee would reduce the charges for these stores to such small fractions upon each consignment that I am of opinion it would be better, as a matter of convenience in account, to carry them free than to charge a less rate per ton than the one I have suggested.

From the Agent of the Great Southern of India Railway, to the Acting Consulting Engineer for Railways, dated Negapatam, 26th December 1871, No. 4,316.

In reply to your memorandum No. 333, of the 21st instant, I have to suggest, for the consideration of Government, the following rates for the conveyance of railway material intended to be used for construction purposes :—

For special material train service $27\frac{1}{2}$ annas per mile run.

For small consignments conveyed by ordinary train, $9\frac{1}{2}$ pies per ton per mile. The first rate is thus arrived at—

Actual cost of working during the half-year ending 30th June last, Annas 26.13 per train mile.	
Add for contingencies	1.37
	<hr/> 27.50

The cost of carrying units of traffic has not been prepared in my office, but I believe that your calculations for last half-year show the cost of carrying a ton of goods to have been 9 pies per mile. To this figure I have added about 5 per cent. for contingencies in arriving at the rate of $9\frac{1}{2}$ pies per ton per mile for small consignments of material conveyed by ordinary trains.

No. 325. ORDER THEREON, 22nd April 1872, No. 1,034.

RAILWAY, No. 50.

G. O., No. 3,191, dated 18th December 1871.

It having been ruled that the rates to be charged by Guaranteed Railway Companies for the conveyance of their own material for construction purposes shall be so fixed as to cover the actual cost of carriage with a small margin for contingencies, but leaving no profit, the Consulting Engineer was directed to submit for approval proposals for each Railway in the Madras Presidency with the data on which the proposed rates are based.

2. Major Prendergast now complies with this requisition, and, taking as the basis of calculation the cost of hauling an average goods vehicle and load as exhibited in the Traffic Analysis prepared for the Government of India, and assuming that the average load of all material waggons will be three-quarters of the full load, he obtains as the cost per ton per mile of hauling a truck load of railway material the following results :—

On the Madras Railway $5\frac{1}{2}$ pies,
Great Southern of India Railway 5 pies

3. The circumstances of the Carnatic Railway are exceptional, and as no heavy material is at present carried it is proposed to charge 1 Rupee per ton for the conveyance of stores, etc., from Arconum to Conjeveram on construction account, or a rate of $10\frac{1}{2}$ per ton per mile.

4. The Government sanction these rates as well as a charge of $27\frac{1}{2}$ annas per mile run for special material trains on the Great Southern of India Railway

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22nd April 1872.*

when not less than 66 tons are carried, and, subject to the confirmation of the Government of India, they may be considered as coming into operation from the 1st January 1872.

(True Extract.)
(Signed) G. W. WALKER, Colonel, R.E.,
Officiating Secretary to Government.

No. 326. (DOCKET No. 1,035, dated 22nd April 1872.)

Copy of the above forwarded for the confirmation of the Government of India with reference to their Resolution, No. 717-A.R., dated 28th November 1871.

(True Extract.)

Colonel, R.E.,
Officiating Secretary to Government.

Exd. S. T. Augustin.

No. 125.

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE.

Madras, 23rd February, 1872.

From

Robert D. Clinch, Esq.

Agent and Manager, M. R. Co.

To

Major H. B. Prendergast, R.E.

Acting Consulting Engineer for Railways.

Sir,

In accordance with the request contained in your endorsement of 1793 dated the 21st of December 1871 I have the honour to inform you that it is proposed to introduce on this Railway in compliance with the Orders of the Government of India a special rate of 8 pice per ten per mile for the carriage of the Company's materials to be used on construction account, such rate to have effect, if approved by Government, from the 1st of January 1872.

The Traffic Manager points out that it is very difficult to say what the actual cost of carrying any particular item of Traffic on this Railway is, as all trains are mixed, composed of Passengers and goods vehicles. Mr. Church observes:

The average cost of carrying one ton gross per mile for the half years ending 30th June 1871 was 2.513 pice, exclusive of superintendence, and the cost of carrying one ton net was 9.64 pice per mile, but these figures do not facilitate a proper solution

of the question, is as much as the full load
of a Passenger Carriage is only 3 Tons, while
that of a Wagon is from $6\frac{1}{2}$ to 9 Tons, and
under ordinary circumstances an Engine
would haul as many Wagons fully loaded
as it would haul Carriages fully loaded,
and in this way the cost of hauling one
Ton net of Goods per mile would be much
less than the cost of hauling one Ton net
of Passengers.

3. The Charge to be made for the
conveyance of materials used in construction
must therefore be arbitrarily fixed and
looking at the miscellaneous character
of the Traffic, ranging from Iron Rails
in the first or lowest class to Scientific
Instruments in the 5th or highest class, it has
been considered that the wishes of the
Government would be best met by the
intermediate rate of 8 pence per Ton per
mile mentioned above.

I have the honour to be,
Sir,

Your most Obedient Servant.

J. H. Mellis.

for the Agent & Manager.

Recd letter to Agent No 148 of 4 March 1872.

Regarding the matter
concerning the proposed
route in the Madras
Presidency for the
extension of the railway
from the present terminus
to the proposed terminus
at the proposed terminus.

P. N. 1482/72

Date 23. March 1872.
Recd. 26. "

No. 125

MADRAS RAILWAY.
From
The Agent and Manager
To
The Consulting Engineer
for Railways.

22045

No. 165

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE.

Madras, 13th March 1872

From

R. B. Elvin Esquire

Agent and Manager. M. R. C.

To

Major H. L. Prendergast R.E.

Ag. Consulting Engineer for Railways.

Sir,

With reference to your letter No 148 of the
4th instant I have the honour to enclose you the
copy of a letter from the Traffic Manager No
C 125 of the 6th idem which I request you will
be so good as to submit to the Government
with my letter No 125 of the 23rd ultimo and
your observations thereon.

I have the honor to be,

Sir

Your most obedient servant
J. N. Mellis.

for the Agent and Manager

Madras Railway
Traffic Manager's Office
Madras 6 March 1872

C $\frac{125}{100}$

Y.

The Agent and Manager
M. P. C.

Dear Sir

Rules for conveyance of Railway Materials
Cons. Engrs. letter No 148 dated 6 March

However useful the Traffic Analysis prepared in the Consulting Engineer's office may be for purposes of comparison with the workings of other Lines of Railway, I am still of opinion that it is no true guide in determining the cost of carrying of any particular item of Traffic, simply because many of the charges must of necessity be arbitrarily distributed, whereas in the case of the Madras Railway the Traffic is conveyed by mixed Trains of Passengers and Goods.

Should the Government, however consider the rate proposed by the Consulting Engineer sufficient to cover the cost of Carriage with only a small margin for Contingencies, I presume that the minimum charge for a Wagon of material will be that for $6\frac{1}{4}$ Tons.

(2) Yours faithfully
H. E. Church
Traffic Manager

(True copy)

J. H. Mellis.
for the Agent & Manager

Wm.

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated 13th March 1872.

Recd 14

No. 165

Regarding the special
rate quoted by the
Agent & Manager for the
conveyance of materials
required for construction
purposes

P. 91482/72

15-
CARNATIC RAILWAY CO., (LIMITED.)

AGENT AND MANAGER'S OFFICE,

MADRAS, 31st July 1871.

No. 138

FROM

J. J. Fisher Esq^r.

AGENT AND MANAGER, CARNATIC RAILWAY CO.,

Madras.

TO

Major H. L. Spendergast R.E.

Ag. CONSULTING ENGINEER FOR RAILWAYS,

Madras.

SIR,

With reference to the Circular letter of the India Office dated 24 June wherein the Secretary of State requests my Board to instruct me to place myself in communication with the local Government, for the purpose of arranging the rates for the conveyance of our own Railway Materials such rates being only intended to cover the Cost of Conveyance with a small margin for Contingencies but without leaving a profit upon the transaction.

2. I have the honor to suggest that as the Cost of working the goods traffic on this Railway cannot be correctly arrived at inasmuch as it is worked in mixed trains & without separate staff that an arbitrary round rate of Rs. 1.00 per ton should be charged for all our Railway Stores & Materials Carried from Arcotum to Conjevaram on Construction Account. a rate of this Amount for goods of a miscellaneous character carried in small quantities, cannot leave a margin of large profit to the credit of net

11/1482/2

nett Revenue..

I have the honor to be.

Sir.

Your most Obedt. Servt.

for J. Fisher
Agent & Manager.

No. 339

FROM

J. J. Fisher Esq^r.

AGENT AND MANAGER, CARNATIC RAILWAY CO.,
Madras.

TO

Major H. L. Spendergast R. E.

Ag. CONSULTING ENGINEER FOR RAILWAYS,
Madras.

SIR,

With reference to your letter No. 30.
dated 8th Instant, I have the honor to state
that, considering that the stores which have
been or are likely to be carried on the open
portion of this line consist of small parcels
weighing a few lbs only, a less rate per ton
than one rupee would reduce the charges
for these stores to such small fractions upon
each consignment that I am of opinion it
would be better as a matter of convenience in
account to carry them free than to charge a
less rate per ton than the one I have sug-
gested..

I have the honor to be.

Sir.

Your most Obedt. Servant.

for J. Fisher
Agent & Manager

FROM

The Agent and Man-
CARNATIC RAILWAY CO.

To
The Consulting En-
for

DATED 31st Jan 1872
REC'D

No. 138

P. M. 1452/72

Charges are now
rate of Rs. 10.00 per
tonnage of the 16

2000 8/27

No. 4316 GREAT SOUTHERN OF INDIA RAILWAY.

AGENT'S OFFICE,
NEGAPATAM, *December 26/18*

From

THE AGENT,

Great Southern of India Railway,

To

*The Acting Consulting Engineer
for Railways
Madras*

*In reply to your Memorandum
No. 339 of the 21st Instant, I have
to suggest for the consideration of
Government, the following rates
for the conveyance of Railway
Material intended to be used for
Construction purposes*

*For special Material Train
Service — $2\frac{1}{2}$ annas per mile run*

*For small consignments
conveyed by ordinary train $9\frac{1}{2}$ pice per ton per mile*

*The first rate is thus arrived at.
Actual cost of working during the
half year ending 30th June last
annas*

The Agent and Manager
GREAT SOUTHERN RAILWAY COMPANY

To The Consulting Engineer
for Railways

Dated *12th Decr 1872*

No. 339-

*Explanations as to the
proposed for carrying the
Material - etc -*

P. M. 1882/12

annas 26.13 per train mile, add for
Contingencies $\frac{1.37}{27.50}$

The cost of carrying units of
traffic has not been prepared in my
office, but I believe that your
calculations for last half year
show the cost of carrying a ton of
goods to have been 9 pias per mile,
to this figure I have added about
5 per cent for contingencies in
arriving at the rate of $9\frac{1}{2}$ pias
per ton per mile for small con-
-signments of materials conveyed
by ordinary trains

I have the honor to be
Your most ^{dev}oted servant
William B. B. B.

agent

Madras Department

Cons: Engineers Office

No. 144

From

Major H. L. Prendergast R.E.
Acting Consulting Engineer
for Railways

To

Colonel J. Caspendale R.E.
Secretary to Government
Public Works Deptt
Fort Saint George

Sir,

With reference to G.O.
No. 3191 of the 18th December 1871, I
have the honour to submit letters
from the Railway Agents, proposing
a special rate for the conveyance
of materials on construction account.

2. The Agent of the
Madras Railway in his letter of the
23rd February, considers that, owing
to the miscellaneous character of the
material, varying from heavy iron

Madras
5725^a
31872
5713^a
21872
no enclosure

Madras
5731^a
31871
39712^a
21872
5726^a
21871

Also has the same
at Railway Deptt.
to be used for
construction
P.W. 1482/1

sails to scientific instruments,
a rate must be fixed arbitrarily;
and recommends the rate of 8 pice
per ton per mile, which is at present
the lowest ordinary rate for goods.

In reply to the above,
I sent to the Agent, the calculations
that I had made from the Traffic
Analysis, showing that the rate
arrived at, was nearly $5\frac{1}{2}$ pice
per ton per mile. The Traffic

Manager observes that the Traffic
Analysis is no true guide, as to
the cost of a particular class of
traffic, because the charges
must be arbitrarily distributed,

2,²
where there are mixed trains of
passengers and goods. But the
Traffic Manager, admits as quoted
in the Agent's letter of 23rd February,
that in obtaining the average cost
of carrying one ton gross per mile,
and that of carrying one ton net,
the real cost of hauling one ton
net of goods per mile would be
much less than the cost of hauling
one ton net of passengers.

Hence from such data
as are obtainable, it appears
to me, that a rate of $5\frac{1}{2}$ pice per
ton per mile, fully represents the
actual cost of conveyance, with
a small margin for contingencies.

The Traffic Manager says, that if the Government considers this rate to be sufficient, he presumes that the minimum charge for a wagon of material will be that for $6\frac{1}{4}$ tons. This in other words is a proposal for a premium to be given for running half-loaded wagons and would entirely defeat the object of having one uniform rate.

3. The Traffic Manager quotes $6\frac{1}{4}$ tons, as that taken by me to be the average load of a railway material wagon; but an error was made in giving $6\frac{1}{4}$ instead of $6\frac{3}{4}$ tons, (although the

3
the result is very slightly affected) I will submit my calculations (as corrected) in detail, in order that the Government may take into consideration the principle by which the rate has been arrived at, as based on the figures given in the Revenue Analysis.

The quantity of scientific instruments now conveyed in the highest or 5th class can be but very small, in comparison with the mass of permanent way materials, and may be left out of consideration or treated as provided for under contingencies.

It is doubtless difficult as the Traffic Manager observes, to

ascertain the actual cost of carrying any particular item of traffic: but a tolerably accurate approximation can be obtained from the half-yearly Traffic Analysis, prepared for the Government of India.

In calculating below, the probable cost of hauling heavy material, the cost of hauling an average goods vehicle and load, is taken as the basis from the Analysis.

It is assumed that wagons will be run, with a full load of 9 tons; and as materials for construction are sent from the

4
3)
coast, while the preponderance of ordinary goods traffic is towards the coast; allowing for empties, the average load may be taken at $\frac{3}{4}$ of the full load, or $6\frac{3}{4}$ tons.

A high sided open goods wagon weighs on an average 5.325 tons, and the average weight of wagon and load of railway material together will be 12.075 tons. Now taking the working expenses in detail, the cost in the Maintenance and Locomotive Department of hauling an average ordinary traffic goods wagon and load, must be increased for a material goods wagon and load,

in the proportion in which 12.075 tons exceeds the weight of the former.

The carriage and wagon expenses may be increased by half that proportion, while the expenses in the other Departments need not be altered.

In the half-year ended December 1870, the average weight of wagon and load is 8.739 tons and the multiple for maintenance and locomotive charges becomes

$$\frac{12.075}{8.739} = 1.381 \text{ also that for carriage and wagon expenses}$$

$$\text{is } \frac{1.381+1}{2} = 1.190$$

Details

Details	Cost per average good wagon	Multiplied by	Resulting cost per material wagon
Maintenance—	8.07	1.381	11.144
Locomotive—	10.42	1.381	14.390
Carriage and wagon	1.48	1.190	1.761
Traffic—	4.25	1	4.250
General—	1.24	1	1.240
Special & Miscellaneous	1.86	1	1.860
	27.32	Total	34.645

hence the actual cost of hauling a material wagon in that half year would be 34.645 pica.

In the half-year ending June 1871, the average weight of wagon and ordinary load was 8.634 tons and as above

$$\frac{12.075}{8.634} = 1.398 \text{ also } \frac{1.398+1}{2} = 1.199$$

Details

Details	Cost per average good wagon	Mult. by by	Resulting cost per material wagon
Maintenance	8.451	1.378	11.814
Locomotive	9.716	1.378	13.582
Carriage & wagon	1.582	1.199	1.896
Traffic	4.018	1	4.018
General	1.300	1	1.300
Special & miscellaneous	0.911	1	0.911
		Total	33.521

the actual cost of hauling a material wagon in this half-year will thus be 33.521 pies.

The average of the 2 half-years then is 34.083 pie or adding 5 per cent for contingencies 35.787.

Divide this by the average load in tons 6.75 tons; and the result is 5.30 pies the rate per ton

per mile.

4. The Agent of the Great Southern of India Railway, proposes a rate of $9\frac{1}{2}$ pies per ton per mile, on the grounds that the cost of carrying a ton in the half-year ending the 30th June 1871, was 9 pies. This is correct, inasmuch as the average load of vehicles in that half-year was 2.27 tons, the average weight of the vehicles being 5.68 tons, and the cost 9.01 pies per ton per mile. But in the previous half-year ending 31st December 1870; average loads of only 1.25 tons of goods were carried on vehicles of an average

weight of 5.85 tons at a cost of
16.20 piers per ton per mile.

Thus it is evident,
that the recorded cost of carriage
of goods in one half-year with
wagons conveying on an average,
a very light load, cannot be
taken as determining the cost at
which materials ought to be
conveyed over the line.

5. Railway materials
will be carried almost entirely
up the River, from the coast;
and the tendency of the present
goods traffic is principally,
down, towards the coast. This
is shown by the returns of vehicle
mileage, for the 2 half-years ending

31st December 1870, and 30th June
1871; viz:

	1 st half of 1871	2 ^d half of 1870
loaded down	233.525	194.097
open sided and high sided goods trucks } up	34.784	34.293
empty down	19.493	15.360
Do up	227.141	181.524

The heavy railway material will
be carried chiefly in the high-sided,
and the open-sided goods wagons;
the weight of the former is 5 tons
6 cwt, and that of the latter 4 tons
19 cwt; the average weight may
then be taken as 5.2 tons; and the
full load as 8 tons; also, making
allowance for empty return wagons,
it is assumed that the average
load of all material wagons

will be three quarters of the full load or 6 tons. Hence the average weight of wagon and load of railway material together will be 11.20 tons.

Now the distributed cost of hauling a goods vehicle, and load, 1 mile, was for the

	Half year ended		
	31st Dec 1890	30th June 1891	Average
Maintenance	Pies 5.30	Pies 4.16	Pies 4.73
Locomotive	7.82	8.19	8.00
Carriage and wagon	1.19	1.55	1.37
Traffic	3.18	3.20	3.19
General	2.21	2.53	2.37
Special and Miscellaneous	.50	.79	.65
<u>Total</u>	<u>20.20</u>	<u>20.42</u>	<u>20.31</u>
and the weight of vehicle	5.85	5.68	5.76
<u>Do of load</u>	<u>1.25</u>	<u>2.27</u>	<u>1.76</u>
<u>Total of vehicle & load</u>	<u>7.10</u>	<u>7.95</u>	<u>7.52</u>

In order to obtain from the known cost of hauling a goods wagon and its load, the probable cost of hauling a truck load of Ry material; it is assumed that the maintenance and locomotive charges will be increased in proportion to the increased weight of wagon and load; that of the carriage and wagon expenses one half only will be increased in the same proportion; and that the other charges will not increase. The following then becomes the probable distributed cost:-

$$\text{Maintenance } 4.73 \times \frac{11.20}{7.52} = \text{Pies } 7.05$$

$$\text{Locomotive } 8.00 \times \frac{11.20}{7.52} = 11.91$$

$$\text{Carriage & wagon } 0.68 + 0.69 \times \frac{11.20}{7.52} = 1.71$$

Traffic	3.19	x 1	= 3.19
General	2.37	x 1	= 2.37
Special & miscellaneous	0.65	x 1	= 0.65
			<u>26.88</u>

add 5 percent for contingencies 1.34

Total 28.22

Thus, the cost of conveying 6 tons per mile being 28.22 pies the cost for 1 ton will be 4.70 pies or say 5 pies.

6. The Agent of the Great Southern of India Railway, likewise proposes a rate of $27\frac{1}{2}$ annas per mile run, for special material trains -

and, $27\frac{1}{2}$ annas = 330 pies
= 5 pies x 66

There would thus appear to be no objection to this rate.

rate, provided it be charged only when not less than 66 tons are conveyed in the train.

7. The Agent of the Carnatic Railway suggests that an arbitrary round rate of Rupee 1 per ton be charged for railway stores and materials carried from Arcconum to Conjeeveram on construction account; the length being $18\frac{3}{4}$ miles; and the rate proposed is therefore about $10\frac{1}{4}$ pies per ton per mile.

The circumstances of this small line, however, are different from those of the other railways; no heavy material is conveyed by it, but only small

miscellaneous consignments to the
Engineers on the Survey.

I think therefore
the above rate may be adopted
for the present, leaving the rates
for material in general for the
construction of the line southwards,
to be determined hereafter.

I have the honour to be,
Sir,
Your most obedient Servant,
New Pendergast Major R.E.
Acting Comd. Eng. & Fort Dept.

Madras
22 March 1872

Dec 18 December 1872 325-326

P. J. 1872 Report
Pm. of Govt for April
From No 1482.

The C. of C. for
for 1872

To the Secy to Govt
P. M. D.

Date: 22 March 1872
Recd 25

No 114

Enclosures 6

Submitting
agents to letters re
garding the con-
veyance of Railway
materials

No 1034-1035. 22 April 1872

No 324

66th Dec 1872

Records of the Madras Govt
Read the following

The Railway
Board for Railway
No 1034

G.O. No 3191 d/18th Dec 1871

It having been
ruled that the rates to be
charged by guaranteed
Railway Companies for
the conveyance of their
own material for con-
struction purposes shall
be so fixed as to cover
the actual cost of carriage
with a small margin
for contingencies, but
leaving no profit, the
Consulting Engineer was
directed to submit for
approval proposals
for each railway in the
Madras Presidency
with

with the data on which
the proposed rates are based.

Major Prendergast
now complies with this
requisition, and taking
as the basis of calculation
the cost of hauling an
average goods vehicle
and load as exhibited
in the Traffic Analysis
prepared for the Govt
of India and assuming
that the average load
of all material wagons
will be three quarters
of the full load, he
obtains as the cost per
ton per mile of hauling
a truck load of railway
material the following
results.

On the Madras Railway $5\frac{1}{2}$ pias.
" G.S. of I. do 5--

The

The circumstances
of the Carnatic Railway
are exceptional, and
as no heavy material
is at present carried
it is proposed to charge
1 Rupee per ton for the
conveyance of stone, &c.
from Arcotum to Pond
ferrum on construction
account, or a rate of
 $10\frac{1}{2}$ pias per ton per mile.

The Government
sanction these rates
as well as a charge of
 $27\frac{1}{2}$ annas per mile
now for special material
traffic on the G. S. of I.
Railway when not less
than 66 tons are carried,
and, subject to the
confirmation of the
Govt of India, they
may

may be considered as
coming into operation
from the 1st January 1872.

M. H. No 10352/.

Copy of the above
forwarded for the con-
firmation of the Govt
of India with reference to
their Resolution No 717 A
dated 28th November 1871.

M. H.
Jan 27/

Dec 23/4/72.

64/11/4/72

10-14-82

Govt. of India

PUBLIC WORKS.

The Consulting Eng.
for Railways
and

The Secretary to the
Govt of India

Part 6

22nd April 10314-10315

Nos. 324-325 & 326

Notes: Proposed Rates

for the conveyance of
railway materials on the
Andas Pys, sanctioned
to the remarks.

Forwarded copy of
the Sanctioning proposed
rates for the conveyance of
materials on the
Andas Pys.