M.R.O. 1—77,006—8-6-37.

(1) Number of pages 1 + 4 + 1 = 6

(2) Date of repair

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Public works **DEPARTMENT.**

G.O. No. 316-17 Press Mis.

607-09

Dated 26. 1 1870.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department, 26th January 1870.

No. 607. Read the following letter from the Consulting Engineer for Railways, to the Secretary to Government, Public Works Department, dated Madras, 19th January 1870, No. 21:—

In compliance with the instructions contained in the Order of Government, dated the 4th instant, No. 16, I have the honour to submit two letters* from the Agents of the Madras and the Great Southern of India Railways, giving the required information regarding the proportion of tie-bars to cast-iron bowl-sleepers used on those two Railways.

* From Agent, Great Southern of India Railway, No. 3,284, dated 12th January 1870, with enclosure.
From Agent, Madras Railway, No. 26, dated 17th January 1870, with enclosure and sketch.

2. It will be seen that on the Madras Railway the length of rail is twenty feet, and that to every rail there are six pairs of bowl-sleepers; the distance between each pair being 3½ feet except at the joint, where the distance in only 2½ feet. A tie-bar is used to each pair of bowls; and the opinion both of the Agent and the Chief Engineer is in favour of continuing that practice, on the ground of economy.

3. On the Great Southern of India Railway the length of rail is 21 feet, and to every rail there are seven pairs of bowl-sleepers, the distance between each pair being three feet. Excepting upon sharp curves, tie-bars are used to every alternate pair of bowls; there being to every rail four pairs of bowls with ties, and three without. The opinion of the Railway authorities is to the effect that the above proportion of tie-bars is ample.

4. My own opinion is decidedly in favour of the practice in force on the Madras Railway. The experience of the two Railways in this Presidency has satisfied me that the omission of two or three tie-bars to each length of rail is far from being a measure of true economy. On the North-West Line of the Madras Railway where, from a scarcity of tie-bars, portions of the line were originally laid with four tie-bars only to each length of rail, it was afterwards found necessary to supply, at considerable additional expense, the omitted ties. And the practice adopted on the Great Southern of India Railway, of omitting three tie-bars to each length of rail, has not, in my opinion, resulted in forming a road which will bear a favourable comparison with the iron-sleeper road of the Madras Railway.

5. The saving which can be effected by omitting two or three tie-bars to each length of rail is very slight; where there can be no doubt that the wear and tear of rolling stock and of permanent-way must be materially affected by the increased oscillation due to the less perfect road.

6. I agree with Mr. Going that the suggestion made by the Agent of the Oudh and Rohilcund Railway to the effect that the necessity for complete ballasting may be obviated by having a tie-bar to every pair of bowl-sleepers, is erroneous and at variance with the teaching of experience.

From the Agent of the Great Southern of India Railway, to the Consulting Engineer for Railways, Madras, dated Negapatam, 12th January 1870, No. 3,284.

Adverting to your letter, No. 5, dated the 6th instant, and Government Order, No. 16, attached thereto, I beg to forward, herewith, copy of the Chief Engineer's Report regarding the numbers of tie-bars necessary on a pot-sleeper road. I beg to add that I concur with that officer's views on the subject.

true copy.

From the Chief Engineer, to the Agent of the Great Southern of India Railways, dated Trichinopoly, 10th January 1870, No. 91.

YOUR letter, No. 275, of this date, with reference to the number of tie-bars necessary in a pot-sleeper road.

2. On our line we have laid the straight parts with ties to every alternate pair of pots, except at the joints of the rails, where the pair on each side of the joints is tied. To the 21 feet rail there are four pairs of pots with ties, and three pairs without. This is ample with our present weight of traffic.

3. On the curved positions of the line I consider that each pair of pots should be tied, except on very flat curves.

4. I have not yet heard from Mr. Bruce as to the proportion of ties to sleepers for the extension.

5. Our pots are all sent out perforated for tie-bars, so that at any time the ties, where left out in laying, can be put in.

From the Agent and Manager of the Madras Railway Company, to the Consulting Engineer for Railways, dated Madras, 17th January 1870, No. 26.

ADVERTING to your letter of the 6th instant, No. 6, which gave cover to Order of Government, No. 16, dated the 4th of January, on the question of the advantage of having a tie-bar to each pair of cast-iron bowl-sleepers, I have the honour to solicit your attention to the enclosed copy of a communication* received this afternoon from the Acting Chief Engineer, and to the sketch of the pot-sleeper known as "Greave's Patent," which is in use on this Railway.

No. 23, 14th January.

2. The conclusions arrived at by Mr. Going are based upon experience gained on our lines, and I concur with him in thinking that it is a measure of true economy to have a tie-bar to each pair of bowls.

From the Acting Chief Engineer, to the Agent and Manager of the Madras Railway Company, dated Madras, 14th January 1870, No. 23.

IN compliance with Consulting Engineer's letter, No. 6, of 6th instant, I have now the pleasure to forward a sketch of the pot-sleeper in use on the Madras Railway, and to offer the following information in reference to the other points on which a reply is requested :—

1. The description of pot used is that known as Greave's patent.

2. The distance apart at which these sleepers are laid in the line is 3 feet 6 inches except at the joint, between the two sleepers on each side of which the distance is 2 feet 6 inches.

3. A tie-bar is used to each pair of pots.

4. Our rail is 20 feet in length. There are then six pairs of pots to each length of rail. A sleeper on each side of every joint is imperative, so that under no circumstances could a less number than four tie-bars to each length be used. The saving of ties would thus amount to only a third.

5. I do not go the length of agreeing with the suggestion made by the Agent of the Oudh and Rohilchund Railway in his Memorandum embodied in the Proceedings of the Madras Government which accompanied the letter under reply, namely, that a tie-bar to every sleeper would prevent the "necessity for complete ballasting," because experience has taught us that pot-sleepers must be kept completely covered with ballast even when the full complement of tie-bars is used. They cannot be kept packed otherwise, and lose in consequence a portion of their bearing powers.

6. The wear and tear of rolling stock will, however, in all probability, be favourably affected by the greater stability due to the full complement of ties.

7. A road in which two tie-bars to a length of rails have been omitted is very difficult to keep from buckling, and requires a larger number of gaugers in maintenance. This has been our experience on the Madras Railway where a scarcity of tie-bars, at one time, led to the adoption of such a road on some straight portions of the line.

8. Apart from all considerations of economy I do not think the safety of trains would be endangered by such a distribution of tie-bars on straight lines; but on curves and steep gradients I consider an omission of any of the tie-bars might be attended with considerable danger.

9. Under all circumstances a road in which the full complement of tie-bars is not used must be less comfortable to passengers than where they are complete.

No. 608. ORDER THEREON, 26th January 1870, No. 316.

RAILWAY, No. 69.

ORDERED that these papers be forwarded to the Government of India.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

S P 4

No. 3284 GREAT SOUTHERN OF INDIA RAILWAY.

AGENT'S OFFICE,

NEGAPATAM, 12th January 1870

From

THE AGENT,

Great Southern of India Railway,

To The Consulting Engineer
for Railways
Madras

SIR,

Adverting to your letter No. 5.
dated the 6th instant and Government
Order 16 attached thereto I beg
to forward herewith Copy of the
Chief Engineers Report regarding
the number of the bars necessary
on a pot sleeper road. I beg to
add that I concur with that
officer's views on the subject.

I have the honor to be
Sir
Your most obt Servant
[signature]
Agent

True copy.
[signature]
Clerk.

SP 5

No. 91.

Chief Engineers Office
Christchurch 10 January 1870.

W.S. Betts Esquire
My dear Sir

Your letter No. 275 of this date with reference to the number of tie bars necessary in a 20ft sleeper road.

On our line we have laid the straight parts with ties to every alternate pair of pots, except at the joints of the rails, where the pair on each side of the joints is tied. To the 21 feet rail there are 4 pairs of pots with ties, and three pairs without — This is ample with our present weight of traffic.

On the curved portions of the line I consider that each pair of pots should be tied, except on very flat curves.

I have not yet heard from Mr Bruce as to the proportion of ties to sleepers for the Extension.

Our Pots are all sent out perforated for tie bars so that at any time the ties where left out in laying, can be put in.

Yours truly
signed David Lagan

proportion

True copy.
Rollo Shuttleworth
Clerk

No. 3284

From

The Agent & Chief Engr. S.I.R. Co.

To Captain H.P. Yule R.E.

The Secy. to Govt. of India

Fort St. George

Dated 12th May 1870

Read 15th " "

Forwards Copy of Correspondence regarding Experimental Tie Bars

No. 26.

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE.

Madras, 17th January 1870.

From

R. B. Elwin Esqre.,

Agent and Manager. of the M & A Rs

To

Major J. Hills Shaw Stewart R.E.

Consulting Engineer for Railways.

Sir,

Adverting to your letter of the 6th instant, No 6, which you have come to under of Government, No. 16 dated the 4th of January, on the question of the advantage of having a tie-bar to each pair of Cast Iron Bowl sleepers, I have the honor to solicit your attention to the enclosed copy of a communication received this afternoon from the Acting Chief Engineer and to the Sketch of the Pot Sleeper known as "Greaves Patent", which is in use on this Railway.

2 The Conclusions arrived at by Mr Going are based upon experience gained on our Lines, and I concur with him in thinking that it is a measure of true economy to have a tie-bar to each pair of Bowls—

I have the honor to be
Sir
Your most obedient servant
(Sd) R. B. Elwin
Agent & Manager

No. 23.
14th Jany

Madras Railway Company
Chief Engineer's Office.
Madras 14th January 1870.

No. 23.

Dear Sir,

In Compliance with Consulting Engineer's letter No. 6 of 6th instant I have the honour to forward a sketch of the Pole sleepers in use on the Madras Railway and to offer the following information in reference to the other points on which a reply is requested.

1. The description of Pole used is that known as Greaves Patent.

2. The distance apart at which these sleepers are laid in the Line is 3 feet 6 inches. except at the joints, between the two sleepers on each side of which the distance is 2 feet 6 inches.

3. A Tie bar is used to each pair of Pole.

4. Our rail is 20 feet in length. There are then 6 pairs of Pole to each length of Rail. A sleeper on each side of every joint is inserted, so that involves no Circumstances only a less number than 4 tie bars to each length be used. The saving of ties would therefore amount to only a third.

5. I do not go the length of agreeing with the suggestion made by the Chief Engineer of the South Mahratta Railway in his annual embodied in the Proceedings of the Madras Government which Recommended the Poles under report, that a tie bar to every sleeper would prevent the necessity for Complete Ballasting because experience has taught us that Sleepers must

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MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

P.W. 242/70.

Dated 17 January 1870.

Recd. 18.1.70.

No. 26.

Soliciting attention to accompanying Copy of a letter from the Acting Ch. Engineer on the question of the advantage of having a tie bar for each pair of Poles from South Sleepers

must be kept completely covered with ballast even when the full complement of tie bars is used. They cannot be kept packed otherwise and lose in consequence a portion of their bearing powers.

6. The wear and tear of rolling stock will however in all probability be favorably affected by the greater stability due to the full complement of ties.

7. A road in which two tie bars to a length of rails have been omitted is very difficult to keep from buckling and requires a larger number of gangers in maintenance. This has been our experience on the Madras Railway where a scarcity of tie bars, at one time, led to the adoption of such a road on some straight portions of the line.

8. Apart from all considerations of economy I do not think the safety of trains would be endangered by such a distribution of tie bars on straight lines, but on curves and steep gradients I consider an omission of any of the tie bars might be attended with considerable danger.

9. Under all circumstances a road in which the full complement of tie bars is not used must be less comfortable to passengers than where they are complete.

Yours faithfully
Sd/ F. W. Going
Asst. Chief Engr.

The Agent & Manager

True Copy
Sd/ W. H. Austin
Agent & Manager.

Compd/rom

Pub Works Dept. 4

No 316 13

Proceedings of the Madras Government.

Under date the 26th January 1870

Read the following

From the Consulting Engineer for Railways No. 21 of 19th January 1870.

Ordered that these papers be forwarded to the Government of India.

To the Secy. to Govt. for Railways

Desp. 28/1/70
Cancd. Copies Dftd 28-1-70.

Docket No. 317 dt 26 Jany 1870

Copy of the above forwarded to the Govt. of India with reference to their letter No. 1806 R of the 2d Decr 1869.

Desp. 26/1/70
Plan desp. 31/1/70 by Bangy

Cue 242

Govt. of {1870} Madras.

PUBLIC WORKS.

To

The Consulting Engineer
for Railways

Dated

Recd. Encl.

G. O., 26 Jany 1870, No. 316 & 317.

Nos. 607-608

Tir.-bars (Rly) Requesting him to
have letter from the Engrs. furnishing the information called
for regarding the proportions of tie-
bars & cast iron bowl sleepers
used on the Madras Rly & Sy & Rys

Tir.-bars (Rly) A copy of Proceed-
-ings requesting the information required
regarding the proportions of tie-
-bars & cast iron bowl sleepers
used on the Madras Rly-Ly & Rys
forwarded Govt for guidance.