M.R.O. 1—77,006—8-6-51.

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MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 3482 Press / ~~Mis.~~

606-07

Dated 29 - 10 1846.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department, 29th October 1869.

No. 606. Read the following Circular from the Officiating Secretary to the Government of India, Public Works Department, (Railway,) to the Governments of Madras, Bombay, Bengal, and the Punjab; and Chief Commissioner of Oudh, dated Simla, 21st September 1869, No. 25 :—

IN continuation of Public Works Department Circular No. 18 Railway, of the 10th August 1869, I am directed to forward, for information, copy of further papers* on the use of steel-rails.

* From Government of Bombay, No. 1,733, dated 4th September 1869, and enclosure.
From Government of Bengal, No. 1,976 G., dated 8th September 1869, and enclosure.

From the Secretary to the Government of Bombay, (Railway Branch,) to the Secretary to the Government of India, Public Works Department, dated 4th September 1869, No. 1,733.

WITH reference to the Government of India's Circular No. 18, dated 10th August 1869, and accompaniments, I am directed by His Excellency the Governor in Council to forward copy of a letter from the Consulting Engineer for Railways, No. 2,453, dated 26th August 1869, communicating his views and opinion on the subject of the use of steel-rails on steep inclines.

2. There is, I am desired to observe, great practical force in Colonel Trevor's argument. Steel-rails, by reason of their greater durability, are better suited for inclines; but it appears to remain a fact that, when the rails are clean, *i. e.*, during greater part of the year, more brake-power would be necessitated by their use than would be needed were the ordinary iron-rails employed.

From Lieutenant-Colonel J. S. TREVOR, R.E., Consulting Engineer for Railways, to the Secretary to the Government of Bombay, in the Public Works Department, (Railway Branch,) dated 26th August 1869, No. 2,453.

REFERRING to Circular No. 18, of the 10th August, from the Government of India, I have the honour to point out that the references to the Bombay Government, and Bombay Government Engineer, are evident misprints for Madras, and to observe that so far as the experience on the two Ghaut Inclines on the Great Indian Peninsula Railway has gone, nothing has yet occurred to lead to the conclusion that steel-rails should not be used on steep inclines.

2. It is true that adhesion on a *clean* steel-rail is less than on a *clean* rolled iron-rail, but there is little, if any, difference in the adhesion on the two rails when greasy, that is, when the friction on each is reduced to its minimum.

3. It follows that the appliances which serve to ensure safety on the one, will practically ensure it on the other, and as the loads are limited to the weight which can be taken up or down when the rails are in the worst possible condition, there need be no difference in the composition of the trains.

4. In point of durability, the advantage is altogether on the side of the steel-rails. Mr. Hawkshaw's recommendation, that steel-rails should be laid only at stations, is evidently based on the consideration that these rails being very expensive should only be used where the wear from shunting and application of brakes is greatest. The same reason holds good on the Ghauts.

From the Officiating Joint Secretary to the Government of Bengal, Public Works Department, (Railway Branch,) to the Secretary to the Government of India, Public Works Department, dated 8th September 1869, No. 1,976 G.

IN reference to Public Works Department Circular No. 18 R., dated 10th ultimo, I am directed to forward copy of a communication† from the Committee of Agency, Eastern Bengal Railway Company, enclosing one from Company's Consulting Engineer in India, regarding the use of steel-rails on lines of Railway.

† No. 3,584, dated 2nd September 1869, with enclosure.

2. It will be seen that Mr. Leslie is of opinion that the objection raised to the use of the steel-rails on inclines owing to their liability to polish, holds good when such rails are laid at or near stations.

From the Committee of Agency, Eastern Bengal Railway, to the Officiating Consulting Engineer to the Government of Bengal, Railway Department, dated 2nd September 1869, No. 3,584.

Report No. 1,442, dated 31st August 1869.

THE Committee of Agency have the honour to acknowledge receipt of the papers forwarded under the Officiating Joint Secretary's Office, No. 1,787 G., and to forward, for the information of Government, certain remarks by this Company's Consulting Engineer in India on the use of steel-rails.

From B. LESLIE, Esq, Chief Engineer, Eastern Bengal Railway, to the Committee of Agency, Eastern Bengal Railway, dated 31st August 1869, No. 1,442.

I BEG to acknowledge the receipt of your No. 346 L., of the 21st instant, forwarding Notes upon the use of steel-rails in Madras.

With reference thereto, it appears to me, if it is the fact that steel-rails acquire such a degree of polish as materially to affect the adhesion of the wheels, that such fact would constitute a very serious argument against any further extension of the use of steel-rails, because whether on an incline or on a level railway, the load which a locomotive can drag is limited by the adhesion of the driving wheels to the rails, and particularly would the polish acquired by steel-rails be an objection to their use near stations, where, on account of the starting and stopping of trains, the maximum amount of adhesion attainable is required.

I believe that Mr. Hawkshaw's recommendation, that the use of steel-rails should be confined to the neighbourhood of stations, goes to prove that in England it has not been found that the polish acquired by steel-rails is so great as to reduce the efficiency of the adhesion of the wheels.

At any rate it is a matter that requires investigation, because it appears to me inconsistent to prohibit the use of steel-rails on inclines because they become polished and slippery, and at the same time to direct that steel-rails should be laid down at stations where, if anywhere, a polished and slippery road is objectionable.

No. 607. ORDER THEREON, 29th October 1869, No. 3,482.

RAILWAY, No. 82.

COMMUNICATED to the Consulting Engineer for Railways.

(True Extract.)

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

To the Consulting Engineer for Railways.

Exd. S. T. Augustin.

Enclosure to Circular No. 25 Railway.

No. 1733, dated 4th September, 1869.

From—COLONEL M. K. KENNEDY, R. E., *Secy. to the Govt. of Bombay,* ~~*in the P. W. Dept., Ry. Branch,*~~ *Railway Branch,*

To—Secretary to the Government of India, P. W. Dept.

With reference to the Government of India's Circular No. 18, dated 10th August 1869, and accompaniments, I am directed by His Excellency the Governor in Council to forward copy of a letter from the Consulting Engineer for Railways, No. 2453, dated 26th August 1869, communicating his views and opinion on the subject of the use of steel rails-on steep inclines.

2. There is, I am desired to observe, great practical force in Colonel Trevor's argument. Steel-rails, by reason of their greater durability, are better suited for inclines; but it appears to remain a fact that, when the rails are clean, *i. e.*, during a greater part of the year, more brake-power would be necessitated by their use than would be needed were the ordinary iron-rails employed.

No. 2453 dated 26th August, 1869.

From—LIEUT.-COL. J. S. TREVOR, R. E. *Consulting Engineer for Railways,*

To—Secy. to the Govt. of Bombay, in the P. W. Dept., Railway Branch.

Referring to Circular No. 18 of the 10th August, from the Government of India, I have the honor to point out that the references to the Bombay Government, and Bombay Government Engineer, are evident misprints for Madras, and to observe that so far as the experience on the two Ghât Inclines on the Great Indian Peninsula Railway has gone, nothing has yet occurred to lead to the conclusion that steel-rails should not be used on steep inclines.

2. It is true that adhesion on a *clean* steel-rail is less than on a *clean* rolled iron-rail, but there is little, if any, difference in the adhesion on the two rails when greasy, that is, when the friction on each is reduced to its minimum.

3. It follows that the appliances which serve to ensure safety on the one, will practically ensure it on the other, and as the loads are limited to the weight which can be taken up or down when the rails are in the worst possible condition, there need be no difference in the composition of the trains.

4. In point of durability, the advantage is altogether on the side of the steel-rails. Mr. Hawkshaw's recommendation, that steel-rails should be laid only at stations, is evidently based on the consideration that these rails being very expensive should only be used where the wear from shunting and application of brakes is greatest. The same reason holds good on the Ghâts.

No. 1976 G, dated 8th September, 1869.

From—MAJOR J. HOVENDEN, R E., *Offg. Joint-Secy. to the Govt. of Bengal, in the P. W. Dept., Railway Branch,*

To—Secretary to the Government of India, P. W. Dept.

In reference to Public Works Department Circular No. 18 R, dated 10th ultimo, I am directed to forward copy of a communication* from the Committee of Agency, Eastern Bengal Railway Company, enclosing one from Company's Consulting Engineer in India, regarding the use of steel-rails on lines of Railway.

* No. 3584, dated 2nd September 1869, with enclosure.

2. It will be seen that Mr. Leslie is of opinion that the objection raised to the use of the steel-rails on inclines owing to their liability to polish, holds good when such rails are laid at or near stations.

No. 3584, dated 2nd September, 1869.

From—*Committee of Agency, Eastern Bengal Railway,*

To—*Offg. Consg. Engr. to the Govt. of Bengal, Railway Dept.*

The Committee of Agency have the honour to acknowledge receipt of the papers forwarded under the Officiating Joint-Secretary's Office No. 1787G, and to forward for the information of Government certain remarks by this Company's Consulting Engineer in India on the use of steel-rails.

Rport No. 1442, dated 31st August 1869.

No. 1442, dated 31st August, 1869.

From—B. LESLIE, Esq., *Chief Engineer, Eastern Bengal Railway,*

To—*Committee of Agency, Eastern Bengal Railway.*

I beg to acknowledge the receipt of your No. 346 I of the 21st instant, forwarding Notes upon the use of steel-rails in Madras.

With reference thereto, it appears to me, if it is the fact that steel-rails acquire such a degree of polish as materially to affect the adhesion of the wheels, that such fact would constitute a very serious argument against any further extension of the use of steel-rails, because whether on an incline or on a level railway, the load which a locomotive can drag is limited by the adhesion of the driving wheels to the rails, and particularly would the polish acquired by steel-rails be an objection to their use near stations, where, on account of the starting and stopping of trains, the maximum amount of adhesion attainable is required.

I believe that Mr. Hawkshaw's recommendation, that the use of steel-rails should be confined to the neighbourhood of stations, goes to prove that in England it has not been found that the polish acquired by steel-rails is so great as to reduce the efficiency of the adhesion of the wheels.

At any rate, it is a matter that requires investigation, because it appears to me inconsistent to prohibit the use of steel-rails on inclines because they become polished and slippery, and at the same time to direct that steel-rails should be laid down at stations where, if anywhere, a polished and slippery road is objectionable.

CIRCULAR No. 25 RAILWAY.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY.

To

THE GOVERNMENTS OF MADRAS, BOMBAY, BENGAL, AND THE PUNJAB; AND CHIEF COMMISSIONER OF OUDH.

SIMLA, SEPTEMBER 21, 1869.

SIR,

In continuation of Public Works Department Circular No. 18 Railway of the 10th August 1869, I am directed to forward, for information, copy of further papers* on the use of steel-rails.

* From Government of Bombay No. 1733, dated 4th September 1869, and enclosure.
From Government of Bengal No. 1976 G, dated 8th September 1869, and enclosure.

I have the honour to be,

SIR,

Your most obedient Servant,

(Signed) R. STRACHEY, *Colonel, R. E.,*
Offg. Secy. to the Govt. of India.

J. Alexander, *C. E.,*
Asstt. Secy. to the Govt. of India.

To The Secretary to Govt of Madras
Railway Department

P. W. 1869 Dept.
No 4289.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY.

To

THE GOVERNMENTS OF MADRAS, BOMBAY, BENGAL, AND THE PUNJAB; AND CHIEF COMMISSIONER OF OUDH.

CIRCULAR No. 25 RAILWAY.

Dated SIMLA, *September* 21, 1869.

Received 6 Oct. 11 " 4

No 3482. 29. October 69.

Forwards further papers on the use of steel-rails.

P. W. D. Press—30-9-69—152.

Letter an order

Communicated to the Consulting Engineer for Railways.

No 3482

Dated 29 Oct 1869

Rec'd 1 Nov 1869

Acknowledged 1 Nov 1869

No.

Railway Circular No. 25 of 1869 Dt. 21 Sept 1869

Rec 4289

Govt. of {1869} Madras.

PUBLIC WORKS.

To The Consulting Engr.
for Railways

Dated

Rec'd Ent.

G. O. 24 Oct. 1869. No. 3682

Nos. 606-607

Steel rails Correspondence from District
& Press forwarding further papers
on the use of steel rails. Cnd
to Dist Offs concerned.