

(1) Number of pages _____

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(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	1880	Press
B.P. No.		Mis.
Dated	13-7-	C874 195-

Not to be folded or roughly handled

No. 240. Read the following Proceedings of the Government of India, Public Works Department, (Railways), dated Fort William, 17th June 1874, Nos. 1,361—69-R:—

System of testing iron-bridges on State Railways.

Read:—

Memorandum by G. L. MOLESWORTH, Esq., Consulting Engineer to the Government of India for State Railways, relative to the system of testing iron-bridges on State Railways, dated 26th May 1874.

I do not approve of the system of testing iron-bridges to an extent far in excess of the maximum loads they will have to carry in practice.

If tested heavily, a faulty portion is likely to be strained and to cause failure afterwards, and the extreme test is no more guarantee against failure than the lighter test.

The rolling loads which have been assumed for the calculation of the strains in girders of the metre gauge railways give nearly an equivalent to a maximum of three engines of the heavy class with their full complement of water and fuel (if there is room for them on the span), and the remainder of the span covered with a train of wagons loaded so as to give a weight of 4 tons on each pair of wheels. If this load be adopted in testing bridges after erection, it will suffice.

In long spans the loaded wagons should be both before and behind the engines, so that the engines may stand as near as possible to the centre of the span. Officers who test the wrought-iron bridges of the State Railways should ascertain and report whether this load, together with the dead load (including the rails, platform, ballasting, asphalt, girders or cross girders, etc., etc.), produces a strain exceeding 5 tons per square inch (or 4 tons in compression) in any part of the material whether in the main girders, in the cross-girders, or in the rail bearers.

When material is exposed to a tensile strain, deduction must be made to allow for the diminution of area caused by rivet holes or otherwise. When subject to a compressive strain, deduction should be made to allow for diminution of area caused by imperfectly filled *rivet* holes, and by holes for pins or bolts whether filled or not.

The materials in some of the bridges sent from England will probably be strained to more than 4 tons per square inch in compression, but though this may in some cases be allowed, it must be with the special sanction of the Government of India.

The testing load should pass over the bridge three times, and the deflection and oscillation (when practicable) should be noted at each time of passing.

At the first passage, the testing train should proceed slowly, and should be brought to a stand with its heaviest portion as near as possible to the centre of the span. It should remain in this position for at least 10 minutes.

At the second passage also the train should proceed slowly, and be brought to a stand, but need not remain in that position longer than is necessary to observe the deflection. The object of this test is to ascertain the deflection after the girder has recovered from the first test.

*Proceedings of the Madras Government. Public Works Department,
13th July 1874.*

At the third the train should pass over the bridge at the speed of 20 miles an hour.

It is desirable that strict orders should be issued to all Managers of Railways not to allow more than three engines to be on any span at one and the same time.

ORDER.—Ordered that this memorandum be forwarded to the Director of State Railways for information and communication to all Engineers-in-Chief of State Railways.

Also, to the Government of Bengal, Scarcity and Relief Department, for information and communication to the Engineer-in-Chief of the Northern Bengal State Railway.

Also, to the Governments of Madras and Bombay, Chief Commissioner, Central Provinces, and the Resident at Hyderabad, for information.

Also, to Consulting Engineers to the Government of India for Guaranteed Railways at Calcutta, Lahore and Lucknow, for information.

(Signed) H. DRUMMOND, Colonel, R.E.,
Deputy Secretary.

No. 241.

ORDER THEREON, 13th July 1874, No. 1,880.

RAILWAY, No. 35.

COMMUNICATED to the Consulting
Engineer for Railways.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the Consulting Engineer for Railways.

Exd. S. T. Austin.

Spare Copies

*P. W. 1874. Department
Proc. of Govt. July No. 3871.*

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAYS.

To

Nos. 1361—69 R.

Dated June 17, 1874.

Received — 25 —

Commenceable to the end of June for Railways

Q. Q. No. 1880. 13-7-74.

System of testing iron-bridges on State Railways.

P. W. D. Press—18-6-74—209.

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Govt. of 1874 Madras.
PUBLIC WORKS.

The Comd. In-
for Mys.

Dated

Recd.

Encl.

G.O., 17 July 1874, No. 1880

Nos. 240-241.

System of testing iron-
bridges on State Railways

Proceedings of the Govt
of India, communicating
Memorandum by the
Comd. In- to the Govt of
India, relative to the
Comd. to the Comd. In-
for Railways —