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MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	4811	Press
B.P. No.		Mis.
Dated	48-7	48 76.
		195.

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*Proceedings of the Madras Government, Public Works Department,
18th July 1876. No. 1,811.*

No. 282. Read the following Circular letter from the Government of India, Public Works Department, (Railway,)—to the Governments of Madras and Bombay, in the Public Works Dept. (Railway); the Chief Commissioners of the Central Provinces and British Burmah; the Resident at Hyderabad; the Consulting Engineers to the Government of India for Guaranteed Railways, Calcutta, Lahore, and Lucknow, dated Simla, 1st July 1876, No. 11, Railway:—

I AM directed to forward for information copies of two Memoranda, dated 2nd May 1876 and 7th June 1876, by the Consulting Engineer to the Government of India for State Railways, on the subject of laying Permanent-way telescopically on the Neemuch State Railway, together with two tables of experiments.

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

*Memorandum by the Consulting Engineer to the Government of India for State Railways on
laying Permanent-way telescopically.*

At my request, Mr. Cheyne, the Engineer-in-Chief of the Neemuch State Railway, has forwarded to me the results of experiments in laying the Permanent-way telescopically. As this information is valuable, I think it might be printed and circulated in the department.

The results are briefly as follows:—

		1st Experiment.	2nd Experiment.
Number of men employed	...	439	628
" of working hours	...	9	10
Length of line ready for the engine	... yards	3,320	3,960
Do. do. do.	... miles	1.886	2½
Number of trollies for fastenings	...	2	2
" " rails	...	12	14
" " sleepers	...	10	12
Cost of labor	... Rs.	157	216
" " per yard	...	9	10½
" " per mile	...	83½	96

Gauge of Railway = 1 metre.

Rails (Vignole's), 40 lbs. per yard.

Weight of materials per mile = 135 tons.

The condition of the line, half spiked, and half the number of fastenings ready for the passage of an engine and train at 15 miles per hour. The trains bringing up the materials are loaded so that the rails are in front of the sleepers.

The number of men employed and cost of labor do not include unloading the train.

The plan of operations is as follows:—Two light trollies are loaded overnight with fish-plates and fastenings for the next day's work, and are kept pushed up close to the linkers as they advance. The other trollies for rails and sleepers are light trollies; they are divided into two sets, one set being loaded whilst the other is following up the linkers closely. The return empty trollies are removed from the line when they meet the loaded trollies, and are replaced when passed.

Each rail as soon as laid is roughly gauged and secured with three spikes, half driven, to allow the material trollies to follow the linkers closely.

The number and disposition of the men employed is shown in the accompanying table. The results above given represent an experimental result of a push, but more than represent an average day's work.

2nd May 1876.

G. L. M.

In continuation of my note on the laying of Permanent-way telescopically, I have received the following information from Mr. Cheyne in reply to my inquiries:

Four men per wagon are employed in loading at depôt and load in 1½ hours.

Eight are employed at the rail-head and unload in from 15 to 20 minutes.

A wagon carries 150 sleepers and 14 pairs of 24 feet rails.

Fifteen wagons will carry ½ mile of permanent-way, and this is the maximum load that an engine of the A class will take over the diversions.

I enclose the replies to my questions in order that they may be put within the previous Memorandum.

7th June 1876.

G. L. M.

LAYING PERMANENT-WAY TELESCO
1ST EXPERIMENT.

	Gangers.				Carpenters.		Spikers.			Coolies.				Boys.	Smiths.	Watermen
Daily rate of pay in Annas ...	14	12	10	8	10	9	7	6½	6	6	5½	5	4	3	10	8
With 2 light trollies for fastenings ...	...	...	...	...	...	...	...	...	...	...	...	12	11	5	...	...
„ 12 „ „ rails ...	...	...	1	...	1	...	...	...	...	80	...	...	...	...	...	...
„ 10 „ „ sleepers ...	...	...	1	...	1	...	...	...	...	106	30	...	...	...	...	...
Total for trollies ...	...	...	2	...	2	...	...	...	...	80	106	42	11	5	...	...
Setting sleepers ...	...	...	...	...	2	...	...	...	...	...	...	6	...	...	...	...
Drawing up rails ...	...	...	...	...	...	...	...	...	...	...	...	12	...	...	...	...
Fixing fish-plates ...	...	...	...	...	1	...	...	...	...	4	4	...	...	2	...	...
Tightening fish-bolts ...	...	...	...	...	...	...	...	...	...	...	6	...	...	...	...	...
Straightening rails (with jim-crow) ...	...	...	...	...	1	...	...	...	...	3	...	...	...	...	...	...
Temporary spiking ...	...	...	...	...	...	...	...	2	...	...	2	...	...	...	...	...
Permanent spiking ...	...	...	...	1	...	...	12	21	1	...	34	...	...	1	...	...
Temporary straightening ...	...	...	...	1	...	...	...	...	...	4	...	...	...	...	...	...
Lifting and packing ...	...	...	...	1	1	...	...	...	...	...	30	12	...	...	...	...
Permanent straightening ...	...	...	1	...	...	...	...	...	...	4	...	...	...	...	...	...
Total for laying ...	1	...	3	5	...	...	12	23	1	15	76	30	...	3	...	...

ABS

For trollies ...	...	2	...	2	...	...	...	...	...	80	106	42	11	5	...
For laying ...	...	1	...	3	5	...	12	23	1	15	76	30	...	3	...
Miscellaneous ...	...	...	...	...	3	4	...	...	...	...	12	...	...	...	...
GRAND TOTAL ...	1	2	3	7	3	4	12	23	1	95	182	84	11	8	...

Gangers ...	...	...	...	13
Carpenters ...	...	...	...	7
Spikers ...	...	...	...	36
Coolies ...	...	...	...	372
Boys ...	...	...	...	8
Smith ...	...	...	...	1
Watermen ...	...	...	...	2

TOTAL ... 439

PICALLY, NEEMUCH STATE RAILWAY.

2ND EXPERIMENT.

	Gangers.				Carpenters.				Spikers.			Coolies.				Boys.	Smiths.	Watermen
Rate of pay in Annas ...	16	12	10	8	12	10	9	8	7	6	5	6	5	4	3	2	10	8
With 2 small trollies for fastenings ...	...	...	...	2	...	...	...	...	...	...	...	...	20	3	3	5	...	...
With 14 small trollies for rails ...	...	1	4	...	...	...	...	...	...	...	...	89	...	...	...	...	...	...
With 12 small trollies for sleepers ...	...	...	5	4	...	...	...	...	...	...	...	...	216	4	...	...	...	...
Total for trollies ...	...	1	9	6	...	...	...	...	...	...	...	89	...	236	7	3	5	...
Setting sleepers ...	...	...	...	2	...	...	...	...	...	...	...	12	...	...	...	...	...	...
Drawing up rails ...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	...	...	...	...
Fixing fish-plates ...	...	...	...	1	...	...	...	...	...	...	...	4	8	...	2	...	...	...
Tightening fish-bolts ...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	...	...	...	...
Straightening rails ...	...	...	...	1	...	...	...	...	...	...	...	4	...	...	...	...	...	...
Temporary spiking ...	...	...	...	...	...	...	...	...	4	...	...	4	...	...	2	...	...	...
Permanent spiking ...	...	...	2	...	...	...	...	12	17	11	...	40	...	...	...	...	...	...
Temporary straightening ...	...	...	1	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...
Lifting and packing ...	...	...	1	2	...	...	...	...	...	...	...	34	46	...	...	...	...	...
Permanent straightening ...	1	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...
Total for laying ...	1	...	3	7	...	...	...	12	21	11	8	118	50	...	4	...	...	...

TRACT.

For trollies ...	...	...	1	9	6	...	...	...	...	...	...	89	...	236	7	3	5	...	...		
For laying ...	...	...	1	...	3	7	...	...	...	12	21	11	8	118	50	...	4	...	...		
Miscellaneous	...	...	1	...	...	...	1	3	4	1	...	...	...	...	14	...	...	...	1	2	
GRAND TOTAL	...	...	2	1	12	13	1	3	4	1	12	21	11	97	118	300	7	7	5	1	2

Gangers ...	...	...	...	28
Carpenters ...	...	...	...	9
Spikers ...	...	...	...	44
Coolies ...	...	...	...	522
Boys ...	...	...	...	12
Smith ...	...	...	...	1
Watermen ...	...	...	...	2

TOTAL ... 618

*Proceedings of the Madras Government, Public Works Department,
18th July 1876. No. 1,811.*

EXTRACT from a letter from Mr. Cockburn, who has been carrying out my experiments on linking in.

Questions by the Consulting Engineer to the Government of India for State Railways.

Replies by the Executive Engineer.

1st.—What gangs are employed in loading materials at depôt and unloading at rail-head?

1st.—Four men per wagon are employed to load the train at the depôt, and they do it in about 1½ hours. As regards unloading, it was noted in Harkness' Memorandum and my accompanying letter that the train was unloaded by the plate-laying gang, but that it would be better to employ a separate set of men for the purpose. On the arrival of each train about eight men per wagon were sent to unload, and they did it in about 15 to 20 minutes. On further consideration and reference to Harkness' Memorandum I have come to the conclusion that when the depôt is near at hand, say within 3 or 4 miles, it would be best to employ one gang of, say, six men per wagon for loading and unloading, and let them run to and fro with the trains; but that with long leads a separate gang should be employed for loading only, and the unloading should be done by the linking men, viz., the men who load and push the trollies, or those who carry forward the rails and sleepers on their shoulders, the number of these being slightly increased to make up for the time lost in unloading.*

2nd.—What arrangements exist for moving the wagons at the rail-head?

2nd.—When the train arrives it is stopped a chain or two short of the farthest point to which the engine can safely run. The wagons are then uncoupled and are pushed forward from each other sufficiently to clear the interlocking ends of the rails which project at both ends of the wagons. The whole contents of each wagon are then unloaded opposite to it. No further moving on can take place after partial unloading, as the engine has already gone forward as far as it can.

We have had no laying on high bank, but it would have to be done in the same way.

3rd.—How many rails and sleepers go to a wagon, and what length of time does a train take on the average, taking diversions into consideration?

3rd.—A wagon carries 150 sleepers of 14 pairs of 24-feet rails. Two wagons acting on diversions at each end of the rail wagons, to receive the projecting ends of the rails, carry each 100 sleepers; only 10 wagons carry ½ mile; 15 wagons ¾ mile. The latter is the greatest load one A engine will draw over the diversion inclines; but having only 21 wagons altogether, we have hitherto worked trains of 10 wagons only, leaving one set to be loaded while the other is being run out.

* I agree in this proposal.—C. Cheyne.

*Proceedings of the Madras Government, Public Works Department,
18th July 1876. No. 1,811.*

4th.—What is the length of time occupied in loading and unloading a train?

4th.—Loading 1½ hours; unloading 20 minutes: see reply to 1st question.

No. 283.

ORDER THEREON, 18th July 1876, No. 1,811.

RAILWAY, No. 29-A.

COMMUNICATED to the Consulting Engineer for Railways for information of the Railway Authorities.

(True Extract.)

Colonel,
Offg. Under Secy. to Govt., P.W.D.

To the Consulting Engineer for Railways.

Exd. T. O'Connor.
Spare Copies

80-5009
GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY.

To

THE GOVERNMENTS OF MADRAS AND BOMBAY,
IN THE PUBLIC WORKS DEPARTMENT (RAIL-
WAY).

THE CHIEF COMMISSIONERS OF THE CENTRAL
PROVINCES AND BRITISH BURMAH.

THE RESIDENT AT HYDERABAD.

THE CONSULTING ENGINEERS TO THE GOVERN-
MENT OF INDIA FOR GUARANTEED RAILWAYS,
CALCUTTA, LAHORE AND LUCKNOW.

Circular No. 11 Railway.

Dated SIMLA, July 1, 1876.

Received 13 13

Enclos: One

*No 1811 7/13 July 1876
Communicated to
the Consulting Engineer
for Railways for informa-
tion of the Railway
authorities.*

Confmg. Supd. 10-8-76.

Forwards copies of memoranda by the Consult-
ing Engineer for State Railways on the subject
of laying permanent-way telescopically on the
Neemuch State Railway.

N^o 282/83

5009 (H.)

Govt. of 1876 Madras.
PUBLIC WORKS.

To The Hon: Secy: for P.W.

Dated

Issued

Recd.

Encl. 1

G. O. 18th July 1876. No. 1811

Nos 282/23

Intd. in Register
11/10/76

Neemuch State Railway

Letter from the Govt
of India forwarding copy
of Memo: by the Cong: Secy:
to the Govt of India for State
Rly on the subject of laying
permanent way teleco:
-graphically on the
Road to the Cong: Secy for P.W.

The Secy to the Govt of Madras

P. W. (Railway)