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12

Proceedings of the Madras Government, Public Works Department,
24th August 1876. No 2,234

No. 543 Read the following endorsement of the Consulting Engineer for Railways, dated Madras, 10th August 1876, No 396 —

From R B ELWIN, Esq, Agent and Manager of the Madras Railway Company, to Lieutenant-Colonel J H M SHAW-STEWART, R E, Consulting Engineer for Railways, dated Madras, 17th May 1876, No 520

IN continuation of my letter of the 24th January last, No 80, I have the honor to forward you herewith results of the tests of the Kuddlehoondy bridge, the bridge at 395th mile, 5th telegraph post, South-west Line, and the Tiroor bridge which were taken on the 13th and 14th of March 1876

From F B HANNA, Esq, Resident Engineer, 4th Division, to the Acting Deputy Chief Engineer, Madras Railway, dated Pothenore, 17th March 1876, No 222-W

I HAVE the pleasure to enclose statements showing the results of the testing of the western portion of the Kuddlehoondy bridge which was carried out in the presence of the Acting Chief Engineer on the 13th instant, and of the bridge at 395th mile, 5th telegraph post, and the Tiroor bridge which were tested the following day

2 The testing train on the 13th was formed thus —

Kuddlehoondy Bridge, Bridge at 395th mile, 5th telegraph post, and Tiroor Bridge.

					Tons	Cwt	Qrs
Tender	No 126	.	..	..	25	4	0
Engine	" 126	..	..	...	31	6	0
Engine	" 50	..	..	...	27	11	0
Tender	" 50	..	...	..	17	15	1
H S O G	" 786	.	.	..	9	3	2
"	" 1488	..	...	...	11	1	2
"	" 821	...	..	..	10	7	0
"	" 624	..	.	...	10	4	0
"	" 567	.	.	...	6	16	0
"	" 887	...	.	...	7	9	0
Inspection Carriage, say	..	.	.	...	8	0	0
Guards' brake van, No 44	...	..	..	...	7	17	3
					172	15	0

representing a distributed load of about 15 cwt per lineal foot The load attained its maximum value at engine No 126, when 123 tons were borne by the centre driving wheels and 31 3 tons rested upon a wheel base of 14 33 feet

3 The testing train at 395th mile bridge was made up of—

					Tons	Cwt	Qrs
Engine	No 126	..	.	.	31	6	0
Tender	" 126	..	...	.	25	4	0
H S O G	" 786	.	..	...	9	3	2
"	" 1488	..	.	.	11	1	2
"	" 821	...	.	..	10	7	0
"	" 1666	..	.	.	9	4	1
"	" 203	.	.	...	9	16	0
"	" 940	.	.	..	7	10	0
Inspection Carriage, say	.	.	.	.	8	0	0
Third-class brake van	.	..	..	..	5	3	0
					126	15	1

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representing a distributed load of a little over half a ton per lineal foot, the maximum value being the same as before

4 At the Tiroor bridge the weight of the testing train was increased by the addition of tank engine No 13 to the train

In this engine—

Total length is	...	..	...	...	..	Ft	In
Wheel base	..	.	...	...	..	14	9
Weight on driving wheels			..	.	.	Tons	Cwt
Total weight	..	...		..	..	13	0
						26	11

5 The wagons in all cases were coupled with centre chains

6 For convenience in fixing directions the ends of the bridges nearest Beypoor have been called the west, and the other cardinal points placed accordingly without reference to their true meridional bearings

7 The spans and piers have been numbered from the east or Madras end.
8 At the Fuddilheer by the

8 At the Kuddeloohondy the train passed across the bridge from west to east at a speed of 20 miles per hour, it was then brought back and engine No 126 stopped, first over the centre of the 7th span, and then over the centre of the 8th

9 At the 395th mile, the speed of the first testing train was 20 miles per hour, that of the second 30 miles per hour. The speed at Tiroor was 15 miles per hour.

10 In cases where the pencil of the testing instrument did not return accurately to zero, the total movement only has been given

TESTING OF TIROOR BRIDGE, 14TH MARCH 1876

No 1 opening, span		Six openings					Ft. In	
Nos	2, 3 & 4	"	"	"	"	"	"	65 0
No	5	"	"	"	"	"	"	66 2
"	6	"	"	"	"	"	"	64 0
"		"	"	"	"	"	"	21 3

					Deflection	Counter Deflection.	Total Movement
<i>Deflection</i>							
Testing train No 1, speed 15 miles an hour—							
1st span,	north girder	centre	..	..	0 635	0 11	0 745
" "	south "	" "	"	"			0 73
2nd "	north "	" "	..	"	0 615	0 22	0 835
" "	south "	" "	"	"	0 65	0 225	0 875
5th "	north "	" "	..	"	0 48	0 01	0 49
" "	south "	" "	...	"	0 45	0 05	0 5
Testing train No 2, speed 15 miles an hour—							
1st span,	north girder	centre	"	...	0 61	0 095	0 705
" "	south "	" "	"	"	0 505	0 095	0 6
2nd "	north "	" "	..	...	0 56	0 195	0 755
" "	south "	" "	"	"	0 625	0 215	0 841
<i>Oscillation.</i>							
Testing train No 1, speed 15 miles an hour—							
1st span,	south girder	centre	"	"	0 315	0 28	0 595
2nd "	north "	" "	...	"	0 485	0 14	0 625
3rd "	" "	" "	"	"	0 39	0 305	0 695
4th "	" "	" "	..	"	0 41	0 26	0 67
5th "	south "	" "	..	"	0 085	0 06	0 145
1st trestle	pier,	north trestle	"	...	0 105	0 045	0 15
2nd "	" "	" "	"	..	"	"	0 385
3rd "	" "	" "	...	...	"	"	0 225
4th "	" "	south "	..	"	...	"	0 15

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TESTING OF BRIDGE No 393 AT 395TH MILE, 5TH TELEGRAPH POST, 4TH MARCH 1876

Three openings of $\left. \begin{array}{r} \text{Ft} \quad \text{In} \\ 68 \quad 9 \\ 66 \quad 8 \\ \text{and } 67 \quad 10 \end{array} \right\} \text{Spans}$

	Deflection	Counter Deflection	Total Movement
Testing train No 1, speed 20 miles an hour—			
3rd span, north girder centre	0 49	0 265	0 755
3rd " south " "	0 525	0 215	0 74
4th " north " "	0 745	0 085	0 83
4th " south " "			
8-30 A M goods train, speed 10 miles an hour—			
4th span, north girder centre	0 62	0 06	0 68
4th " south " "	0 625	0 05	0 675
10-15 A M mail train, speed 10 miles an hour—			
4th span, north girder centre	0 595	0 05	0 645
4th " south " "	0 63	0 055	0 685

			Maximum Movement from zero	Minimum Movement from zero	Total Movement
<i>Oscillation</i>					
Testing train No 1, speed 20 miles an hour—			0 17	0 13	0 30
2nd span, north girder centre	..	...	0 265	0 245	0 51
3rd " " " "	..	.	0 27	0 09	0 36
4th " south " "	..	..	0 065	0 065	0 13
Vertical pile, per south side	..	..	0 085	0 045	0 13
1st trestle pier, south trestle	..	..	0 065	0 055	0 12
2nd " " north "	..				
Testing train No 2, speed 30 miles an hour—			0 18	0 12	0 30
2nd span, north girder centre	..	..	0 26	0 235	0 495
3rd " " " "	..	.	0 37	0 17	0 54
4th " south " "	..	..	0 07	0 06	0 13
1st trestle pier, south trestle	..	.	0 095	0 075	0 17
2nd " " north "	..				
10-5 A.M. mail train, speed 10 miles an hour—			0 06	0 025	0 085
2nd span, north girder centre	..	..	0 1	0 095	0 195
3rd " " " "	..	...	...	...	0 155
4th " south " "	..	..			

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24th August 1876. No 2,231

TESTING OF WEST PORTION OF KUDDEHOONDY BRIDGE, 13th MARCH 1876

Eight openings, each 66 feet span

The deflection is given in decimal parts of an inch

	Deflection	Counter Deflection	Total Movement
Deflection			
Testing train No 1, speed 20 miles an hour—			
7th span, north girder centre	..	0.24	..
7th " south " "	0.59	0.245	0.835
8th " north " "	0.63	0.64	0.71
8th " south " "	0.65	0.685	0.735
Testing train, stationary—			
Leading engine at centre of 7th span			
tending over 8th span.			
7th span, north girder centre	0.565	..	0.565
7th " south " "	0.495	..	0.495
8th " north " "	..	0.67	0.67
8th " south " "	..	0.67	0.67
Testing train, stationary—			
Leading engine at centre of 8th span			
7th span unloaded			
7th span, north girder centre	..	0.13	0.13
7th " south " "	..	0.135	0.135
8th " north " "	0.535	..	0.535
8th " south " "	0.57	..	0.57

The oscillation is given in decimal parts of an inch

	Maximum Movement from zero	Minimum Movement from zero	Total Movement
Oscillation			
Testing train No 1, speed 20 miles an hour—			
1st span, south girder centre	0.07	0.055	0.125
2nd " " " "	0.29	0.275	0.565
3rd " " " "	0.235	0.13	0.365
4th " " " "	..	..	..
5th " " " "	0.185	0.05	0.235
6th " " " "	..	..	..
7th " " " "	0.125	0.1	0.225
8th " " " "	..	..	..
1st pier trestle	..	..	..
2nd " " " "	..	..	..
3rd " " " "	..	..	..
4th " " " "	..	..	..
5th " " " "	..	..	..
6th " " " "	..	..	..
7th " " " "	..	..	..
9-45 A.M. train, 1st March, slow—			
8th span, south girder centre ..	0.22	0.075	0.295

(Signed) F. B. HANNA,
Resident Engineer, 4th Division.

Proceedings of the Madras Government, Public Works Department,
24th August 1876. No. 2,231.

ANALYSIS OF RESULTS
Kuddehoondy Bridge, Western portion

Maximum deflection—
South girder of west span 0.65 inches
Spans 7 and 8 only were tested

Maximum oscillation—
2nd span $0.29 + 0.255 = \dots$ 0.545 "
South girder of each span was tested

Maximum oscillation of trestle pier—
4th pier, total movement 0.22 "
South pier of each trestle was tested
Bridge No 393 at 395th Mile, 5th Telegraph Post 3=

Maximum deflection—
North girder of 4th span 0.745 inches
From a comparison of the results obtained with ordinary trains it seems probable that a slightly greater deflection would have been found in the case of the south girder if the testing instrument had not failed

Maximum oscillation—
4th span $0.37 + 0.17 = \dots$ 0.54 "
One girder of 2nd, 3rd, and 4th spans was tested.
Maximum oscillation of trestle pier—
2nd pier $0.095 + 0.075 = \dots$ 0.17 "
One trestle of each pier was tested.

Turoor Bridge

Maximum deflection—
South girder of 2nd span... .. 0.65 inches.
Both girders of spans 1, 2, and 5 were tested.

Maximum oscillation—
3rd span $0.39 + 0.305 = \dots$ 0.695 "
One girder of each large span was tested.

Maximum oscillation of pile pier—
2nd pier, total movement 0.385 "
One trestle of each pier was tested

(Signed) F. B. HANNA,
Resident Engineer, 4th Division.

SUBMITTED for the information of Government, in continuation of the papers embodied in Proceedings of Government, No 381, dated 12th February 1876.
(Signed) J. H. M. SHAW-STEWART, Lt-Col, R.E.,
Consulting Engineer for Railways.

No. 544. ORDER THEREON, 24th August 1876, No. 2,233.

RAILWAY, No 59-C.

ORDERED to be printed and communicated to the Government of India.

(True Extract.)
(Signed) G. W. WALKER, Major-General, R.E.,
Secretary to Government

No. 545. DOCKET No. 2,234, dated 24th August 1876
Copy of the above forwarded to the Government of India in continuation of No. 382, dated 12th February 1876.
(True Extract.)

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

Exd E C Shunker.
Spare Copies

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370

7/24

SUBMITTED FOR THE INFORMATION OF GOVERNMENT,
in continuation of the papers embodied
in Proceedings of Government No 301
dated 6/2 February 1876

CONSULTING ENGINEER'S OFFICE,

Madras,

1876

R. E.,

Consq. Engineer for Railways.

To

The Secretary to Government,

Public Works Department,

Fort Saint George

501-12-74845 3873

12-2-76 382

No 2233 of 24 Aug 76
Declared to be printed
and communicated to
the Govt of India

U.S. 2234 of 24 Aug 76
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India in continuation
of No. 382 of 12 Feb 1876

[Signature]

Decd 15/9/76

[Signature]

16-523/45

Copy for Mr. Witte 25-
Apr 1876

Decd 25/9/76

16-523/45
12-8-76 12-8-76

RAILWAY DEPARTMENT.

From 1876

The Consulting Engineer
for Railways

To
The Secretary to Government,
P. W. Department,
Fort St. George.

Dated 10 } 1876
Received }

No.
Enclosures. 2 ✓

Submitting for the
information of Govt
letter from the Agent
in 17 regarding the
results of tests of water
bridges on the T. & D.
in 17. Witte order

578241

Col. of 115761 119112

PUBLIC WORKS.

2.

The Govt. Eng. & Survey

D. 1

I. 1

L. 1

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33-24

G. O. 2454/1911 No

75

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No. 52345

Submitting papers
containing the results
of the tests of certain
bridges of the North
West line of the
Madras Ry.

Bridges on the S.W. line
Madras Ry.

Papers containing the
results of the tests of
certain — ordered
to be forwarded to
the Secy. of Madras Ry.

21-11-11