

(1) Number of pages _____

(2) Date of repair _____

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works

DEPARTMENT

G.O. No. 2283-834 (2y) Press
B.P. No. ~~Mis.~~

Dated 28-8-1876

Not to be folded or roughly handled

No 637. Read the following letter from Lieutenant-Colonel J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways, to Major-General G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Madras, 15th August 1876, No 410.—

I HAVE the honor to report that I have sanctioned the opening of the South Indian Railway between Madras and Tindevanum, a distance of 76 miles, upon the 1st proximo, subject to a final inspection to be made before the end of this month.

2. Upon the section about to be opened the steepest gradient is 1 in 200, that being the ruling gradient between Madras and Tanjore. The sharpest curve has a radius of 18 chains.

3. Twelve stations are situated within the section; their names and distances from Madras being as follows —

	Miles.
Madras	0
Saidapett	6
Gundy	7½
Saint Thomas' Mount	9
Palaveram	12½
Vundalur	19½
Guduvancheri	23
Chingleput	35
Madrantikum	50½
Atcheravak	59
Olakkur	68½
Tindevanum	76

4. Of the requirements specified in the Proceedings of Government, dated the 10th April 1876, No 945, the whole are expected to be completed by the 1st proximo, with the exception of some of the station buildings. The most backward of these are the station-house at Chingleput, Madrantikum, and Tindevanum. It is expected that these will be finished during September; but in the mean time the Agent proposes to open the line for passenger traffic only.

5. The line about to be opened cannot be said to be fenced throughout. Vegetable fences have been planted every where, upon both sides of the line, but they are not yet efficient for the prevention of cattle trespass. Between Madras and Saidapett, a distance of 6 miles, iron wire fencing has been erected.

6. Upon the section about to be opened, there are four large bridges, over the Cooum, the Adyar, the Palar, and the Karunguli rivers. The largest of these, the Palar bridge, is yet unfinished. It will consist of eighteen openings, each 120 feet in width; and will probably be completed during 1877. The river will for the present be crossed on a temporary road laid along the bed, with twelve openings, each of 18 feet, to pass the water during slight freshes. The precautions to be observed with a view to the safety of traffic passing over this temporary road are detailed in an appended statement.

7. The Adyar bridge consists of six openings, each 65 feet in width, spanned by lattice girders resting on masonry piers. The bridge is built on a skew, the angle being

757. The girders are of what is known as the "Whipple Murphy" pattern. The bridge was tested in March last, but the result was not altogether satisfactory; the chief defect being that, under heavy rolling loads, the two girders in each opening did not vibrate in parallel lines. This defect has been overcome by the addition of horizontal bracings formed of angle iron, connecting the bottom booms of the two girders in each opening. The bridge was again tested on the 12th July, when the maximum vertical deflection, recorded under a stationary weight of 60 tons, was 56 inch. Under the same weight, moving at a speed of 25 miles per hour, the maximum deflection recorded was 94 inch. The maximum lateral deflection, caused during the passage of a heavy train weighing 180 tons, at a speed of 25 miles per hour, was 68 inch.

These results have led me to recommend that the girders shall be still further strengthened. According to the design, each of the six openings is provided with three sets of diagonal horizontal bracings distributed at intervals along the upper face of the top booms of the girders. I have asked that similar bracings shall be placed continuously throughout each opening; the number of sets of these bracings being thus increased from three to eight. This is now being done, and will in my opinion give sufficient rigidity to the girders. The work will probably be finished before the end of this month; and in the interim the speed of all trains running over the bridge is limited to ten miles per hour.

8 The Karunguli bridge consists of eleven openings, each of 40 feet, spanned by wrought iron plate girders resting on masonry piers. The bridge was tested on the 18th July, when the maximum vertical deflection, recorded under a stationary load weighing 33 tons, was 31 inch. Under the same weight, moving at a speed of 25 miles per hour, the maximum deflection recorded was 42 inch.

9 The Coom bridge consists of five openings, each of 40 feet, spanned by wrought-iron plate-girders resting on masonry piers. The bridge was tested on the 12th July, when the maximum vertical deflection, recorded under a stationary weight of 33 tons, was 35 inch. Under the same weight, moving at a speed of 25 miles per hour, the maximum deflection recorded was 49 inch.

10 All the large bridges named above, as well as most of the smaller ones, are founded on the hard; and in every case where this was not possible, the bridge has been provided with a substantial floating to protect it from the destructive influence of floods.

11. The time table to be introduced upon the opening of the line was sanctioned by Government in their Proceedings, dated the 21st July 1876, No. 1,831.

From the bridge over the Palani all have been completed and opened for traffic, the provisions for the bridge over the river are also complete, and the bridge over the river is now the river on the temporary work. The provisions for the bridge over the river are also complete, and the bridge over the river is now the river on the temporary work.

- (1) Note in addition to the provisions for the bridge over the river, the provisions for the bridge over the river are also complete, and the bridge over the river is now the river on the temporary work.
- (2) Note in addition to the provisions for the bridge over the river, the provisions for the bridge over the river are also complete, and the bridge over the river is now the river on the temporary work.
- (3) Note in addition to the provisions for the bridge over the river, the provisions for the bridge over the river are also complete, and the bridge over the river is now the river on the temporary work.
- (4) Note in addition to the provisions for the bridge over the river, the provisions for the bridge over the river are also complete, and the bridge over the river is now the river on the temporary work.

- (5) The Inspector in charge shall keep the Resident Engineer regularly informed as to the state of the river.
- (6) When the river is in flood, no passenger train shall cross until the engine shall have first gone over alone, with the Inspector, and returned for the train.

No 638

ORDER THEREON, 28th August 1876, No. 2,283.

RAILWAY, No 66.

ORDERED to be recorded and communicated for the information of the Government of India

2 The vegetable fences should be carefully tended so as to be made efficient at the earliest date practicable

3 The result of the tests of the Adyar bridge given is not satisfactory, and the Governor in Council is of opinion that the speed over the Adyar bridge should not exceed four miles per hour, pending completion of the measures being taken for giving additional strength to the girders. The result of these measures should be reported in due course

(True Extract)

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

No 639.

DOCKET No 2,283-A, dated 28th August 1876

COPY of the above forwarded to the Government of India

(True Extract)

Colonel,

Offg. Under Secy to Govt, P.W.D.,
for Secretary to Government.

Exd. W H French

Spare Copies

515/

Until the bridge over the Palar shall have been completed and opened for traffic, the precautions specified below should be strictly observed in the case of every train which crosses the river on the temporary road. These precautions were laid down by Government for observance on the Madras Railway under similar circumstances.

- (1) ~~No train~~ shall cross the river except during daylight.
- (2) No train shall cross the river at a speed exceeding 4 miles per hour.
- (3) An Inspector shall be

retained in special charge of the temporary road, which shall be constantly watched.

(4) The Inspector in charge shall accompany the engine of every train which crosses the river. Strict orders must be given to drivers not to cross the river unless the Inspector is upon their engine.

(5) The Inspector in charge shall keep the Resident Engineer regularly informed as to the state of the river.

(6) When the river is in flood, no passenger train shall cross until the engine shall have first

first gone over alone, with the Inspector, and returned for the train.

P.W.D.

17 1076

RAILWAY DEPARTMENT.

CONSULTING ENGINEER'S OFFICE,

Madras, *15th Aug^r* 1876

No. 111

From

LIEUT - COLONEL J. H. M. SHAW-STEWART, R E,

Consulting Engineer for Railways,

To

MAJOR-GENERAL G. W. WALKER, R E,

Secretary to Government,

Public Works Department,

Fort Saint George

SIR,

*See remarks on
Arya Bridge
23/8
JL*

I have the honour to report that I have sanctioned the opening of the South Indian Railway between Madras and Tondavanam, a distance of 76 miles, upon the 1st proximo, subject to a final inspection to be made before the end of this month.

2. Upon the section about to be opened, the steepest gradient is 1 in 200, that being the ruling

rising gradient between Madras
and Tanjore. The sharpest
curve has a radius of 15 chains

3. Twelve stations are
situated within the section; their
names and distances from Mad-
ras being as follows:

Madras	0 miles
Sindapet	6 "
Gairdy	7 1/2 "
Saint Thomas' Mount	9 "
Palavaram	12 1/2 "
Vandalur	16 1/2 "
Guduvancheri	23 "
Chingleput	35 "
Madurantakam	50 1/2 "
Thiruvarak	59 "
Chakkur	67 1/2 "
Tindivanam	76 "

4. Of the requirements spe-
cified in the Proceedings of
Government dated the 10th April
1846 N^o 945, the whole are
expected to be completed by the
1st proximo, with the exception
of some of the station buildings.
The most backward of these are
the station-house at Chingleput,
Madurantakam, and Tindivanam.
It is expected that these will
be finished during September;
but in the meantime the Agent
proposes to open the line for
passenger traffic only.

5. The line about to be
opened cannot be said to be
fenced throughout. Vegetable
fences

(13) 3
fences have been planted every
where, upon both sides of the line,
but they are not yet efficient for
the prevention of cattle incursions.
Between Madras and Saidapett
a distance of 6 miles, iron wire
fencing has been erected.

Upon the section about
to be opened, there are four large
bridges, over the Coovim, the
Adyar, the Palar, and the Ma-
ranguli rivers. The largest of
these, the Palar bridge, is yet
unfinished. It will consist of
eighteen openings, each 120 feet in
width; and will probably be com-
pleted during 1877. The river will
for the present be crossed by a

a temporary road laid along the
bed, with twelve openings, each
of 18 feet, to pass the water during
slight freshes. The precautions
to be observed with a view to
the safety of traffic passing
over this temporary road are
detailed in an appended state-
ment.

The Adyar bridge con-
sists of six openings, each 65
feet in width, spanned by lat-
tice girders resting on masonry
piers. The bridge is built on
a skew, the angle being 75° .
The girders are of what is known
as the "Whipple Murphy" pattern.
The bridge was tested in March
last

last, but the result was not altogether satisfactory; the chief defect being that, under heavy rolling loads, the two girders in each opening did not vibrate in parallel lines. This defect has been overcome by the addition of horizontal bracings formed of angle iron, connecting the bottom booms of the two girders in each opening. The bridge was again tested on the 12th July, when the maximum vertical deflection, recorded under a stationary weight of 60 tons, was 56 inch. Under the same weight, moving at a speed of 25 miles per hour, the maximum deflection

This result after insertion of transverse bracing is satisfactory - The elasticity is very great & struck with such elastic girders. which from the skew of the bridge will occupy a train - it will not be safe for passenger trains to cross at a higher speed than 4 miles per hour - The deflection is not so much with the change from stationary rolling weight - The lateral flexure is less than other girders in the arrangement of the bracing that the holes are completely closed & no pressure is put on the base of the beam.

deflection recorded was 94 inch. The maximum lateral deflection, caused during the passage of a heavy train weighing 180 tons, at a speed of 25 miles per hour, was 68 inch. These results have led me to recommend that the girders shall be still further strengthened. According to the design, each of the six openings is provided with three sets of diagonal horizontal bracings distributed at intervals along the upper face of the top booms of the girders. I have asked that similar bracings shall be placed continuously throughout each opening; the number of sets of these bracings being

a being thus increased from three to
 7. eight. This is now being done,
 a and will in my opinion give suf-
 ficient rigidity to the girders. The
 work will probably be finished
 before the end of this month; and
 in the interim the speed of all
 trains running over the bridge is
 limited to ten miles per hour.

P. The Kurungui bridge consists of eleven openings, each of 30 feet, spanned by wrought iron plate girders resting on masonry piers. The bridge was tested on the 13th July, when the maximum vertical deflection, recorded under a stationary load weighing 33 tons, was 31 inch. Under the same weight, moving at a speed of 25 miles

9. The Coom bridge consists of five openings, each of 40 feet, spanned by wrought-iron plate girders resting on masonry piers. The bridge was tested on the 12th July, when the maximum vertical deflection recorded under a stationary weight of 33 tons, was 3.5 inches. Under the same weight, moving at a speed of 25 miles per hour, the maximum deflection recorded was 2.9 inches.

10. All the large bridges so named above, as well as most of the smaller ones, are founded on

on the land; and in every case
where this was not possible, the
bridge has been provided with
a substantial flooring to pro-
tect it from the destructive in-
fluence of floods.

11. The time-table to be
introduced upon the opening of
the line was sanctioned by the
Government in their Proceedings
dated the 21st July 1876, N^o 1831.

I have the honour to be,
Sir,

Your Most Obedt Servant,

Wm. Mount Stewart

Secy. Genl. Railways

821-7-76 No 1851
 - 10-6-76 - 945
 - 1-6-76 - 1366.

P.W.D.
 17 1876

No 2283

Public Works Department

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 28th Aug 76 No 2283
 Read the following —

From

The Chief Eng^r for
 Railways

(H.C. No 410 of 15th Aug 76)

Ordered to be
 recorded and communicated
 for the information of the
 Gov^t of India.

2. The vegetable fences
 should be carefully tended
 so as to be made efficient
 at the earliest date practi-
 cable.

3. The restriction of speed
 to ten miles an hour over
 the Adyar bridge is
 approved, pending com-
 pletion of the measures
 being taken for giving
 additional

23/8

27/11

Cir-22-8-76 M.A. 28.8.76
 Dated 28-8-76

Noting that the
 instructions issued
 on the 1st June 1876
 in reference to the
 vegetable fences
 between the
 stations of the
 railway are
 being
 carried out.

Dated 15th August 1876

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

From
 The Consulting Engineer
 for Railways,
 RAILWAY DEPARTMENT.

additional strength to
the garrisons. The result
of these measures, should
be reported in due course.

N.C. No 233 of 25th Aug 1876
No 228300.

Copy of the above for-
warded to the Govt of
India.

12657-634

Enclosed for P.O.
in 2 letters for 12657-634

12657-634

PUBLIC WORKS.

the same way for $H^{u,2}$

2283
 2285

11. 637(a) 639

18-9-46

Examining copies of logs
on Report received from the
County for logs of opening
for public traffic on the
1st proximo. the section of
line from Grandview to Lin-
denbaum. T. City.

South Indian Railway
Line from Madras to Trin.
Neramun. Report from
the Engineer for the
opening for public traffic
on the 1st proximo, the —
recorded with remarks, and
sent to the Govt of India
for confirmation.