

(1) பக்கங்களின் எண்ணிக்கை

74

(2) புதுக்கித் திருப்பிய நாள்

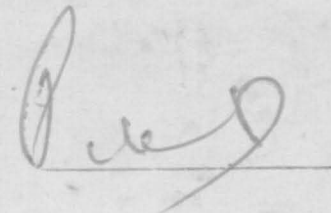
அக்டோபர். 90

(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம்

leza

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு



துறை

அரசாணை எண்.

மு. கோப்புத் தாள் எண்.

2066-67

அச்சகம்
பலவகை

நாள் :

31. 7. 1891

198

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

37 sheets

31st JULY 1891, No. 2066 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following papers:—

From C. VINCENT, Esq., Under-Secretary to the Government of India, Public Works Department (Civil Works—Communications), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 4th July 1891, No. 236 C.

With reference to the despatch from the Secretary of State to the Government of Madras, No. 2, Public Works (Stores), dated the 29th August 1889, I am directed to forward, herewith, a copy of the under-noted despatch from the Secretary of State for India, together with copies of two reports accompanying by the Consulting Engineer to the India Office on the subject of a new series of designs and specifications for rivetted road bridges, and to request that the Government of India may be informed whether the suggestions made by Sir Alexander Rendel are concurred in by the Government of Madras.

ENCLOSURES.

From the Right Honorable Her Majesty's Secretary of State for India, to His Excellency the Most Honorable the Governor-General of India in Council, dated India Office, London, 4th June 1891, No. 31, Public Works.

In your Public Works Secretary's letter, No. 71 C. of the 23rd February 1891, he inquires when your Excellency's Government might expect to receive the lithographed copies of the new series of designs and specifications for rivetted road bridges promised in my Public Works (Stores) despatch, No. 1 of the 20th June 1889.

2. I now transmit, for the information of your Government and for communication to the Governments of Madras and Bombay, copies of two reports* by Sir Alexander Rendel, from which you will see that no great progress has been

made in the preparation of the type designs and that, in view of the great differences in the requirements of different parts of India, he is now doubtful whether type drawings can be prepared which would be generally useful. The cost also would be £450 instead of £150.

3. In these circumstances, I shall be glad to know whether, as suggested by the Consulting Engineer, the present type drawings might not be used by Engineers in India for the purpose of preparing estimates and designs where necessary, in other cases Engineers submitting their own designs with the indents, or giving such a description of what is wanted as would enable designs to be prepared here.

Copy report by Consulting Engineer, dated 22nd April 1891, No. 1.

No great progress has been made with the type drawings. I have looked upon them as a work to be taken up at times when my draughtsmen were not busy with more urgent matters, and they have lately been fully employed. I have also been led of late to doubt if we can prepare type drawings which shall be generally useful without going to much greater expense than I first thought of, for I notice by the indents lately sent home very strong differences in the requirements of different parts of India, some due to difference of circumstances, others to difference in the personal views of Engineers in respect to the way in which the circumstances should be met. Northern India, for instance, asks for bridges having iron roadways thickly covered with ballast. Madras, on the other hand, asks for bridges with very light roadways made of timber only, whilst Bombay asks for a combination of timber and ballast. If we are to design type girders not only of varying spans but varying roadways also, I am afraid we shall

spend much more money than is yet contemplated without any certainty after all of meeting the cases which will actually arise.

The main use of these type drawings is to enable Engineers in India to estimate the cost of the works they intend to propose and this purpose is very well served by the present drawings, because the designs they represent are certainly more expensive than any new designs would be, and what I would suggest is that they should continue to be used for the purpose of estimate when the Engineer, who is indenting, does not feel able to prepare and estimate a design of his own, and that indents should either be accompanied by designs prepared directly for the purpose of the indent or by such a description of what is wanted as would enable us to do so here. It will be found, I think, in many cases that the Engineer will prefer to make a design of his own, for the Public Works Department contains now many Engineers quite as capable for designing girders as any one in England can be.

Copy report by the Consulting Engineer, dated 1st May 1891, No. 2.

It may be safely said that to make a complete set of type drawings with all kinds of roadway will cost £150 instead of £150 and then there is the printing to be paid for.

Note by the Chief Engineer, Public Works Department.

Several objections having been taken to the type designs for superstructure of bridges as prepared by Mr. James, the India Office was addressed in letter No. ¹⁴/₁₇₁₈ W., dated 28th June 1889, recommending the preparation of a fresh series of type designs, the list of which to be similar to that of the previous series of type designs.

2. Meanwhile despatch from the Secretary of State for India, No. 1, Public Works (Stores), dated 20th June 1889, enclosing a report from the Consulting Engineer was received.

3. In the report, Sir A. Rendel recommended the preparation of fresh designs for spans of 40, 50, 60, 70 and 80 feet only, and for two widths, 12 feet and 18 feet, and intimation was given in the despatch that instructions had issued for the preparation of these proposed designs.

4. This was replied to in letter No. ¹⁵/₂₀₆₉ W., Public Works, dated 1st August 1889, in which attention was invited to letter No. ¹⁴/₁₇₁₈ W., but at the same time it was desired that the matter, both as regards designs and the number of intermediate spans, might be left to Sir A. Rendel's discretion.

5. A copy of Mr. Anderson's note, pointing out the excessive loads that had been provided for in the original designs was also forwarded at the same time.

6. Finally in despatch No. 2, Public Works (Stores), dated 29th August 1889, it was intimated to this Government that its suggestion contained in letter No. ¹⁴/₁₇₁₈ W. would be considered when replies to communications on the same subject made to the Governments of India and Bombay were received.

7. The Government of India now forwards a copy of despatch from Secretary of State No. 31, Public Works, dated 4th June 1891, together with two reports by the Consulting Engineer to the India Office with a request that it may be informed if this Government concurs with the suggestions made by the Consulting Engineer.

8. From the Consulting Engineer's report, it appears that but little progress has been made towards the preparation of the fresh series of designs.

9. The Consulting Engineer reports that from indents he has received from different parts of India he observes that there are variations in the class of roadways proposed for bridges and that to draw up a series of type designs that should provide for each of these classes (iron, timber or combination of both) a larger expenditure would be incurred than was previously considered to be sufficient. He now estimates the cost of the designs at £150, the previous estimate having been £150.

10. It is not known if this estimate of £450 would cover the cost of designs for spans of from 5 feet to 150 feet, or if it refers only to spans of 40 feet, 50 feet, 60 feet, 70 feet and 80 feet, but, as it now appears that the proposed designs would be prepared with reference to the requirements of the Governments of India and Bombay as well as

of the Government of Madras, and that presumably those Governments would contribute a proportionate share of the cost, the Chief Engineer does not consider the estimate of £450 excessive, and in so far as cost is concerned he considers that there is no valid objection to the preparation of the designs.

11. The Consulting Engineer suggests that the present type designs should be used for the purpose of arriving at the cost of any proposed bridge, the design on which the bridge is actually to be constructed to be either prepared in India or from a full description of requirements in England, and the reason for this suggestion is that the cost so arrived at cannot fail to be more than the actual cost of the bridge.

12. Sir A. Rendel, in his report on the Gadilam bridge, dated 16th November 1888, showed that the cost of one span of that bridge, according to the type design, would be £652-10-0, whilst, if constructed in accordance with the design, type of which we have been so long waiting for, the cost would only be £484-10-0, that is to say, that, if the Consulting Engineer's suggestion had been applied to this particular bridge, each span of it would have been over-estimated by £168 or Rs. 2,370.

13. The Chief Engineer would not like to see this procedure adopted and therefore cannot concur in the suggestion of the Consulting Engineer.

14. The Chief Engineer fully concurs with the Consulting Engineer in his opinion of the capabilities of the officers of the Public Works Department in the matter of designing girders, but would point out that to do full justice to a design requires an amount of time which Engineers in this Presidency have not usually at their disposal. A proof of the time designing takes is the little progress that has been made up to date owing to the press of work in the Consulting Engineer's office with the type designs which were promised in despatch from the Secretary of State No. 1, Public Works of 20th June 1889.

15. It is to obviate such delays that the Chief Engineer would again urge the desirability of this department being furnished with a series of type designs suitable to this country.

16. As regards the designs, the Chief Engineer would observe that, as built girders will rarely be required for spans of less than 30 feet, while spans exceeding 80 feet, besides being very rare, will usually call for special treatment, the types, as proposed by the Consulting Engineer in his report, dated 1st May 1889, forwarded with despatch No. 1, Public Works, dated 20th June 1889, might be adhered to, viz., plate girders for spans up to 60 feet and lattice girders for spans of 70 feet and 80 feet, to be of two widths 12 feet and 18 feet; the flooring to be of wrought iron trough plates or corrugated iron. Should wooden flooring be from any reason considered advisable the necessary alteration in the design could be made in this country.

17. The Chief Engineer considers that if the types were designed for spans increasing by increments of 5 feet instead of 10 feet, their utility would be largely increased, that the lowest limit of span, for which type designs are prepared, should be 30 feet instead of 40, and that it would be advantageous if one of the types for plate girders was designed to carry the flooring on the bottom booms.

C. TACAMUND,
24th July 1891.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

ORDER—dated 31st July 1891, No. 2066 W., Public Works.

Ordered that the following reply be sent to the Government of India.

(Here enter No. 2067 W., dated 31st July 1891.)

(True Extract.)

Major, R.E.,
Under-Secy. to Govt., P.W.D.

Exd. A. D. Xavier.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1891} Madras.
PUBLIC WORKS.

Dated July, 31st.

Recd.

Encl.

G.O., 31st July 1891, No. 2066 W.

JULY.

Rivetted Road Bridges

Ordered that the Government of India be addressed on the subject of a new design and specifications for —.

31st JULY 1891, No. 2067 W., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

LETTER—from

COLONEL J. PENNYCUICK, R.E.,
*Secretary to the Government of Madras,
Public Works Department,*

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

In reply to your letter No. 236 C., dated 4th July 1891, I am directed to forward a copy of the Proceedings of this Government No. 2066 W., dated 31st July 1891, embodying a note by the Chief Engineer, Public Works Department, and to state that His Excellency the Governor in Council concurs in the views therein expressed.

2. It has already been pointed out in the despatch from this Government to the Right Honorable the Secretary of State No. ¹⁵/₂₀₆₉ W., dated 1st August 1889, that the adoption of the existing type plans will in many cases entail much greater cost than is necessary and that lighter designs more suited to local circumstances should be provided, and I am now to add that the preparation of designs by local officers, as suggested by the Consulting Engineer to the India office, will involve much labour and loss of time, which the type designs are intended to obviate. I am, therefore, to express the hope of His Excellency the Governor in Council that it will be found practicable to obtain for use in this Presidency a new series of type designs as indicated in the Chief Engineer's note.

I have the honour to be,

Sir,

Your most obedient servant,

Colonel, R.E.,
Secretary to Govt., P.W.D.

OOTACAMUND,
31st July 1891.

Exd. A. D. Xavier.
Spare Copies

2066²⁶⁹
4

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1891} Madras.
PUBLIC WORKS.

Dated July, 31st.

Road.

Encl.

31st July 1891, No. 2067 W.

JULY.

Rivettted Road Bridges

Requesting to obtain a new series of type
designs, &c., for —.

All communications
should be addressed to
the Secretary.

No. 236 C.

GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.
CIVIL WORKS.
Communications.

2066-107
1891
18/5

To

The Secretary to the Government of
Madras, Public Works Department.

Sir, Simla, the 4th July 1891.

2067 W
25.7.91

With reference to the Despatch
from the Secretary of State to the
Government of Madras, No 2, Public
Works, (Stores), dated the 29th August 1889,
I am directed to forward herewith a
copy of the undernoted Despatch from
the Secretary of State for India, to-
gether with copies of two Reports accom-
panying, by the Consulting Engineer to
the India Office on the subject of a
new series of designs and specifications
for rivettted road bridges, and to request
that

D. W. Furman

7519

That the Government of India may
be informed whether the suggestions
made by Sir Alexander Rendel
are concurred in by the Government of
Madras.

I have the honour to be,
Sir,

Your most obedient Servant,

C. V. Furman

Under Secretary to the
Government of India.

Documents accompanying

Copy of Despatch from Secretary of State,
No 31 P. 11, dated 4th June 1891.
Copies of the two Reports accompanying

Recd 13. VII. 91

Chs 13-VII
m 13-VII

206669
6

1/2

Fr. Aug 269 w 81. 2. 86. ✓
 Despatch no 269 w 81. 2. 86 ✓
 Fr. Aug 1525 w 816. 6. 86 ✓
 " " 1387 w 811. 5. 88 ✓
 " " 2328 w 821. 7. 88 ✓
 " " 3891 w 811. 12. 88 ✓
 Despatch no 14 1718 w 828. 6. 89 ✓
 Fr. no 1718 w 828. 6. 89 ✓
 " " 1964 w 820. 7. 89 ✓
 Despatch no 15 2069 w 81. 8. 89 ✓
 Fr. no 2069 w 81. 8. 89 ✓
 " " 2674 w 825. 9. 89 ✓

Note some spare copies of 98 in
 file printed and sent
 separately to S. A. J. V. V.

Government of Madras.

189

P. W. DEPARTMENT.

CURRENT No. 7519 ✓

From

The Govt. of India

ENCLOS. —

No. 236 C

Dated 4-7-91

Received 15-7-91

SUBJECT.

Rivettted Road bridges

Forwarding a copy of
 Despatch from the
 together with copies of
 Reports by the Com. Eng. to
 the India Office on the
 subject of a new series of
 designs and specifications for

DISPOSAL.

No.

dated

2 SP
 India Office
 London, 4th June 1891.
 Public Works -
 No. 31.
 To His Excellency the Most Honourable
 the Governor General of India in Council.

My Lord Marquis,

In your Public Works Secretary's
 letter No. 71 C of the 23rd February 1891, he enquires
 when your Excellency's Government might expect to
 receive the lithographed copies of the new series of
 designs and specifications for rivettted road bridges
 promised in my Public Works (Stores) Despatch
 No. 1 of the 20th June 1889.

2. I now transmit for the information
 of your Government and for communication to
 the Governments of Madras and Bombay, copies
 of two reports by Sir Alexander Rendel, from
 which you will see that no great progress has
 been made in the preparation of the type designs,
 and that, in view of the great differences in
 the requirements of different parts of India, he
 is now doubtful whether type drawings can
 be prepared which would be generally useful.
 The cost also would be £450 instead of £150.

3. In these circumstances I shall be glad
 to know whether, as suggested by the Consulting
 Engineer, the present type drawings might
 not be used by Engineers in India for

Dated 22nd April
 and 1st May 1891

1/27 2317.71

the purpose of preparing estimates and designs
were necessary; in other cases Engineers submitting
their own designs with the indent, or giving
such a description of what is wanted as
would enable designs to be prepared here.

I have, &c &c,

W. Cross.

N. 1.

Copy Report by Consulting Engineer
dated 22nd April 1891.

No great progress has been made
with the type drawings. I have looked upon
them as a work to be taken up at times
when my draughtsmen were not busy with
more urgent matters, and they have lately
been fully employed. I have also been
led of late to doubt if we can prepare
type drawings which shall be generally useful
without going to much greater expense
than I first thought of, for I notice by
the Indents lately sent home very strong
differences in the requirements of different parts
of India, some due to difference of circumstances,
others to difference in the personal views
of Engineers in respect to the way in which
the circumstances should be met. Northern
India for instance asks for Bridges having
iron roadways thickly covered with ballast.
Madras on the other hand asks for Bridges
with very light roadways made of timber
only, whilst Bombay asks for a combination
of timber and ballast. If we are to design
Type girders not only of varying spans but
varying Roadways also I am afraid we
shall spend much more money than is yet
contemplated, without any certainty after
all of meeting the cases which will actually
arise.

The

The main use of these type drawings is to enable Engineers in India to estimate the cost of the works they intend to propose and this purpose is very well served by the present drawings. Because the designs they represent are certainly more expensive than any new designs would be; and what I would suggest is that they should continue to be used for the purpose of estimate when the Engineer who is indenting does not feel able to prepare and estimate a design of his own, and that Indents should either be accompanied by designs prepared directly for the purpose of the Indent or by such a description of what is wanted as would enable us to do so here. It will be found I think in many cases that the Engineers will prefer to make a design of his own, for the Public Works Department contains now many Engineers quite as capable for designing girders as any one in England can be.

(No II)

Copy Report by the Consulting Engineer
dated 1st May 1891.

It may be safely said that to make a complete set of type drawings with all

4 3 80
all kinds of Roadway will cost £ 450
instead of £ 150, and then there is the
printing to be paid for.

2066-69
9

2066 P.W.S.

Read the following:

Letter from the Govt of India No. 236 C of 4. VII 91

Note by the Chief Engineer, P.W.S. —

Several objections having been taken to the type designs for superstructure of bridges as prepared by Mr. James, the India office was addressed in letter

No. 14/1718W dated 28th

June 1889 recommending the preparation of a fresh series of type designs, the list of which to be similar to that of the previous series of type designs.

2. Meanwhile Despatch from the Secretary of State

82
P.W. 7019/1

for India No. 1 P.W.
(Stores) dated 20th
June 1889 enclosing
a report from the
Consulting Engineer
was received.

3. In the report,
Sir A. Rendel recom-
mended the preparation
of fresh designs for
spans of 40, 50, 60, 70
and 80 feet only,
and for two widths,
12' & 18', and intimation
was given in the
Despatch that instructions
had issued for the
preparation of these
proposed designs.

4. This was replied
to in letter No. 15
Public Works dated
1st August 1889, in
which attention
was invited to letter

No. 14
17186 but at the
same time it was
desired that the
matter both as
regards designs
and the number
of intermediate
spans might be
left to Sir A. Rendel's
discretion.

5. A copy of Mr.
Anderson's note,
pointing out the
excessive load that
had been provided
for in the original
designs was also
forwarded at the
same time.

6. Finally in
Despatch No. 2 P.W.
(Stores) dated 29th
August 1889, it was
intimated to the
Government that its

suggestion contained
in letter No. 19
1718 W
would be considered
when replies to com-
munications on the
same subject made
to the Govt of India
and Bombay were
received.

7. The Govt of India
now forwards a
copy of despatch from
Secretary of State
No. 31 P.W. dated
14th June 1891 together
with two reports by
the Consulting
Engineer to the India
Office with a request
that it may be
informed if this
Government concurs
with the suggestions
made by the Consulting
Engineer.

8. From the Cons.
Engineer's report, it
appears that but
little progress has
been made towards
the preparation
of the fresh series
of designs.

9. The Consulting
Engineer reports that
from incidents he has
received from different
parts of India he
observes that there
are variations in
the class of roadways
proposed for bridges,
and that to draw
up a series of type
designs that should
provide for each of
these classes (iron,
timber, or combination
of both) a larger

expenditure would
be incurred than
was previously
considered to be
sufficient. He now
estimates the cost
of the designs at
£450/-, the previous
estimate having
been £150/-.

10. It is not known
if this estimate
of £450 would cover
the cost of designs
for spans of from
5' to 150', or if it refers
only to spans of 40',
50', 60', 70' and 80',
but as it now
appears that the
proposed designs
would be prepared
with reference to
the requirements

2006-07
13
of the Governments
of India and Bombay
as well as of the
Govt of Madras, and
that presumably these
Governments would
contribute a pro-
portionate share of
the cost, the Chief
Engineer does not
consider the estimate
of £450/- excessive,
and in as far as
cost is concerned
he considers that
there is no valid
objection to the
preparation of the
designs.

11. The Consulting
Engineer suggests that
the present type
designs should be
used for the purpose
of arriving at the

exp. cost of any proposed
bridge, the design
was on which the bridge
can be actually to be
any constructed to be
est. either prepared in
of India or, from a
full description
of requirements in
England. And the
reason for this suggestion
is that the cost
of so arrived at
the cannot fail to be
more than the actual
cost of the bridge.

12. Sir A. Rendel
in his report on the
Gadilaw Bridge,
dated 16th November
1888, showed that
the cost of one span
of that bridge according
to the type design
would be £652:10:0

whilst

2066
14

whilst if constructed
in accordance with
the type design type
of which we have
been so long waiting
for. The cost would
only be £484:10:0.
That is to say that
if the Consulting
Engineer's suggestion
had been applied
to this particular
bridge, each span
of it would have been
over-estimated by
£168 or £2370.

13. The Chief Engineer
would not like ^{to see} this
procedure adopted,
and therefore cannot
concur with the
suggestion of the
Consulting Engineer.

14. The Chief Engineer
fully concurs with

the Consulting Engineer in his opinion of the capabilities of the officers of the P.W.D. in the matter of designing girders, but would point out that to do full justice to a design requires an amount of time which Engineers in this Presidency have not usually at their disposal. A proof of the time designing takes is the little progress that has been made up to date, owing to the press of work in the Consulting Engineers office, with the type designs which were promised in Despatch from the

Secretary of State
No. 1 P.W. of 20th June 1887.

15. It is to obviate such delays that the Chief Engineer would again urge the desirability of this Dept. being furnished with a series of type designs suitable to this country.

16. As regards the designs, the Chief Engineer would observe that as built girders ^{rarely} will ~~never~~ be required for spans of less than 30 feet, while spans exceeding 80 feet, besides being very rare will usually call for special treatment, the types as proposed

to the Consulting
Engineer in his report
of dated 1st May 1885
to forwarded with
Despatch No. 1 P.W.
dated 20th June 1885
might be adhered to
to viz plate girders for
spans up to 60', and
lattice girders
of for spans of 70' & 80'.
in case of two widths
be 12' & 18'. The flooring
to be of wrought
A row trough plates,
or corrugated
iron. Should wooden
flooring be from
any person considered
to advisable the
necessary alteration
in the design could
be made in this
country.
Do 17. The Chief Engineer

10th P
considers that if
the types were
designed for spans
increasing by
increments of 5'^{instead of 10'}
their utility would
be largely increased;
that the lowest limit
of span for which
type designs are
prepared should be
30 feet instead of
40, ~~that~~ their
utility would be
considerably increased
if the increments
were smaller instead
of 10, and that it
would be advantageous
if one of the types
for plate girders
was designed to
carry the flooring

on the bottom
hoons.

EW

Ootacamund
July 24. 1891.

2 Despatches of
Madras 1891
V/28

Please note
that G.O. letter to
G.O. No 2007 W with
31. 11. 91
endome No 2006 W
has been served by
W & despatched this
day to G.O. P.O.
Sulda.

Subject: Revised for
of the revised in the
for revised there are no
unless which would
give to be revised
the country.

The reasons for asking
a fresh set of designs
revised designs will
be in the Chief
is not printed
G.O. No 1718 W 91
1891 - 11-11-91

on the bottom
booms.

Dr. J. H. H.

E. W.

Ootacamund
July 24. 1891.

2 Despatches, 4/1
Madras 6/1

29/8

Please note
that ~~the~~ letter to

G.O. No 2067 W. with
31. VII. 91

endome No 2066 W

has been served by

W & despatched this

day to G.O. P.W.S.

Sundia.

Subject New series

of type design &

in Divided Road

bridges.

M. B. M.

29/8
7. VIII. 91

on the bottom
booms.

D

EW

Ootacamund

July 24. 1891.

7579

20664

DW

Orders.

The type designs
already received include
liries & from 5 to 152 feet
They are divided into
three main classes

- 625 to 151
- (1) Those in which floor plates
are used as girders
 - (2) Those with rolled iron
girders
 - (3) Those with Whipple trusses.

They do not include any
plate, ^{Warren} wooden or lattice
girders.

They all provide for
pinched bridges & in the
designs there are no
members which would
require to be rivetted
in this country.

The reasons for asking
for a fresh set of designs
for rivetted bridges will
be found in the Chief
Engineer's letter printed
with G.O. No. 1718 of
28.6.89. It was

7579

20667

Rev

Consider.

The type designs
already received include
bridges from 5 to 152 feet
They are divided into
three main classes

12/20/15

- (1) Those in which floor plates
are used as girders
- (2) Those with rolled iron
girders
- (3) Those with Whipple truss
trusses.

They do not include any
plate, ^{Warren} wooden or lattice
girders.

They all provide for
pinch bridges & in the
designs there are no
members which would
require to be rivetted
in this country.

The reasons for asking
for a fresh set of designs
for rivetted bridges will
be found in the Chief
Survey note printed
with G.O. No. 17180 of
28.6.89 - It was

found that the advantages
of the printed guides had
been overestimated. A lot
withed bridges would
showing he had the character
strange. The design
was moreover poor
for much greater loads
than would even come
on the bridge. They
were unnecessary and
poor.

Designs for bridges for
the Gadsden & Talawa
rivers, based on the
type design, & were
submitted by Sir A. Rendel
in favour of rivetted
bridges.

The India Store Dept
now propose to give up the
idea of preparing any great
designs, & to leave it to
engineers in the country
to use the type when about
to erect, or to prepare
their own designs.
The S. P. D. asks
whether this Govt. agrees
with the above proposal.

C
16/7/91

20/6/91
8/6/91
19
I have
Draft reply
2 Co. 1. not concerning
with Curator's copy -
I suppose a
2nd kind of type
designs required
by Govt. may
be prepared
over
20.7.91

11. 2066 7519
20. 173 ✓

A large number
of excellent designs
for iron bridges have
from time to time been
prepared by the Dept.
& the bridges erected.

It would seem
a pity that the time
& trouble taken in these
designs should not
be made more
generally useful.

I would suggest
that L^d be asked
to make these lists
prepared of the more
important bridges
in the co., of which
complete drawings
are preserved, and
to give information
regarding location
of piers - Span -
width of roadway -
land provided for,
& name of designer.

plans with these
computed & circulated
an officer having a
body to design would
look through his list
& probably he will
be select me to send
his representations -
He would then only
have to write for his
drawings of the
selected bridge and
a receipt for each
his estimate, & return
the drawings when
he has had a tracing
taken - He would
know that his bridge
from actual experience
had been proved to
be a good one -

Methods of calculation
are practically the
same now as 20 years
ago, and I might
spend days & weeks
in calculating the
parts of his bridge
drawn to the sixth
and get no better

design than he ²⁰⁶⁵
might have obtained
by simply writing for
a list & getting
the plans of a
bridge ready made -
If approved, I
will draw up a
form to be filled in
giving the necessary
information of
each bridge

over

27-7-96

1850/51
Several objections
having been taken
to the type designs
for superstructure
of bridges as prepared
by Mr. James, the
India office was
addressed in letter

$\frac{14}{17.8.89}$ 28th June 1889
recommending the
preparation of fresh
series of ^{type} designs, the
list of which the
similar to that of the
previous series of
type designs -

Memorandum
from the Dept. for I.
No. 1. Rev. (Clerk) 20th
June 1889 - enclosing
a report from the
Consulting Engineer
was received -

In the report, Sir A.
Rendel recommended
the preparation of designs
for spans of 40, 50, 60

70 x 80 feet only, and
for two widths, 12' x
18', and in addition
was given in his sketch
that instructions had
issued for his preparation
of these proposed designs.

This was replied
to in letter No. 15th Dec.
2069, on
1st August 1889, in
which attention was
called to letter No. 14th
in which he later No. 17th Dec.
but after some time
he was desired that
the matter be taken as
regards the designs &
the number of inter-
mediate spans
might be left to his
discretion. His explanation
a copy of Mr. Anderson's
note, pointing out
the excessive loads the
had been provided
for in the original
design was also
forwarded at the
same time.

be useful for the
purpose of arriving
at the cost of any
proposed bridge.
The design in which the
bridge is actually to
be constructed the
other proposed in India
or, from a full
description of the
the proposed - And
the reason for this
suggestion is that the
cost so arrived at
cannot fail to be
more than the actual
cost of
the bridge -
Sir Mr. Rendel in
his report on the
Gallilee Bridge
dated 16th March
1888 - showed that
the cost of

Span of ~~the~~ bridge
according to the
Type Design would
be £652-10-0

Whilst if constructed
in accordance with
the design - Types
of which we have
been so long waiting
for - the cost would
only be £484-10-0.

That is to say that
if the consulting
Engineers suggestions
had been adopted
to the particular
bridges, each span
of it would have
been overestimated
by £168 or Rs 2570.

The Chief Engineer
would not like to
see this procedure

adopted, and
therefore cannot
concur with the
suggestion of the
Consulting Engineer.

The Chief Engineer
fully concurs with
the Consulting Eng.
his opinion
is that the
work of the capabilities

The officers of RWD
is the matter of
designing bridges
generally, but will
point out that to do
but justice to a
design, requires
an amount of time
which Engineers seldom
possessing have not
usually at their

disposal. On the time designing the
proof of the is the
1. The papers that

has been made
owing to the pressure of
work in the Consulting
Engineer's office, with
the Super designs which
were promised in
despatch from the 1st of
Dec: Dec. of 20th June 1889.

It is to be regretted
such delays that
the Chief Engineer
would again have
to be dissatisfied of
the Dept. being
furnished with a
series of Super
designs suitable
for the Consulting -
to be reported to the
designs the Chief
Eng. would observe
that as the use of
rolled steel girders

are permissible of
the spans of 53', &
that such super structures
can be made for no very
difficult calculations
of or design, and
also that spans of
over 80' are not
very often required
but covered in the
Pres. by the Chief
the Super as proposed
by the Consulting
Eng. in his report
dated 1st May 1889
forwarded with
despatch Dec: 1st Dec.
Dec: 6-89 might be
advised to, viz
plate girders for
spans of from 40'
to 60', and lattice
girders for spans

of 40' x 80' - 2 Jo
be of 2 inches
12' x 18' - The
flooring like of
brought in through
plates, or completed
min - Should

wooden flooring
be from any reason
considered advisable
to necessary alteration
in the design
could be made in
this country -

The Chief Eng. considers
that if the types were
designed for spans
increasing by
increments of 5 ft
their utility would
be largely increased

The Chief Engineer
also considers
that it would be

advantageous if
one other type for
plate girder was
designed to carry
the flooring in the
lower bottom beams.

Cost
20.7.91

20.7.91
20.7.91
26.7.91

on the bottom

PROCEEDINGS OF THE MADRAS GOVERNMENT.

206667
READ the following

Letter from the Govt. of India, P.W.D. H.E. No 236C of 4 July 1891
Note by the Chief Engineer P.W.D. dated July 1891

ordered that the
following reply be sent
to the Govt. of India

(H.E. No 236C of 4 July 1891)

To.

The Secy to the
Govt. of India P.W.D.

Sir,

In reply to your letter
No. 236C dated 4 July 1891,
I am directed to forward
a copy of the Proceedings
of this Govt No 236C of 4 July
1891, embodying
a note by the Chief
Engineer P.W.D. and
to

on
to state that after
leo considering the views
therein expressed,
this Govt is unable
to agree with the
suggestions made
by Sir Alexander
Dendel that the type
plans of bridges already
sent out should be
used by engineers in
this country for the
purpose of preparing
designs and estimates
where necessary, and
that in other cases
engineers should
submit their own
designs with indentures,
or give descriptions
which would enable
designs to be prepared
in England.

2. It has already
been pointed out in
the despatch from

H. E. the ~~present~~
in Council ~~views~~
in the views
therein expressed -

this Government to the
Ad. Hon. the Secy. of
State No. 15 dated
20690

1st August 1889 that the

adoption of the

existing type plans

will in many cases

entail much greater

cost than is necessary,

and that lighter designs

more suited to local

circumstances should

be provided, and I

am now to add that

the preparation of

designs by local officers

as suggested by the

Consulting Engineer

to the India office,

will involve much

labour and loss of

time which the

2016-67
230
28

type designs are intended
to oblige. I am
therefore to express
the hope of His
Excellency the Governor
in Council that
it will be found
practicable to
furnish for use in
this Presidency a
new series of type
designs as indicated
in the Chief Engineer's
note above referred
to

Hm

Ce 60-7519

OKs 13. Vm

Hm 24. Vm

I have &c

ms
22-7-91

D
W

Recd

Cu

Note by the Chief Engineer P.W.D.

2066
29 31
several objections
having been taken to the
Type designs for super-
structure of bridges
as prepared by Mr.
James, the India office
was addressed in letter
14 dated 28 June
17/18 W
1889 recommending
the preparation of a
fresh series of Type
designs, the list of
which to be similar
to that of the previous
series of Type designs.
Meanwhile Despatch
from the Secy of State
for India No. 1 P.W. (Stores)
dated 20 June 1889
enclosing a report
from

from the Consulting Engineer was received.
3. In the report, Sir. A. Rendel recommended the preparation of fresh designs for spans of 40, 50, 60, 70 and 80 feet only, and for two widths, 12' and 18', and information was given in the Despatch that instructions had issued for the preparation of these proposed designs.
4. This was replied to in letter No. $\frac{15}{2069W}$ P.W. dated 1st August 1889, in which attention was invited to letter No. $\frac{14}{1718W}$ but at the same time it was desired that the matter both as regards designs and the number of intermediate spans might be left to Sir.

A. Rendel's discretion.
5. A copy of Mr. Anderson's note, pointing out the excessive loads that had been provided for in the original designs was also forwarded at the same time.

2066
388
3

6. Finally in Despatch No. 2 P.W. (Stores) dated 29 August 1889, it was intimated to this Govt that its suggestion contained in letter No. $\frac{19}{1718W}$ would be considered when replies to communications on the same subject made to the Govts of India and Bombay were received.

7. The Govt. of India now forwards a copy of Despatch from Secy. of State No. 31 P.W. dated 4 June 1891 together

together with 2 Reports
by the Consulting Engineer
to the India office with
a request that it may
be informed if ^{this} that
Govt concurs with the
suggestions made by
the Consulting Engineer.

8. From the Consulting
Engineer's report, it
appears that but little
progress has been made
towards the preparation
of the fresh series of
designs.

9. The Consulting Engineer
reports that from
inquiries he has received
from different parts
of India he observes
that there are variations
in the class of roadways
proposed for bridges,
and that to draw
up a series of type
designs that should
provide for each
of

of these classes (iron,
timber, or combination
of both) a larger expenditure
would be
incurred than was
previously considered

2066-67
~~2066-67~~
31

to be sufficient. He
now estimates the
cost of the designs
at £450, the previous
estimate having been
£150.

10. It is not known if
this estimate of £450
would cover the cost
of designs for spans of
from 5' to 150', or if
it refers only to spans
of 40', 50', 60', 70' and
80', but as it now
appears that the
proposed designs would
be prepared with
reference to the
requirements of the
Govts of India and

to Bombay as ^{well} as of
the Govt. of Madras,
and that presumably
those Govts would
contribute a proportion-
ate share of the cost,
the Chief Engineer does
not consider the estimate
of £450 excessive and
in so far as cost is
concerned he considers
that there is no valid objec-
tion to the preparation
of the designs.

11. The Consulting Engineer
suggests that the present
type designs should
be used for the purpose
of arriving at the cost
of any proposed bridge,
the design on which
the bridge is actually
to be constructed
to be either prepared
in India or, from
a full description

of requirements in
England - but the
person for this suggestion
is that the cost so
arrived at cannot
fail to be more than
the actual cost of
the bridge.

12. Sir A. Rendal in his
report on the Gadilam
Bridge, dated 16th Novem-
ber 1888, showed that
the cost of one span
of that bridge accord-
ing to the Type Design
would be £652-10-
while if constructed
in accordance with
the Design-types of
which we have been
so long waiting for - the
cost would only be
£484-10-... That is to
say that if the Consulting
Engineer's suggestion
had been applied to
this particular bridge

each span of it would have been overestimated by £ 168 or Rs 2370.

13. The Chief Engineer would not like to see this procedure adopted, and therefore cannot concur with the suggestion of the Consulting Engineer.

14. The Chief Engineer fully concurs with the Consulting Engineer in his opinion of the capabilities of the officers of P.W.D. in the matter of designing girders, but would point out that to do full justice to a design, requires an amount of time which Engineers in this Presidency have not usually at their disposal - A proof of the time designing takes

built as ~~rolled~~ girders with much to require for spans of less than 30 feet, while spans exceeding 30 feet, ~~beams~~ being very rare with ~~usually~~ call for special

takes is the little progress that has been made up to date, owing to the press of work in the Consulting Engineer's office, with the Type Designs which were promised in Despatch from the Secy. of State No. 1 P.W. of 20 June 1889.

15. It is to obviate such delays that the Chief Engineer would again urge the desirability of this Dept being furnished with a series of Type Designs suitable to this country.

16. As regards the design the Chief Engineer would observe that ~~as the use~~ of rolled steel girders are permissible up to spans of 33', and that such superstructures call for no very difficult calculations or design

2066-67
33

and also that spans
of over 80' are not very
often required to be
bridged in this Presidency
1. In Sept, the Types
as proposed by the
Consulting Engineer
in his report dated
1st May 1889 forwarded
with despatch No 1 P.W.
dated 20 June 1889
might be adhered to,
viz plate girders for
spans of from 40' to
60', and lattice girders
for spans of 70' and
80' - To be of 2 widths
12' and 18' - The flooring
to be of wrought iron
trough plates, or
corrugated iron. Should
wooden flooring be
from any reason
considered advisable
the necessary alteration

in the design could
be made in this country.
17. The Chief Engineer con-
siders that if the types
were designed for
spans increasing by
increments of 5' their
utility would be
largely increased.
18. The Chief Engineer also
considers that it would
be advantageous if
one of the types for
plate girders was
designed to carry the
flooring ^{on the} bottom
beams.

the lowest limit of 30
feet for single type
designs in preference
should be 30 feet
instead of 40; that
their utility would
be much increased if
the increments were
made 5' instead of
10, and 2

20.7.9

135 P
No 2066 W of 31 July 1891
PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

66-67
27/7
Read the following

Letter from the Govt of India (H.E. No 236 C of 4. VII. 91)
Notifying the Chief Engr. P.W.D. (d/24. VII. 91)

Ordered that
the following reply
be sent to the
Govt of India.

(H.E. No 2067 W of 31 July) 891.
To, the Secretary to the Govt of India,
P.W.D.

12
1891
25/July. Sir, In reply to your
letter No 236 C dated
14th July 91, I am
directed to forward
a copy of the Proceeding
of this Govt No 2066 W
31 July 1891
d/, embodying a
note by the Chief
Engineer P.W.D. and
to state that His

Excellency the Govt
in Council concurs
in the views therein
expressed.

2. It has already been
pointed out in the
Despatch from this
Govt to the Rt Hon. the
Secy of State No. ¹⁵₂₀₆₉₆
dated 17 August 1889
that the adoption
of the existing type
plans will in many
cases entail much
greater cost than is
necessary, and that
lighter designs more
suited to local
circumstances should
be provided, and I am
now to add that the
preparation of designs
by local officers as
suggested by the Cons.
Engineer to the India
Office, will involve
much labor and loss
of time which the
type designs are intended

to obviate. I am
therefore to express
the hope of His Excellency
the Governor in Council
that it will be found
practicable to obtain
for use in this Presidency
a new series of
type designs as
indicated in the
Chief Engineer's
note.

2066-67
I have for 36

D W

24)
scr by Jy. H. H.
7/8
12/8/4

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Handwritten signature

J. H. S.
31-7-91

Oct 13. VII
Nov 24. VII
Dec 27. VII

2066-67
~~2066~~
37

I Warrant

7519

That the Government of India may
be informed whether the suggestions
made by Sir Alexander Rendel
are concurred in by the Government of
Madras.

I have the honour to be,
Sir,

Your most obedient Servant,

C. Vincent

Under Secretary to the
Government of India.

8

Documents accompanying

Copy of Despatch from Secretary of State,
No 3114, dated 4th June 1891.

Copies of the two Reports accompanying

Recd 13. VII. 91

See
we cannot
make a copy
of the two
Reports
13. VII. 91

Oh 13. VII
m 13. VII

206669
6

1/2

Government of Madras.

189

P. W. DEPARTMENT.

CURRENT No. 7519

From

The Govt. of India

ENCLOS. -

No. 236 C

Dated 4-7-91

Received 15-7-91

SUBJECT.

Rivetted Road bridges -

Forwarding a copy of a
Despatch from the S. & S.
together with copies of two
Reports by the Com. Eng. to
the India office on the sub-
ject of a new series of designs
& specifications for

DISPOSAL.

No.

dated

2 SP

India Office
London, 4th June 1891.

Public Works -
No. 31.

To His Excellency the Most Honourable
The Governor General of India in Council.

My Lord Marquis,

In your Public Works Secretary's
letter No. 71 C of the 23rd February 1891, he enquires
when your Excellency's Government might expect to
receive the lithographed copies of the new series of
designs and specifications for rivettted road bridges
promised in my Public Works (Stores) Despatch
No. 1 of the 20th June 1889.

2. I now transmit for the information
of your Government and for communication to
the Governments of Madras and Bombay, copies
of two reports* by Sir Alexander Rendel, from
which you will see that no great progress has
been made in the preparation of the type designs,
and that, in view of the great differences in
the requirements of different parts of India, he
is now doubtful whether type drawings can
be prepared which would be generally useful.
The cost also would be £450 instead of £150.

3. In these circumstances I shall be glad
to know whether, as suggested by the Consulting
Engineer, the present type drawings might
not be used by Engineers in India for

the

Fr. Aug 26 91 W 91. 2. 86 ✓
Despatch no 2 209 W 91. 2. 86 ✓
Fr. Aug 15 25 W 91. 6. 86 ✓
" " 13 87 W 91. 5. 88 ✓
" " 23 28 W 91. 7. 88 ✓
" " 3 89 W 91. 12. 88 ✓
Despatch no 14 1718 W 91. 6. 89 ✓
" " 1718 W 91. 6. 89 ✓
" " 1964 W 91. 7. 89 ✓
Despatch no 15 2069 W 91. 8. 89 ✓
" " 2069 W 91. 8. 89 ✓
" " 2674 W 91. 9. 89 ✓

None some spare copies of 90 in
files passed and sent
separately to S. & S. 27. Vito

Dated 22nd April
and 1st May 1891

231.7.91

The purpose of preparing estimates and designs
were necessary; in other cases Engineers submitting
their own designs with the indents, or giving
such a description of what is wanted as
would enable designs to be prepared here.

I have, &c &c,

W. Cross.

8
Pw 75/9

N. 1.

Copy Report by Consulting Engineer
dated 22nd April 1891.

200
350

No great progress has been made
with the type drawings. I have looked upon
them as a work to be taken up at times
when my draughtsmen were not busy with
more urgent matters, and they have lately
been fully employed. I have also been
led of late to doubt if we can prepare
type drawings which shall be generally useful
without going to much greater expense
than I first thought of, for I notice by
the Indents lately sent home very strong
differences in the requirements of different parts
of India, some due to difference of circumstances,
others to difference in the personal views
of Engineers in respect to the way in which
the circumstances should be met. Northern
India for instance asks for Bridges having
iron roadways thickly covered with ballast.
Madras on the other hand asks for Bridges
with very light roadways made of timber
only, whilst Bombay asks for a combination
of timber and ballast. If we are to design
Type girders not only of varying spans but
varying Roadways also I am afraid we
shall spend much more money than is yet
contemplated, without any certainty after
all of meeting the cases which will actually
arise.

The

The main use of these type drawings is to enable Engineers in India to estimate the cost of the works they intend to propose and this purpose is very well served by the present drawings, because the designs they represent are certainly more expensive than any new designs would be; and what I would suggest is that they should continue to be used for the purpose of estimate when the Engineer who is indenting does not feel able to prepare and estimate a design of his own, and that Indents should either be accompanied by designs prepared directly for the purpose of the Indent or by such a description of what is wanted as would enable us to do so here. It will be found I think in many cases that the Engineer will prefer to make a design of his own, for the Public Works Department contains now many Engineers quite as capable for designing girders as any one in England can be.

(No II)

Copy Report by the Consulting Engineer
dated 1st May 1891.

It may be safely said that to make a complete set of type drawings with
all

4 3 10
all kinds of Roadway will cost £ 450
instead of £ 150, and then there is the
printing to be paid for.

2066-69
9

Pw 7519/1

2066 P.W.G.

Read the folly:-

Letter from the Govt of India No 236 C of 4. VII 89.

Note by the Chief Engineer, P.W.D. 50

Several objections having been taken to the type designs for superstructure of bridges as prepared by Mr. James, the India office was addressed in letter No 14/17186 dated 28th June 1889 recommending the preparation of a fresh series of type designs, the list of which to be similar to that of the previous series of type designs.

2. Meanwhile Despatch from the Secretary of State

I Warrant

7519

That the Government of India may
be informed whether the suggestions
made by Sir Alexander Rendel
are concurred in by the Government of
Madras.

I have the honour to be,
Sir,

Your most obedient Servant,

C. Vincent

Under Secretary to the
Government of India.

Documents accompanying

Copy of Despatch from Secretary of State,
Ch. 31. M., dated 4th June 1891.

Copies of the two Reports accompanying

Recd 13. VII. 91

Chs 13-VII
m 13-VII

206669
6

1/2

File
We cannot
make a copy
of the report
13/7/91

189

From

The Govt. of India

ENCLOS. —

No. 236 C

Dated 4-7-91

Received 15-7-91

SUBJECT.

Riveted Road bridges

Forwarding a copy of a
Despatch from the S^r S^r
together with copies of his
Reports by the Com. Eng^r to
the India Office on the sub-
ject of a new series of maps
& specifications for —

DISPOSAL.

No.

dated

Public Works.

No 31.

To His Excellency the Most Honourable
The Governor General of India in Council.

My Lord Marquis,

In your Public Works Secretary's letter No. 7, C of the 23rd February 1891, he enquires when your Excellency's Government might expect to receive the lithographed copies of the new series of designs and specifications for rivetted road bridges promised in my Public Works (Stores) Despatch No. 1 of the 20th June 1889.

2. I now transmit for the information of your Government and for communication to the Governments of Madras and Bombay, copies of two reports* by Sir Alexander Rendel, from which you will see that no great progress has been made in the preparation of the type designs, and that, in view of the great differences in the requirements of different parts of India, he is now doubtful whether type drawings can be prepared which would be generally useful. The cost also would be £450 instead of £150.

3. In these circumstances I shall be glad to know whether, as suggested by the Consulting Engineer, the present type drawings might not be used by Engineers in India for

~~the~~

135 P
No 2066 W of 31 July 1891
PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

2066-67
31
READ the following

Letter from the Govt of India (H.E. No 236 C of 4 VII 91)
Notifying the Chief Engr. P.W.D. (d/24 VII 91)
11P

Ordered that
the following reply
be sent to the
Govt of India.

(H.E. No 2067 W of 31 July) 891.

To, the Secretary to the Govt of India,
P.W.D.

12
146d
25 July. Sir, In reply to your
letter No 236 C dated
14th July 91, I am
directed to forward
a copy of the Proceeding
of this Govt No 2066 W
of 31 July 1891,
embodying a
note by the Chief
Engineer P.W.D. and
to state that His

each span of it would have been overestimated by £ 168 or Rs 2370.

13. The Chief Engineer would not like to see this procedure adopted, and therefore cannot concur with the suggestion of the Consulting Engineer.

14. The Chief Engineer fully concurs with the Consulting Engineer in his opinion of the capabilities of the officers of P.W.D. in the matter of designing girders, but would point out that to do full justice to a design, requires an amount of time which Engineers in this Presidency have not usually at their disposal - A proof of the time designing takes

built
as ~~min~~ girders with
much to require for
spans of less than 30
feet, while spans
exceeding 30 feet, which
being very rare will usually
call for special

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takes is the little progress that has been made up to date, owing to the press of work in the Consulting Engineer's office, with the Type Designs which were promised in Despatch from the Secy. of State No. 1 P.W. of 20 June 1889.

15. It is to obviate such delays that the Chief Engineer would again urge the desirability of this Dept being furnished with a series of Type Designs suitable to this country.

16. As regards the designs the Chief Engineer would observe that ~~not the use~~ of rolled steel girders are permissible up to spans of 33', and that such superstructures call for no very difficult calculations or design

75-19

Govt. of Madras.

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