

- (1) பக்கங்களின் எண்ணிக்கை 22
 (2) புதுக்கித் திருப்பிய நாள் 17.2.92
 (3) ஆதாரக் குறிப்பவர் கருக்கோபம்

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

P.W.D.

துறை

அரசாணை எண்.	3235	அச்சகம்
மு. கோப்புத் தாள் எண்.	P.W.D.	பலவகை
நாள் :	17-12-1893	199

மடிக்கவோ தண்டபடி கையாளவோ கூடாது.

17

ஆவண. கா. 1-18,006-6-9-90.

COPY REPORT BY SUPERINTENDENT, INDIA STORE DEPOT,
DATED 14th NOVEMBER 1893.

3255

In the details of Rolled Steel Joists attached to the
indent, I find that the Indenting Officer gives $7\frac{1}{2}$ tons as
the limit of stress, but the dead loads specified to be
carried by the various joists will produce greater amounts
of stress, so that the two conditions are incompatible.
If the stress is to be kept to the limit of $7\frac{1}{2}$ tons the
dead loads would have to be reduced to the following
amounts:

Item 1 - 23.1938	
.. 2 - 27.65 ..	} Instead of 39 tons.
.. 3 - 28.52 ..	
.. 4 - 29 ..	
.. 5 - 16.72 ..	.. 21 ..
.. 6 - 19.00 ..	.. 28 ..
.. 7 - 6.42 ..	.. 9 ..
.. 8 - 3.92 ..	.. 13 ..

Table I annexed shows the figures from which the above
revised loads are derived. As regards items 1 to 4 the
indenting officer has noted that built up girders may be
supplied instead of joists and has given alternative
dimensions and there will be no difficulty, in providing
such girders (about $30" \times 10"$) to carry the required loads
within the limiting stress.

In the case of items 5 to 8 however there seems to be
no intention of allowing any increase in the depth at least
that is the only interpretation I am able to put upon the
detail showing the maximum and minimum dimensions which
appear to have been wrongly copied or also misunderstood:
and it is not practicable to get rolled joists of these
depths with wider flanges. It will therefore be necessary
to refer these 4 items to the Indenting Officer and ask
what he wishes to be done: an increase in the number
of these joists may answer his purpose or he may prefer to
increase the limit of stress: the actual stresses caused
by the proposed loads are shown in Table II. In any case
however

9633
however care should be taken that the specified loads do not cause stresses exceeding the limit determined on, otherwise we are liable to assume that the necessary calculations have been made in India for the specified loads, with the result that if any failure occurred from undue deflection or excessive stress the blame for it would be attached to the Store Department.

2/3235

TABLE SHewing DISTRIBUTED LOADS THAT JOISTS DEMANDED
WILL CARRY ON ONE FOOT (CENTRE TO CENTRE OF BEARINGS).

Items	Section and Weight.	Moment of Inertia.	Moment of Resistance.	Distributed Loads in Tons that one foot will carry with limiting stress of $7\frac{1}{2}$ tons per sq.in.	
		I	R	C	
1 to 4	20" x 3" 100lb.	1825.1.	182.51.	912.55.	3235
5.	12" x 6" 57lb.	386.41.	6440	312.	
6	15" x 6" 61 lb.	641.46	85.53	427.65.	
7	6" x 5" 26 lb.	43.84	14.31	73.05	
8	8" x 6" 36 lb.	114.14	28.53	142.65.	

$R = I$ divided by half depth of joist
 $\frac{1}{8} C \times 12(\text{inches}) = R \times 7\frac{1}{2}$ or $C = 5 R$

C divided by number of feet in span (which should be measured from centre to centre of bearings and not only from edge to edge of bearings or clear span) gives distributed load in tons for the span with limiting stress of $7\frac{1}{2}$ tons per sq.in.

§ Taken from Dorman Long & Co's List.

11.

4/5235

9633

TABLE SHOWING ACTUAL STRESSES PER sq.in. WHICH WOULD BE PRODUCED BY THE LOADS SPECIFIED IN THE INDENT.

Item.	Section and Weight.	Specified Load.	Distance from centre to centre of bearings in feet.	Actual Stress.
		W.	L	S
		Tons	Feet.	Tons per sq.in
5	12" x 6" 57 lb.	21	19½	9.42.
6	15" x 6" 61 lb.	28	21½	10.33
7	6" x 5" 26 lb.	9	11½	10.30
8	8" x 6" 36 lb.	13	16	10.24

Above values of S calculated from the formula $\frac{1}{8} W \times L \times 12 = S R$ (R being moment of Resistance as in Table I)

$$\text{or } S = \frac{3 \times W \times L}{2 \times R.}$$

S.12,775.

DUPLICATE

5/3235

9633

17th November 1893.

Sir,

With reference to the girders for the New Law College which are asked for in the indent received with your letter No.2466 W. dated 25th September 1893, I have the honour to forward for your information a copy of a report by the Superintendent of the India Store Depot, dated 14th November 1893 and also copy of tables I and II referred to therein.

The girders forming items 1 to 4 of the indent are being supplied "built up", but the provision of items 5 to 8 must await an expression of your wishes which I shall be glad to have in due course.

I have the honour to be, Sir,
Your obedient Servant,

J. PARKER

Director General of Stores.

The Secretary to Government,
Public Works Department,
Madras.

Duplicate

OW 1036/4/93

10211

S.D.O. 4031.

6/3235

DUPLICATE

8th December 1893.

Sir,

With reference to the second paragraph of my letter No.S.12775 dated 17th November 1893, so far as it relates to items 1 to 4 of the indent transmitted with your letter No.24507 dated 25th September 1893, I have now the honour to forward for your information a drawing numbered 2514, and I would suggest that the stone templates under ends of girders, should have the outside edge bevelled (as shown in red on the drawing) in order to reduce the risk of the edge being chipped away.

I have the honour to be, Sir,
Your obedient Servant,

J. PARKER

Director General of Stores.

3235 w
137293

10960 - 10/12/93

1394/11 157 2514
589 3760

The Secretary to Government,
Public Works Department,
Madras.

P. W. Duplicate

10960/93
10960

73 W

11-1-94

10960/93 15755 W

10960/93 15755 W

10960/93 15755 W

10960/93 15755 W

10960/93 15755 W

10960/93 15755 W

10960/93 15755 W

10960/93 15755 W

With original
2-1-94

S.12775.
COPY REPORT BY SUPERINTENDENT, INDIA STORE DEPOT,
DATED 14th NOVEMBER 1893.

7/3235

In the details of Rolled Steel joists attached to the indent, I find that the Indenting officer gives $7\frac{1}{2}$ tons as the limit of stress, but the dead loads specified to be carried by the various joists will produce greater amounts of stress, so that the two conditions are incompatible. If the stress is to be kept to the limit of $7\frac{1}{2}$ tons the dead loads would have to be reduced to the following amounts:

Item 1 - 23 tons	
.. 2 - 27.65 ..	} Instead of 39 tons.
.. 3 - 28.52 ..	
.. 4 - 29 ..	
.. 5 - 16.72 ..	
.. 6 - 19.66 ..	.. 21 ..
.. 7 - 6.49 ..	.. 28 ..
.. 8 - 8.92 ..	.. 9 ..
	.. 13 ..

Table 1 annexed shows the figures from which the above revised loads are derived. As regards items 1 to 4 the indenting officer has noted that built up girders may be supplied instead of joists and has given alternative dimensions and there will be no difficulty, in providing such girders (about 30" x 10") to carry the required loads with the limiting stress.

In the case of items 5 to 8 however there seems to be no intention of allowing any increase in the depths (at least that is the only interpretation I am able to put upon the detail showing the maximum and minimum dimensions which appear to have been wrongly copied or else misunderstood): and it is not practicable to get rolled joists of these depths with wider flanges. It will therefore be necessary to refer these 4 items to the Indenting Officer and ask what he wishes to be done: an increase in the numbers of these joists may answer his purpose or he may prefer to increase the limit of stress: the actual stresses caused by the proposed loads are shown in Table II. In any case however

however care should be taken that the specified loads do not cause stresses exceeding the limit determined on, otherwise we are liable to assume that the necessary calculations have been made in India for the specified loads, with the result that if any failure occurred from undue deflection or excessive stress the blame for it would be attached to the Store Department.

===== 8/3235

I.

TABLE SHewing DISTRIBUTED LOADS THAT JOISTS DEMANDED
WILL CARRY ON ONE FOOT (CENTRE TO CENTRE OF BEARINGS).

Items	Section and Weight.	Moment of Inertia.	Moment of Resistance.	Distributed Loads in Tons that one foot will carry with limitin Stress of $7\frac{1}{2}$ tons per sq.in.	
				I	C
1 to 4	20" x 8" 100lb.	1825.1.	182.51.	912.55.	9/3235
5.	12" x 6" 57lb.	386.41.	6440	322.	
6	15" x 6" 61 lb.	641.46	85.53	427.65.	
7	6" x 5" 26 lb.	43.84	14.61	73.05	
8	8" x 6" 36 lb.	114.14	28.53	142.65.	

$R = I$ divided by half depth of joist

$$\frac{1}{8} C \times 12(\text{inches}) = R \times 7\frac{1}{2} \text{ or } C = 5 R$$

C divided by number of feet in span (which should be measured
from centre to centre of bearings and not only from edge to edge
of bearings or clear span) gives distributed load in tons for the
span with limiting stress of $7\frac{1}{2}$ tons per sq.in.

§ Taken from Dorman Long & Co's List.

DL 9.3
10364/83

10/ 3235

11.

TABLE SHRWING ACTUAL STRESSES PER sq.in.WHICH WOULD BE PRODUCED BY THE LOADS SPECIFIED IN THE MOMENT.

Item.	Section and Weight.	Specified Load.	Distance from centre to centre of bearings in feet.	Actual Stress.
		W.	L	S
		Tons	Feet.	Tons per sq.in
5	12" x 6" 57 lb.	21	19 $\frac{1}{4}$	9.42.
6	15" x 6" 61 lb.	23	21 $\frac{3}{4}$	10.68
7	6" x 5" 26 lb.	9	11 $\frac{1}{4}$	10.40
8	8" x 6" 36 lb.	13	16	10.94

Above values of S calculated from the formula $\frac{1}{8} W \times L \times 12 = S R$ (R being moment of Resistance as in Table 1)

$$\text{or } S = \frac{3 \times W \times L}{2 \times R.}$$

26-2
36/183

It is requested that in any further communication on this subject the under-mentioned letter and number may be quoted, and the reply addressed to

The Director General of Stores,
India Office,
Whitehall,
London, S.W.

S.12,775.

India Office,

Whitehall, S.W.

17th November 1893.

Sir,

With reference to the girders for the New Law College which are asked for in the indent received with your letter No.2436 W. dated 25th September 1893, I have the honour to forward for your information a copy of a report by the Superintendent of the India Store Depot, dated 14th November 1893 and also copy of tables I and II referred to therein.

The girders forming items 1 to 4 of the indent are being supplied "built up", but the provision of items 5 to 8 must await an expression of your wishes which I shall be glad to have in due course.

I have the honour to be, Sir,
Your obedient Servant,

J. Tucker

Director General of Stores.

The Secretary to Government,
Public Works Department,
Madras.

25.9.93. 2465-bw

Enc 103
Recd. 6.12.93

3235 W d 13-12-93

Six

Communicated to the
Communicated to the
Supt. Engr & circle for
Supt. Engr & circle for
early report.
early report.

10/12/93

S

20
The Supt. Engr & circle
Copy to the Cons. Architect
13/12/93

13/12

DESPATCHED
14 DEC 93

INDEXED

14/12

J.C. 14.12.11

With disposal