Public Works (1898) Department.

No Vernacular

G.O., No. 1067 W.

DATED 28th April 1898

3/5/98

[Despatch Abstract.]

Malipoya bridge: Estimate of Rs 13,300 for reconstructing — at 37/4 mile on road No. 4, Wynaad taluk Malaba Dt, sanctioned with remarks.

110/4

~~9D~~

9
28-4-98

Indexed 24/4/98

[P. W. 31.
1,000—12-2-98.]

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

BUILDINGS AND ROADS.
CIVIL WORKS.

Government (1898) of Madras.
PUBLIC WORKS.

Recd. } 1898. *Enclosures*
Regd. *Spare copies*

G.O., No. 1067 W., 28th April 1898.

APRIL.

Thalipoya Bridge

Estimate of Rs. 13,300 for reconstructing — at 37/4 mile on road No. 4, Wynaad taluk, Malabar district, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following papers :—

From A. H. GARRETT, Esq., Superintending Engineer, IV Circle, to the Chief Engineer, Public Works Department, dated Benhope, 15th March 1898, No. 151/W.

I have the honour to submit, herewith, for sanction of Government, plans and estimate, amounting to Rs. 13,000, for re-constructing Thalipoya bridge at 37/4 mile, road No. 4, Wynaad taluk, Malabar district.

It will be observed from paragraph 4 of the District Engineer's office-note No. 11, dated 22nd February 1898 (herewith in original), that no hydraulic data accompany the estimate, as the work is one of reconstruction, and it is proposed to provide increased waterway in the new bridge.

A compressible blue plastic clay does not seem to afford a suitable foundation for the abutments. If better soil is not obtainable by going down a little deeper, the abutments had better rest on piles. Pitching should be more than one foot in thickness.

The President, District Board, states in his covering letter that "as the matter is urgent, the plan and estimate are forwarded in anticipation of the Board's approval."

Note by the Chief Engineer, Public Works Department.

The plan and estimate are recommended for sanction, with the following modifications :—

(*a*) Footings of concrete under abutments should be 1′ instead of 1½′, i.e., the width should be 8′ 3″ instead of 7′.

(*b*) The depth of pitching should be 1½″ instead of 1′.

2. The estimate has been altered accordingly in the Chief Engineer's office, and the amount has been increased from Rs. 13,000 to Rs. 13,300.

25th April 1898. (Signed) W. B. deWINTON,
Ag. Chief Engineer.

Order—No. 1067 W., dated 28th April 1898.

The estimate, am[illegible]ing to Rs. 13,300 (as revised by the Chief Engineer, Public Works Department) [illegible]onstructing Thalipoya bridge at 37/4 mile on road No. 4, Wynaad taluk, M[illegible]t, is sanctioned.

2. Attentio[illegible] Chief Engineer's note recorded above.

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3. A copy of the resolution of the District Board approving the estimate should be submitted.

4. The countersignature of the President, District Board, to the estimate should be obtained before the work is put in hand.

5. The sanction accorded in paragraph 1 has been registered as Local No. 4 W. of 1898-99.

(True Extract.)

Under Secretary to Government.

To the Superintending Engineer, IV Circle.
" Local and Municipal Department, with 9 enclosures.

Exd. W. D'Moss.

A / HVE

Urgent.

P.W. DEPARTMENT.

Papers to be read in Proceedings :—

3 P

Again G.O., dated 189 , No.

Again G.O., dated 189 , No.

Current No. 2534 of 1898, dated 15th March 1898, from The S. E. IV Circle

" " " 189 , " , "

" " " 189 , " , "

Note by the Chief Engineer P.W.D dated 25/4/98

ORDER.

No. 1067 W d 28.4.98

To

The Secy to Govt L & M Dept for favour of C.

B & V Civil Works

Appd. A.S.H 26.4.98

The estimate, amounting to Rs 13.300 (as revised by the Chief Engineer P.W.D), for reconstructing Thalipoya bridge at 37/4 mile on road No 4, Wynaad taluk, Malabar District, is sanctioned

2 Attention is drawn to the Chief Engineers note recorded above.

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4. The countersignature of the President District Board, to the estimate should be obtained before the work is put in hand.

5 The sanction accorded in para 1 has been registered as Local No 4 W of 1898-99.

T/B.

11/5/98

To The S. E. IV Circle L & M Dept with genrls

ASR 21.4. H.T. 23.4.98

P.K.S

P. T. O.

[P. W. 4. 500—27-1-98.]

H.E. 25.4.98 R 26.4.98

__Note__. The estimate has been dealt with in the accompanying technical note.

P.K.1

P. W. Dept

2P

__Note by the Chief Engineer P.W.D.__

The plan and estimate are recommended for sanction with the following modifications:-

Seen
A.S.H

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AK
21.4.

25.4.50

E. W.

Public Works (1898) Department.

CURRENT No. 2534

From

The Supg: Engineer
4th Circle.

Order

No. 151/W

Dated 15th March 1898.

Received
Registered 18.3.98

Enclosures ~~8~~ 9 (2 plans)

Spare copies

SUBJECT.

Thalipoya Bridge –
Forwards for sanction of Government plans and estimate amounting to Rs: 13000 for reconstructing – in Wynad taluk Malabar District.

I for early sanction

CWD
DW
21.3.98.

O.L.S. 3.
sent again 29/4/98 R 28/4

BACK PAPERS.

No.	Date.

FURTHER PAPERS.

No.	Date.

No. 151/W

Superintending Engineer's 4th Circle
Camp: Benhope 15th March 1898.

From

A. H. Garrett Esq
Superintending Engineer
4th Circle.

To.

The Chief Engineer
P. W. Department.

Sir,

I have the honor to submit herewith, for sanction of Government, plans and estimate, amounting to Rs. 13,000 for reconstructing Thalipoya bridge at 37/4 mile road No. 4 Wynad Taluk, Malabar District.

Enclosures. 8
1 Estimate
1 Report
1 Specification
1 Data Sheet
1 Road metal rate book
1 Dt. Engr's. office note.
2 Tracings.

It will be observed from para 4 of the District Engineer's Office Note No. 11, dated 22d. February 1898 (herewith in original) that no hydraulic data, accompany the estimate, as the work is one of reconstruction, and it is proposed to provide increased waterway in the new bridge.

A compressible blue plastic clay does not seem to afford, a suitable

Bridge with brick

suitable foundation for the abutments.
If better soil is not obtainable by going down a little deeper the abutments had better rest on piles. Pitching should be more than 1 foot in thickness.

The President District Board states in his covering letter that "as the matter is urgent the plan and estimate are forwarded in anticipation of the Board's approval"

I have the honor to be
Sir
Your most Obedt. Servant

A. Turner
12.3.98
Superintending Engineer
4th Circle

N 10 3/98

1067 W 1067 W

Public Works Department.

Current No. 2534

Letter No. 151 W

Dated 15th March 1898

From the Supt. Engineer IV Circle

NOTE BY TECHNICAL SECTION.

Name of work Re-constructing Talipoya Bridge. Wynaad Taluq, Malabar District.

Est. Rs 13,000.

The Supt. Engineer IV Circle submits for the sanction of Govt. Plans & Estimates amounting to Rs 13,000 for re-constructing Talipaya Bridge at $\frac{3}{4}$ Mile, road No. 4 - Wynaad Taluq. The existing Bridge is a wooden truss structure with rough stone revetment protecting the approaches. It is considered unsafe as the woodwork is old and decayed, and sagged as 6 inches on one side and $4\frac{1}{2}$ inches on the other. Traffic is only maintained by its being temporarily supported at present. It is proposed to re-build the Bridge with brickwork abutments and from

W.

I do not think we need to go any deeper with the foundations if we have one mass of concrete under wings, abutments and right across the span. The concrete under the masonry might remain as provided - in Portland cement and for the rest Surki might be allowed. No flood would scour away such a mass as that while settlement would progress equally. The toe-wall on the pitching might be of masonry 2 feet thick resting on the concrete which might be maintained at the same level and with 1 foot footings instead of $4\frac{1}{2}$" as shown in plan. The S.E. considers the pitching should be deeper & there would be no harm in increasing it's thickness to 1'-6".

CWM 5/4/98

DW / For orders

R.W. 6/4/98

P. W. 60
250—30-9-97.

irders with Horbury's arched
plated flooring. It was
riginally proposed to con-
truct a bridge of Pony Truss
ith Pin connections, but
n a reference to Messrs
ichardson and Cruddas
r their quotations of prices
ey suggested a cheaper
ridge with plate girders
apable of bearing equal
eight as that of the
ony Truss which sug-
estion was accepted.
he existing bridge has a
pan of 46'6" at the bottom
nd 52'3" at top - vide
ection in plan with
ighest flood level shown.
is proposed in re-building
e bridge to increase the span
60 feet at top. The increas-
d span the L. F. Engineer
ays, in his specification
eport attached to Estimate
ill lower the flood level
6in, but this is not under-
tood. The areas of the
espective sections are
orrect - vide calculation
heet. but there will not
ffect the H. F. L. as stated.

draulic details. No hydraulic
ata accompanies the Estimate
the bridge proposed is
of re-construction.

Hydraulic details may in the circumstances be dispensed with.

tructure details. The Soil. Foundations.

---

the centre line of proposed abutments and taken down 5 feet below nullah bed. The Soil for a depth of 2 ft is represented as sound. (**Shingle** on the Calicut side and Soft laterite on the other). It is proposed to take founds down to 3 feet below bed (really 1½ feet below deep bed) to guard against scour. The Soil below 3 feet is said to be "compressible blue plastic clay". This the Supg Engineer does not consider a suitable foundation for the abutments, and suggests that if better soil is not met with by going down a little deeper the abutments had better rest on piles. Stone concrete in Portland Cement is to be used to form a good bed for abutments & Wings as shown in plan.

Flooring. No flooring is provided, the Soil apparently is considered firm enough to resist the velocity of the Stream as examination must have shown.

Superstructure. The abutments Wings, & parapets will be buil
of 1st class brick in Surki
mortar pointed with Portla
Cement, the Cornice & cole

of parapet being plastered with Portland Cement.

Girders. The main Girders to be wrought iron plate Girders, the length of each girder to be 65 feet over all and 4'6" depth over angle bars. The distance between centre of girders to be 15'6" and the clear width of roadway 14 feet. The girders are shown straight on the drawing but will be constructed with a camber of $\frac{1}{1200}$ of the span. Each girder will bear a load of 45 Tons. according to calculation 44 Tons. vide Calculation Sheet No. 2.

Platform. Cross girders, 9 in number, of rolled steel 15'6" long × 15" deep, weighing about 7 Cwts each will be spaced 7'9" apart from Centre to Centre and Harbury's $\frac{1}{4}$" arched plating as flooring fitted on to the main and Cross Girders. Granite ballast 4" cube, and granite metal $1\frac{1}{2}$" cube for a depth of 4" and 3" respectively being spread over flooring plate. The hand railing on both sides of the bridge will consist of wrought iron standards [illegible] gas piping.

Approaches. The approa the bridge for 50 feet on either side will be metalled 6" deep to the level of the new bridge to break the fall towards the bridge.

Pitching. The Supt. Engineer suggests should be more than one foot in thickness. A gravel backing of 6 inches may be added to the pitching thickness of one foot.

The President District Board states in his covering letter that as the matter is urgent the plan and estimate are forwarded in anticipation of the Board's approval.

Rates. Data, in detail, is furnished for concrete, brickwork, & metal, & is considered fair. Rs. 50 is allowed for boring.

H. J. W.
4. 4. 98.

Calculation Sheet

Old Sectional Ar

$0.75 \times 8.25 =$

$\frac{8.25 + 10.00}{2} = 9.12$

$\frac{10.00 + 13.00}{2} = 11.5$

$\frac{13.00 + 13.75}{2} = 13.$

$\frac{13.75 + 13.50}{2} = 13.6$

$\frac{13.50 + 13.00}{2} = 13.$

$\frac{13.00 + 11.00}{2} = 12$

$\frac{11.00 + 8.75}{2} = 9.$

$1\frac{1}{2} \times 8.75 =$

against 590.77 in repor

New Sectional

Old Sectiona

Ends $\frac{5.25 + 7.75}{2} \times$

$- \quad 8\frac{1}{2} \times \frac{1}{2}$

$\frac{2.5 + 4.5}{2}$

$5\frac{1}{2} + 1 =$

against 664.36

The L. F. Engineer
in flood level a
664.35 : 592 :
Which is not
between H.F.L.
Sides is 2' 6"
plan. 3ft. wo
Hydraulic de

T
Please take this out properly
& see where it does come. The sectional
area of waterway will be
constant. The present mean heights
& present mean widths are known:
also the proposed mean widths are
Thus we get a simple
[illegible] mean

Should be at least 3 feet below bottom of girder to allow for floating bodies — perhaps trees — coming down the stream in floods

CWBY
5/4/98.

It appears to me there will be no appreciable decrease in H.F.L as the sectional area of the stream above & below the site of the bridge remains the same.

H.C.W.
5.4.98.

Calculation Sheet No. 2.

Weight over main wrought iron plate Girders.

	Cwt.	Lbs
7 Cross Girders weighing 7 Cwts. each 15'6" × 15 inches deep	49	5488
Harbury's $\frac{1}{4}$" arched plating for floor 18 wrought iron per Est.	158	17696
18 wrought iron Standards	7	784
$1\frac{1}{4}$" gas pipe railing for -do- 262 Rft @ 2.52 lbs	—	660
Connections to rolled beams	8	896

Ballast over bridge - pointe

Stone 4" Cube - 60 × 14 × $\frac{1}{3}$ = 280

Metalling $1\frac{1}{2}$" - 60 × 14 × $\frac{1}{4}$ = 210

Total Cub Ft. 490

490 Cub Ft. @ 146 lbs to a Cub Foot — 71540

Total - 97064

112

16 Lewis bolts

Live load 60 × 14 × 120 — 100800

Total 197976

Total Tons - 88

Load on each girder. Tons. 44

Calculation for girder. (wrought iron)

$$\text{Safe Load} = \frac{8 \times a\,d \times 4}{L}$$

a = effective sectional area of top & bottom flange.

d = depth in inches = $54\frac{3}{4}$ inches.

L = ~~span~~ from Centre to Centre of bearings in inches.

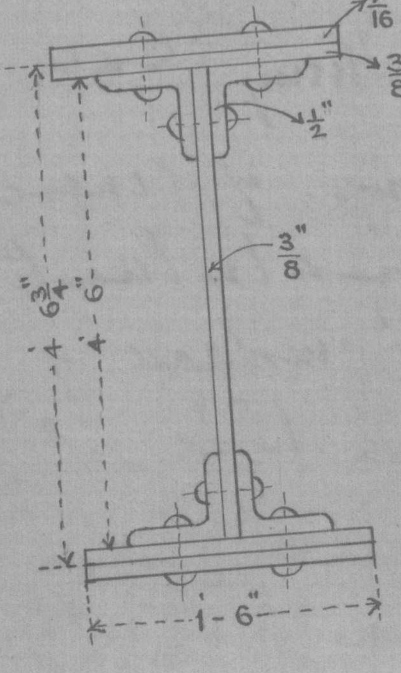
Section of plates $(18 - 2 \times \frac{3}{4}) \times \frac{13}{16} = 13.4$ sq. inches.

2 angle irons
$(4 + 4 - \frac{1}{2} - 2 \times \frac{3}{4}) \times \frac{1}{2} \times 2 = 6$ sq. inches.

Total effective section of plates 19.4 sq. inches.

$$W = \frac{8 \times 19.4 \times 54.75 \times 4}{62.5 \times 12} = 45.3 \text{ Tons}$$

H.C.W.



This may be passed
CWBY
5/4/98

P.T.O.

Steel Cross Girders.

Total weight to be carried
197976 lbs

$\frac{197976}{8}$ = 24747 lbs per one bay

deducting weight of Girder
23963 lbs = 10½ say 11 Tons

From Dorman, Long & Co. book on Steel Sections page 67 a girder for a span of 16 ft. 12" × 5" weighing 39 lbs per foot run will be sufficient.

The girder section provided viz 15" will therefore suffice.

W.C.H.

From the plan the span is apparently 14 feet.

Then W = WL = 11 × 14 = 154 -

A girder 12" × 5" would certainly do & the weight will be only 39 lbs per foot run.

CWM
5/4/98

D.W./

The plan & estimate have been corrected as ordered by "W" & the amount of the estimate increased from Rs 13,000 to Rs 13,300.

16/4.98.

The estimate [illegible] with [illegible] WE [illegible]

CWM
17/4/98

D.W.

Kindly say whether the amount of the estimate should not be altered with reference to W's orders

The plan & estimate may be passed with the following exceptions

(1) Footings of concrete under abutments to be 1' instead of 4½". 7-5 width to be 8.3" instead of 7'.

(2) Pitching to be 1½' thick instead of 1'

BUILDINGS AND ROADS.
CIVIL WORKS.

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Ag. Secretary to Government.

To the Superintending Engineer, IV Circle.
" Local and Municipal Department, with 9 enclosures.

Exd. W. D'Moss.