struction of the bridge until a decision has been arrived at on the question raised in G.O. No 862 M, Mis, L & M dated 21st May 1896, but meanwhile the Suptg. Engineer IV circle will report, with the least possible delay, and with reference to Rule VIII para 147, Chapter IV Volume II P.W. Code, on what portion of the estimate of Rs 23,800 the usual charges for establishment and tools and plant should be levied.

6/6/96

Soon

No. 1709 W, d/ 9 June 1896.

CHBB
6.6.96.

Suptg. Engineer,
IV circle.
L. & M. Dept.

D 9/6

[28]

N.B.—The reply to this communication should be addressed to the Chief Secretary.

LOCAL AND MUNICIPAL DEPARTMENT.

CHIEF SECRETARIAT, MADRAS.

Memorandum.

Dated the 23rd May 1896.

No. 579.

Madras office

With reference to para. 4 of G.O., 308 M., dated 21st February 1896, the following note by the Honourable Mr. Bliss is communicated to the Public Works Department with a request for the favour of an early reply:-

"As to the contribution to the Public Works Department for supervision, what was the reply to para. 4 of G.O., 308 M., dated 21st February 1896 ? It seems to me that, in such a case as this, in which a large part of the expenditure is on the purchase of Europe stores, a much smaller contribution than 24½ % should be exacted."

Under Secretary, P.W.D.,
for Chief Secretary.

To

The Public Works Department.

C. W. CURRENT No. 491

Recd 27-5-96

28-4-96. No 2083C
10-1-96 - 166C
8-11-95 - 3359C
25-9-95 - 2821C
16-8-95 - 2529C
24-7-95 - 2370C
15-6-95 - 1455W
22-1-96 - 373C

Agd: 29.5.96

OS 122 4/6 R 8/6

No 1709W, d/ 9th June 1896.

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following

Proceedings of Govt, Local & Municipal Dept No 308 M d/ 21 Feb 96
From the Suptg. Engineer IV circle No. 135W d/ 21 March 1896
Memorandum from the Local & Municipal Dept No 406 d/ 30th Mar 1896
—— do —— to the —— do —— No 2083C d/ 28th April 1896
—— do —— from the —— do —— No 430 d/ 4th April 1896
Proceedings of Govt, Local & Municipal Dept No 862 M. Mis d/ 21 May 1896
Memorandum from the —— do —— No 579 d/ 23rd May 1896

Copies of the undermentioned papers will be communicated to the Suptg. Engineer IV circle for information.

G.O. No 308 M, L & M, d/ 21st Feby 1896.

Memo. from the L & M Dept No. 406 d/ 30th March 1896

Memo. to the same Dept No. 2083C d/ 28th April 1896.

G.O. No 862 M, Mis L & M dated 21st May 1896.

2. No action will be taken in the P. W. Dept with respect to the construction

(40—4,000—2-11-95.)

struction of the bridge until a decision has been arrived at on the question raised in G.O. No 862 M, Mis, L & M dated 21st May 1896, but meanwhile the Supdg. Engineer IV circle will report, with the least possible delay, and with reference to Rule VIII para 147, Chapter IV Volume II P.W. Code, on what portion of the estimate of Rs 23,800 the usual charges for establishment and tools and plant should be levied.

6/6/96

CARB
6.6.96

Soon

No. 1709W, d/ 9- June 1896.

Supdg. Engineer, IV circle
L. & M. Dept.

D. 9/6/96
2/1/96

P. W. CURRENT No. 4918
P. W. Curl.

Recd. 27-5-96
Regd. 29-5-96

Govt. of { 189 } Madras.

Local and Municipal Department.

To

The Public Works Deptt.

Proceedings, dated 21st May 1896,
No. 862 M. Mis

Subject.

Suspension bridge over the Palar

Requesting with remark, the Vaniyambadi Munl: Council to again Consider the matter of Constructing the ——— and report which of the three proposals referred to it wishes to adopt.

struction of the
bridge

F
17 8,000—17-7-94.

Govt. of 189

REVENUE.

To

The P. W. D.

Dated

Recd.

Encl.

~~Mis.~~ G.O., 22nd May 189 , No. 1064

SUBJECT.

Recording Proceedings of the P.W.D. awaiting receipt of estimate for the work lettered (a).

1144 W d/ 13-5-96
782 W d/ 5-3-96
840 W d/ 7-3-96

Sheet to accompany the Estimate for Constructing a Suspension bridge across the Palar river at Vaniyambadi

Quantity	Particulars	Rate Rs.	Rate a.	Rate p.	Per	Total Rs.	Total a.	Total p.	Total rate Rs.	Total rate a.	Total rate p.
	Concrete in Surki Mortar										
	As per schedule Item No. 71	10	„	„	100 cft.	10	„	„			
100 cft.	Broken stone, carted 1½ miles	1	12	„	Do.	1	12	„			
22 Do.	Lime, carted 1 mile	„	10	„	Do.	„	2	2			
33 Do.	Sand — Do — ½ mile	„	14	„	Do.	„	4	7			
11 Do.	Surki — Do — 1 mile	„	10	„	Do.	„	1	1			
	Sundry charges					„	4	2			
	Total for 100 cft. of Concrete								12	8	„
	Table brick in Surki Mortar										
	As per Schedule Item No. 76	16	„	„	100 cft.	16	„	„			
1520 No.	of Bricks 9"×4½"×2¼" carted 1 mile	„	12	6	1000	1	3	„			
13 cft.	Lime, carted, 1 mile	„	10	„	100 cft.	„	1	4			
7 Do.	Surki — Do — Do	„	10	„	Do.	„	„	9			
20 Do.	Sand — Do. — ½ mile	„	14	„	Do.	„	2	10			
	Sundry charges					„	8	1			
	Total for 100 cft. of table brick work								18	„	„
	Table brick in Surki Mortar for arch work.										
	As per Schedule Items Nos. 80 & 82	18	„	„	100 cft.	18	„	„			
	Cartage &ca. as above	„	„	„	„	1	7	11			
	Sundry charges &ca.	„	„	„	„	„	8	1			
	Total for 100 cft. of table brick arch								20	„	„
	Cut granite stone										
	As per Schedule Item No. 93	80	„	„	100 cft.	80	„	„			
100 cft.	Stone, carted 3 miles	3	12	„	Do.	3	12	„			
	Cartage for sand, lime and labour &ca.					16	4	„			
	Total for 100					100	„	„	or 1	„	„ cft.

	Pointing with surki mortar										
	As per Schedule Item No. 118 ——	1	8	"	100 sft.	1	8	"			
2½ cft.	Lime, carted 1 mile ——	"	10	"	Do.	"	"	3			
5 Do.	Sand — Do — ½ mile ——	"	14	"	Do.	"	"	9			
	charge for surki &ca ——					-	7	- 2			
	Total for 100 sqr feet of Pointing ——								2	"	"
	Teak wood wrought and put up										
	As per schedule Item No. 151.	3	12	"	cft.	3	12	"			
	Cartage & Railway &c charges	"	4	"	Do	"	4	"			
	Total for 1 cft of teak wood ——								4	"	"
	Dry rough stone revetment										
	As per Schedule Item No. 96	2	8	"	100 cft	2	8	"			
100 cft	stone carted 1½ mile ——	2	3	"	Do	2	3	"			
	Sundry charges ——	"	"	"	——	"	5	"			
	Total for 100 cft. of revetment ——								5	"	"

J. Hanna

Supg: Engineer

4th Circle

6
VII Two pp

P.W. Ex 7-4
9126/45
2333/36

Detail of Work.	Number.	Measurements in Feet. Length.	Measurements in Feet. Breadth.	Measurements in Feet. Depth.	Area or Contents.	Total Quantity of each description of Work.
1	2	3	4	5	6	7
Estimate for Constructing a Suspension bridge across the Palar river at Vaniyembadi						
Details for towers						
Concrete with broken stone in Surki Mortar						
Foundation to Towers	4	12	9	6	2592	
Do to abutments between the towers	2	8	9¼	6	888	
Over Archways	2	11	2½	1	55	
Total Cft. of Concrete					3535	say 3555
Table moulded brick in Surki Mortar						
Towers above foundation to road level	4	10	7	19½	5460	
abutments between towers	2	10	5⅝	19½	2194	
Corbels to parapets behind the towers	4	6	3	5¾	414	
Towers first footing above road level	4	9	7	½	126	
Do second Do Do	4	8½	6½	½	111	
Do above footings	4	7	6	28½	4788	
Top of towers	8	6	2	2	192	
Projections at sides of archways up to the springing line	4	6½	½	14½	189	
Archways above springing line	2	11	7	6½	1001	
Carried Over					14475	

P. W. D. Form, No. M 204.

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet. Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each description of Work.
1	2	3	4	5	6	7
Brought Forward					14475	
Parapets above arch ways front and rear	4	11	1½	4	264	
String course to — D°	4	22	¼	¼	6	
— D° — D° to archways	2	16	½	½	8	
Pedestals at the ends of parapets behind towers	4	2	2	2	32	
Parapets to — D° — D°	4	4	1½	1½	36	
Total cft.					14821	
Deduct for						
semi circular spaces	2	area 39.27	„	6	471	
— D° — arches	2	18	6	1½	324	
Cut stone at base of tower 1st and 2nd footings	4	50	1½	½	150	
— D° — at top of towers	4	92	1½	½	276	
Bed stones at top of — D° — for saddles	4	6½	2	1	52	
— D° — at ends of abutments	4	2	2	¾	12	
Total cft. of deductions					1285	
Total cft. of table moulded brick in surki mortar less deductions					13536	say 13,550
t Stone work						
At base of towers	4	50	1½	½	150	
Covering stones at top of towers	4	6½	6½	½	85	
Carried over					235	

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet. Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each description of Work.
1	2	3	4	5	6	7
Brought forward					235	
Cornice at top of towers	4	92	1½	½	276	
String course to parapets behind the towers	4	8	¾	½	12	
— D° — D° — to pedestals	4	2½	2½	½	13	
Caps to parapets	4	4	2	¼	8	
— D° — to pedestals	4	2	2	⅜	6	
Bed stones at ends of abutments	4	2	2	¾	12	
— D° — at top of towers for saddles	4	6½	2	1	52	
Total cft. of cut stone work					614	614
Arch work						
Semi circular arches	2	18	6	1½	324	
Total cft. of arch work						324
Pointing with surki mortar						
Face of abutments above bed to road level	2	24	„	19½	936	
Front and rear face of towers	2×4	6	„	29½	1416	
Sides of — D° — D°	2×4	7	„	29½	1652	
Front and rear face of arch ways	4	11	„	21½	946	
Intrados of arches	2	16	7	„	224	
Projections at sides of arch ways up to the springing lines	4×2	1	„	15	120	
Carried over					5294	

P. W. D. Form, No. M 204.

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet.			Area or Contents.	Total Quantity of each description of Work.
		Length.	Breadth.	Depth.		
1	2	3	4	5	6	7
Brought forward					5294	
Sides and top of parapets	4	11	"	9	396	
— Do — of parapets behind the towers	4	4	"	3	48	
— Do — of pedestals of Do.	4	6½	"	2	52	
Total sqr feet					5790	
Deduct for						
Archways up to the springing lines	4	10	"	15	600	
Semi-circular spaces	4	area 39.27	"	"	157	
Haunches against towers	4	5½	"	6½	143	
Ends of parapets — Do	2×4	1½	"	4	48	
Total sqr feet of deductions					948	
Total sqr. feet of Pointing less deductions					4770	Say 4,800
Teak wood wrought and put up.						
Cross beams	80	11½	1/3	1/2	153.33	
Flooring planks	1	202	10	1/4	505.00	
Planking for wearing surface	1	202	10	1/8	252.50	
Wheel guards	2	202	1/3	3/4	101.00	
Total cft. of teak wood wrought and put up. Say						1012
Revetment.						
Dry stone packing to a distance of 50 feet on each side of abutments	4	50	1½	15	4500	

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet.			Area or Contents.	Total Quantity of each description of Work.
		Length.	Breadth.	Depth.		
1	2	3	4	5	6	7
Total cft. of Dry rough stone revetment						4500
Gravel backing.						
1/3rd the quantity of revetment		4500 × 1/3 =			1500	
Total cft. of gravel backing						1500
Earth work.						
Excavating foundation to towers at right bank	2	9	12	22	4752	
— Do — Do — to abutments	1	8	9¼	22	1628	
— Do — Do — to Corbels	2	5	3	5	150	
— Do — Do — to towers at Left bank	2	9	12	18½	3996	
— Do — Do — to abutments	1	8	9¼	18½	1369	
— Do — Do — to Corbels	2	5	3	5	150	
Forming approaches at right bank	1	100	24	3	7200	
— Do — Do — at left Do.	1	120	24	4	11520	
Add for slopes of Excavating foundation above concrete level and cutting banks &ca					5235	
Total Cft. of Earth work						36,000
Details for anchorages.						
Concrete with broken stone in surki mortar						
Foundation to anchorages	2	32½	18	8½	9946	
— Do — to tunnels to pass steel wire cables	4	11½	3⅔	1½	253	
C. O.					10199	

P. W. D. Form, No. M 204.

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet.			Area or Contents.	Total Quantity of each description of Work.
		Length.	Breadth.	Depth.		
1	2	3	4	5	6	7
Brought forward					10199	
Floor of tunnels	2	23½	3	1	141	
Total cft.					10340	
Deduct for masonry	2	24½	10	2	980	
Total cft. of concrete in Surki Morter less deduction					9360	say 9400
Table Moulded brick in Surki Morter						
First step imbedded in concrete	2	24½	10	2	980	
Second step	2	30½	16	2½	2440	
Third step	2	29½	14	4½	3716	
Fourth step	2	29½	13½	4	3186	
Fifth step at top	2	29½	12½	2	1475	
Side walls of tunnels to pass steel wire cables	4×2	8	5/6	2½	134	
Total cft					11935	
Deduct for						
Tunnels up to the springing	2	23½	3	5	706	
Semi circular spaces line including arch work	2	23½	area 7.95	"	374	
Man holes	2×2	2	2	3½	56	
Tunnels to pass steel wire cables	2×2	8½	2	2½	170	
Covering stones to Do	2×2	20	3⅔	½	147	
Bed stones for fixing rails	2×2	4	3	½	24	
Do Do	2×2	2	1	½	4	
Covering stones for Man holes	2×2	3	3	½	18	

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet.			Area or Contents.	Total Quantity of each description of Work.
		Length.	Breadth.	Depth.		
1	2	3	4	5	6	7
Total cft. of deduction					1499	
Total cft. of brick in Surki Morton less deduction					10436	say 10450
Arch work						
Over tunnels	2	23½	5½	¾	194	
Total cft. of Arch work with brick in Surki Morter					say	200
Cut Stone work						
As per above deduction cft.					193	say 200
Pointing with Surki Morton						
Sides and intrados of archways of tunnels	2	23½	"	13	610	
Ends of tunnels	2×2	3	"	4	48	
Semi-circular spaces	2×2	3·5 area	"		14	
Sides of man holes	2×2	8	"	3½	112	
Do of tunnels for steel wire cables	2×2	16	"	4	256	
Bottom of masonry of Do	2×2	8	"	2	64	
Total sqft. of Pointing with Surki Morter					1104	say 1100
Earth work						
Excavating foundation to anchorages	2	32½	18	21½	25154	
Do. Do. to tunnels to pass steel wire cables	2×2	8	4	3½	448	
Total cft. of Earth work					25603	say 26,000

P. W. D. Form,
No. M 204.

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet. Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each description of Work.
1	2	3	4	5	6	7
Side railings to the approaches						
Cut stone						
Upright stones to be fixed at intervals of 12 feet apart from centre to centre including allowance for shaping and making holes for passing the rails through	4×8	6	1	1/2	96	
Total cft. of cut stone						96
Iron rails						
Sides of approaches at right and left banks	2×2	84	"	"	336	
Total Rg feet or yds of rails					336	112

7/111 [illegible]

P.W. [illegible] 3/972 of 45
2833/56

ESTIMATE FORM.—Abstract.

Quantity.	Description of Work.	Rate.	Per	Amount	Total.
1	2	3	4	5	6
		RS.		RS.	RS.
	Constructing a suspension bridge across the Palar River at Vaniyambadi				
	Towers and abutments				
3,550 cft.	Concrete with broken stone in surki mortar	12-8-0	100 cft.	444	
13,550 Do.	Table moulded brick in surki mortar	18-0-0	Do	2439	
614 Do.	Cut granite stone dressed to size and fitted in surki mortar	1-0-0	cft.	614	
324 Do.	Arch work with table moulded brick in surki mortar	20-0-0	100 cft.	65	
4800 sq ft.	Pointing with surki mortar	2-0-0	100 sq. ft.	96	
1012 cft.	Teak wood wrought and put up	4-0-0	cft.	4048	
4500 Do.	Dry rough stone revetment	4-8-0 5-0-0	100 cft.	225	
1500 Do.	Gravel backing	1-8-0	Do.	23	
36,000 Do.	Earth work for excavating foundation and forming approaches &ca.	4-0-0	1000 cft.	144	
	Carried over			8098	

Grand Total of Estimate ..

Station

Date 189

Executive Engineer.

(E. No.)

CIRCLE—

DIVISION—

DISTRICT—

TALUK (OR ESTATE IN CASE OF ESTATE WORKS)—

ESTIMATE FORM.—Abstract.

Financial Head—

Budget Head—

Departmental Head—

Main Head—

Sub-Head—

Project of which the work forms part—

Section—

Name of Work—

Amount of Estimate, Rs.—

To be carried out by—

REFERENCES.

ESTIMATE FORM.—Abstract.

Quantity.	Description of Work.	Rate.	Per	Amount	TOTAL.
1	2	3	4	5	6
		RS.		RS.	RS.
	Brought forward	—		8098	
	Anchorages				
9400 cft.	Concrete with broken stone in surki mortar	12-8-0	100 cft.	1175	
10450 Do.	Table moulded brick in surki mortar	18-0-0	Do	1881	
200 Do.	Arch work with table moulded brick in surki mortar	20-0-0	Do	40	
200 Do.	Cut granite stone dressed to size and fitted in surki mortar	1-0-0	cft.	200	
1100 sqr.ft.	Pointing with surki mortar	2-0-0	100 sqr.ft.	22	
26,000 cft.	Earth work for excavating foundation &ca.	4-0-0	1000 cft	104	
	Side railings				
96 Do.	Cut granite stone roughly dressed and fitted	0-12-0	cft.	72	
112 Ryds.	Iron Rails to be obtained from Madras Railway Co.	1-8-0	Ryd.	168	
	Railway and fixing charges	—	L.S.	40	
	Carried over	—		11,800	

Grand Total of Estimate ..

STATION——
Date——189 .

Executive Engineer.

(E. No. [illegible]).

CIRCLE—

DIVISION—

DISTRICT—

TALUK (OR ESTATE IN CASE OF ESTATE WORKS)—

ESTIMATE FORM.—Abstract.

Financial Head—

Budget Head—

Departmental Head—

Main Head—

Sub-Head—

Project of which the work forms part—

Section—

Name of Work—

Amount of Estimate, Rs.—

To be carried out by—

REFERENCES.

ESTIMATE FORM.—Abstract.

Quantity.	Description of Work.	Rate.	Per	Amount	TOTAL.
1	2	3	4	5	6
		RS.		RS.	RS.
	Brought forward —			11800	
	Baling water —		L.S.	1000	
	Contingencies @ about 5 % —			640	
	Petty supervision do. —			660	
	Total Estimate Rupees —			14,100	
	Add for iron and steel works for suspension bridge 200 feet clear span with 10 feet roadway to carry a live load of 112 to 120 lbs. per sqr. foot. including cast iron saddles and all necessary anchorage gears and iron fastenings to wood work delivered at ~~Madras~~ as per Messers Burn & Co. Estimate	Rupees		6700	
	Landing charges for the above and railway fare from Madras to Tirupature station and carriage hire to the site —			1000	
	Erection charge for the above iron work —			2000	

Grand Total of Estimate Rs. 23,800

STATION Coimbatore

Date 18th Novr 1895.

Supg. ~~Executive~~ Engineer.
4th circle

(E. No. 323).

CIRCLE— IV Circle.

DIVISION— Salam.

DISTRICT— "

TALUK (~~OR ESTATE IN CASE OF ESTATE WORKS~~)— Tripatur.

ESTIMATE FORM.—Abstract.

Financial Head— Provincial.

Budget Head— Communication.

Departmental Head— Original Works.

Main Head— Bridged and drained throngout

Sub-Head— Bridges and Culverts over 100 ft water way

Project of which the work forms part—

Section—

Name of Work— Constructing a Suspension bridge across the Palar river at Vaniambody

Amount of Estimate, Rs.— 23,800

To be carried out by— P. W. D.

REFERENCES.

8 / TM [illegible]

P. W. Est 2 / ~~9120/95~~ 2333/96

Read - also the [illegible]

5800

Report to accompany the Estimate for Constructing a Suspension Bridge across the Palar River at Vaniembady in the Salem District.

The plan and Estimate were called for in G. O. No. 1455 W, dated 15th June 1895.

The plan and Estimate now submitted are for a 200 feet span Suspension Bridge similar in every respect to the Kullar Bridge.

The width of the roadway is the same, viz: 10 feet. The cost of providing a greater width would, it was found, ~~to~~ be incommensurate with the advantage. Like the Kullar Bridge, owing to insufficient headway this Bridge cannot be stayed to prevent undulation. It could be made stiffer by giving a smaller dip to the cables, but on going into the matter, it was found, that the extra cost would be incommensurate with the advantage gained.

The Palar river divides itself into two branches about 2¼ miles above the site of the proposed bridge. The right branch again

again bifurcates about $\frac{1}{4}$ mile above the site of Bridge as shewn in the accompanying sketch. It is over the right branch of the latter bifurcation known as the Govindapuram river that proposed Bridge is to be built. The area drained by the river above its first bifurcation is 1320 square miles and the discharge from this area as given by the formula $D = 450M^{\frac{2}{3}}$ will be in round figures 54000 ft per second. It will be well on the safe side if the branch to be bridged is assumed to take $\frac{1}{3}$ of this or 18,000 ft per second. The discharge of this branch as calculated from two sections, one taken at site of Bridge and the other at 2200' above it with reference to the maximum flood level as well as it can be now ascertained is 15,000 ft per second arrived at as follows:—

Mean area of sections = $(130 + 12 \times 3) \times 12$
= 1,992 Sq. ft.

$$H.R.M = R = \frac{1992}{205.84} = 9.67$$

$$\text{Surface fall} = S = \frac{1.5}{2200} = .0006818$$

$$V = \overset{90.8}{\cancel{92.4}}\sqrt{9.67 \times .0006818} = 7.36$$

$$D = 7.36 \times 1992 = 14,661 \text{ or say } 15,000$$

With a head at the Bridge of 2 inches the discharge will be 19800 ft per second.

The

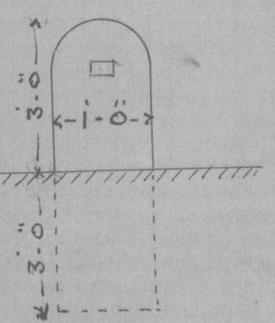
The Bridge towers will be founded on Surki Concrete 6 feet thick resting on clay 6 ft below the deep bed of river.

Lm 308 MB 21/2/96

Printed 106 copies

The superstructure will be of table moulded brick in surki mortar. The masonry work will be carried out in accordance with the standard specification.

The road Embankment from the Towers to the anchoring chamber will be protected with rail fences consisting of old iron rails fixed in stone uprights.



Supg. Engineer, 4 Circle.

D IN THE SURVEY OFFICE
P
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No. 308 M., 21st February 1896.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

Read—again the following paper:—

G.O., Mis. No. 900 M., dated 29th May 1895.

Read—the following letter from J. T. GILLESPIE, Esq., C.S., Chairman, Municipal Council, Vániyambádi, to the Chief Secretary to Government (through the Collector of Salem), dated 25th March 1895, Ref. on No. 23-Eng.:—

With reference to G.O., Mis. No. 26 M., dated 9th January 1895, and in continuation of my letter, Reference on No. 1023-Eng., dated 12th December last, I have the honour to state that in spite of many reminders to Jainulabdin Sahib, a municipal councillor, who promised to collect subscriptions from the people towards the construction of a bridge over the Pálár river, he did not give me any reply till the 14th February last, on which date he wrote to me stating that, as many of the rich residents were away, he could not send his final report. From the conversation I held with him at the last four or five meetings, I learn that the levy of professional tax in the coming year, as already sanctioned, will have a tendency to check private liberality. Being of opinion that further delay in the matter would only be a waste of time, I brought the subject before the council at its meeting held on the 11th instant. The council concur with my opinion that the levy of professional tax will check private liberality and is of opinion that the only course open to them is to raise a loan from Government for the purpose of building the Pálár bridge. Even if any subscriptions should come in, they will not, in all probability, amount to more than about four thousands of rupees, and this of course falls far short of the estimated cost of construction, viz., Rs. 24,000. It is unnecessary for me to explain again that it is beyond the means of the council to spend such a large sum as Rs. 24,000 for a bridge.

2. I therefore request that the Government will be pleased to comply with the request of the council in the matter of raising a loan. The council will be prepared to pay Rs. 1,200 every year (beginning from 1896–97), including the interest, and I beg to point out, as desired by the council, that, unless this is done, it is impossible to do anything in the matter for some years to come.

3. A copy of the council's resolution on the subject accompanies.

Endorsement, No. 148-Sub.

Forwarded.

2. The matter of providing a bridge is one of urgency having regard to the safety of the town. If the municipality will raise a loan for the purpose, I think it would be advisable to help them as far as possible.

(Signed) G. STOKES,
Collector.

3rd April 1895.

Order—Mis. No. 900 M., dated 29th May 1895.

The papers will be forwarded to the Public Works Department with the request that detailed plans and estimates for the proposed suspension bridge may be prepared.

2. It is observed that the Superintending Engineer's letter, No. 495 M., dated 12th December 1894, speaks of a bridge with a roadway of only ten feet. The Public Works Department will be requested to consider whether this is not too narrow for a bridge 200 feet long, as carts could hardly pass one another in that width, and whether the roadway should not measure at least twelve feet.

(True Extract.)

(Signed) J. F. PRICE,
Chief Secretary.

To the Chairman, Municipal Council, Vániyambádi (through the Collector of Salem).
„ Public Works Department.

Read—also the following paper :—

From J. HANNAN, Esq., Superintending Engineer, IV Circle, to the Chief Engineer, Public Works Department, dated Coimbatore, 18th November 1895, No. 445-W.

With reference to G.O., No. 1455 W., dated 15th June 1895, and your last reminder, No. 3359-C., dated 8th instant, I have the honour to submit the plans and estimate amounting to Rs. 23,800 for constructing a suspension bridge across the Pálár river at Vániyambádi in the Salem district.

Enclosure.

Report to accompany the estimate for constructing a suspension bridge across the Pálár river at Vániyambádi in the Salem district.

The plan and estimate were called for in G.O., No. 1455 W., dated 15th June 1895.

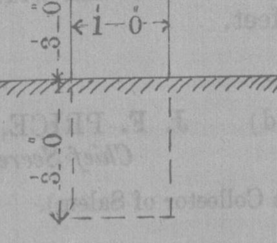
The plan and estimate now submitted are for a 200-feet span suspension bridge similar in every respect to the Kullar bridge.

The width of the roadway is the same, viz., ten feet. The cost of providing a greater width would, it was found, be incommensurate with the advantage. Like the Kullar bridge, owing to insufficient headway this bridge cannot be stayed to prevent undulation. It could be made stiffer by giving a smaller dip to the cables, but on going into the matter it was found that the extra cost would be incommensurate with the advantage gained. The Pálár river divides itself into two branches about 2¼ miles above the site of the proposed bridge. The right branch again bifurcates about ¼ mile above the site of bridge as shown in the accompanying sketch. It is over the right branch of the latter bifurcation, known as the Govindapuram river, that proposed bridge is to be built. The area drained by the river above its first bifurcation is 1,320 square miles and the discharge from this area as given by the formula $D = 450\ M^{\frac{3}{4}}$ will be in round figures 54,000 feet per second. It will be well on the safe side if the branch to be bridged is assumed to take ⅓rd of this or 18,000 feet per second. The discharge of this branch as calculated from two sections, one taken at site of bridge and the other at 2,200 feet above it with reference to the maximum flood level as well as it can be now ascertained is 15,000 feet per second arrived at as follows :—

Mean area of sections = (130 + 12 × 3) × 12 = 1,992 square feet.
H. R. M. = R. = $\frac{1992}{205.84} = 9{\cdot}67$.
Surface fall = S = $\frac{1.5}{2200} = {\cdot}0006818$.
$V = 90{\cdot}8 \sqrt{9{\cdot}67 \times {\cdot}0006818} = 7{\cdot}36$.
$D = 7{\cdot}36 \times 1992 = 14{,}661$ or, say, 15,000.

P.S

With a head at the bridge of two inches the discharge will be 19,800 feet per second. The bridge towers will be founded on surki concrete six feet thick resting on clay six feet below the deep bed of river.



The superstructure will be of table moulded brick in surki mortar. The masonry work will be carried out in accordance with the standard specification.

The road embankment from the towers to the anchoring chamber will be protected with rail fences consisting of old iron rails fixed in stone uprights.

(Signed) J. HANNAN,
Superintending Engineer, IV Circle.

No. 166-C.

Forwarded to the Local and Municipal Department with reference to G.O., Mis. No. 900 M., dated 29th May 1895, and in continuation of this office No. 2529-C., dated 16th August 1895.

(Signed) D. Mc. NEIL CAMPBELL, Lieut.-Col., R.E.,
10th January 1896. *Joint Secretary to Government, P.W.D.*

Order—No. 308 M., dated 21st February 1896.

The plan and estimate for Rs. 23,800, forwarded by the Public Works Department, are sanctioned. A grant of Rs. 10,000 from Provincial funds will be made to the municipal council, and the balance of Rs. 13,800 will be advanced as a loan at 4¼ per cent. interest repayable in thirty years.

2. The council should draw the amount of the grant at once, and, as it is advisable that the loan should also be advanced in the current year, an application in the prescribed form will be published at once in the *Fort St. George Gazette*, so as to allow the council, in the absence of any objections, to draw the amount before 31st March 1896.

3. The Chairman will be requested to report, at a very early date, whether any of the promised subscriptions referred to in his letter, No. 23, dated 25th March 1895, are forthcoming, as a contribution of 24½ per cent. will have to be paid to the Public Works Department for the execution and supervision of the work in addition to the amount of the estimate now sanctioned.

4. The Public Works Department will be requested to state whether it can execute the work at an early date, and whether the total amount of 24½ per cent. will be required as contribution for supervision and tools and plant.

(True Extract.)

Phillips
for *Chief Secretary.*

To the Chairman, Municipal Council, Vániyambádi.
„ Collector of Salem.
„ Accountant-General.
„ Financial Department.
„ Public Works Department. with plans & estimate
Gazette.

[illegible]

[illegible] separately

APPENDIX.

APPLICATION of the Vániyambádi Municipal Council for a Loan from Government under section 5 of the Local Authorities Loans Act, 1879.

The work or works for the construction or repair of which the loan is required and an estimate of the cost thereof.	The amount which it is proposed to borrow.	The fund or funds on the security of which it is proposed to borrow.	The law or laws under which the said fund or funds is or are levied, received or held.	The period for which the loan is required, the number and amount of the instalments, if any, in which it is proposed that the loan shall be taken, the dates proposed for receiving such instalments, and the instalments, if any, in which it is proposed to repay the loan.	A detailed account of the revenue and expenditure of local authority for the three last preceding years.	Existing prior charges upon the funds of the local authority.
Construction of a suspension bridge over the Pálár. Rs. 23,800.	RS. 13,800	Vániyambádi Municipal fund.	The District Municipalities Act IV of 1884 (Madras).	(1) The loan is required for a period of thirty years. (2) It is proposed to be taken in one instalment in March 1896, and repaid with interest at 4½ per cent. in thirty equal instalments of Rs. 822.	Attached herewith.	None.

DETAILED account of the Revenue and Expenditure of the Vániyambádi Municipality for the years 1892–93, 1893–94 and 1894–95.

Receipts.	1892–93. RS.	1893–94. RS.	1894–95. RS.
Balance brought forward	1,889	1,312	3,328
Tax on Buildings and Lands	5,143	7,963	8,457
„ on Vehicles and Animals	195	235	286
„ on Carts	382	388	497
Tolls	1,888	2,268	3,364
Rent of Lands, Buildings, &c., and Sale-proceeds of Lands, &c.	243	342	143
Conservancy Receipts	12	23	7
Fees and Revenue from Educational Institutions	141	123	162
„ „ from Medical Institutions	..	..	2
Income from Markets and Slaughter-houses	847	968	1,035
License Fees	191	293	225
Other Fees	14	8	7
Fines under Municipal and other Acts	301	653	1,135
Grants and Contributions from Government	104	31	4
„ „ from Local Boards	714	718	379
Recoveries for Services to private Individuals	18	126	343
Miscellaneous	8	39	21
Advances Recovered	..	26	10
Total	12,090	15,516	19,405

Detailed account of the Revenue and Expenditure, &c.—*cont.*

Charges.	1892–93. RS.	1894–95 RS.	1893–94. RS.
Grant I—			
New Works—			
Communications	31	..	39
Buildings	464	582	2,040
Water-supply	30	..	..
Miscellaneous Public Improvements	..	..	10
Repairs—			
Communications	957	1,309	1,473
Buildings	249	38	15
Water-supply	344	350	400
Establishment	199	284	288
Tools and Plant and other Stores	3	27	16
Total	2,277	2,590	4,281
Grant II—			
Training Schools	90	..	..
Municipal Schools—			
On the Salary-result System	923	1,147	1,150
Salary Grants	418	420	383
Result Grants	83	132	140
Inspection	111	137	125
Miscellaneous	61	11	6
Total	1,686	1,847	1,804
Grant III—			
Hospitals and Dispensaries	1,435	1,435	1,519
Contributions	66	60	125
Vaccination	244	232	208
Registration of Births and Deaths	109	105	168
Conservancy, Road-cleaning and Road-watering	2,780	3,143	3,488
Total	4,634	4,975	5,508
Grant IV—			
Lighting	593	510	598
Public Garden, Survey of Land, Fire and other charges	480	929	1,145
Total	1,073	1,439	1,743
Grant V—			
Supervision and Management	1,082	1,337	2,193
Advances Recoverable	26	..	23
Balance	1,312	3,328	3,853
Total	12,090	15,516	19,405

Exd. A. Raitt.

P. W. CURRENT No. 2333

Govt. of {1896} Madras.

LOCAL AND MUNICIPAL.

Enclos. (4 plan
8. S. C
Recd: 7.3.96

Issued

Recd. *Encl.*

G.O., No. 308 M., 21st Feb. 1896.

FEBRUARY.

Suspension Bridge over the Palar River in Vaniyambadi.

Sanctioning, with remarks, the plan and estimate for Rs. 23,800 for the construction of a —, ordering the publication in the *Fort St. George Gazette* of an application for a loan of Rs. 13,800 from Government required for this purpose, and requesting the Public Works Department to state whether it can execute the work at an early date and whether the usual contribution for supervision and tools and plant will be required.

No. 135/W
Supdg. Engr's Office 4th Circle
Coimbatore 21st March 1896

From
J. Hannan Esq.
Supdg. Engineer 4th Circle

To
The Chief Engineer
P. W. Department
Madras

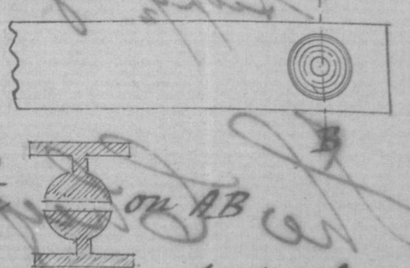
x166c
10.1.96

Sir,

I see from the newspaper that the estimate for constructing a suspension Bridge over the Palar in Salem District forwarded with this office No. 445/W dated 18th Novr. 1895, has been sanctioned by Government. I do not know if this work is to be carried out by this department but in any case, I wish to bring to notice a defect in the design. The road girders are suspended by pins going through their vertical webs. These webs are only about 3/8 inch thick and in order to prevent the pins working through the thin webs they have loose soft metal rings round them. These rings get

continually

continually worn out by the motions of the Bridge and have to be continually renewed at great cost, and inconvenience. To obviate this, the pin holes should be bossed thus



or thickened by having ½" plates rivetted on each side. Thus increasing the bearing area, and doing away with the necessity for rings.

I have the honor to be
Sir
Your most obedient Servt.
W. Unwin
Suptg. Engineer 4th Circle

P. W. CURRENT No. 3015

From
The Supg. Engineer
4th Circle.

Recd: 25.3.96

Dated 21st }
Despd. 23rd } March 1896.

No. 135/W.

Suspension bridge over the Palar, in Salem District.

Brings to notice certain defect in the design, sanctioned by Govt. for constructing a —

Cur. 3015

W

Proposed to keep this paper over for D.W.

D.W. has not yet scrutinised the design for the suspension bridge over the Palar. It was received just before he left for Periyar, & he ordered it to be brought up again immediately on his return vide note on Current 2333.

With reference to the S.E.'s present remarks, it may be pointed out that the plan & estimate were prepared by the P.W. Dept, & that the work will be carried out by this dept.

Cu
26.3.96.

Yes
26/3/96

To D.W. for orders on return.
Cu
26.3.96.

P. W. CURR T No. 3015

Has this estimate undergone scrutiny in the office? I have no recollection of it.

CWSB
10.3.96

Dr

I noted on the estimate before it was forwarded by this office to the L. & W. Dept. Please see the papers marked with red tape.

C
10/3/96

Yes- But I also noted that the estimate should be

P. W. CURRENT No. 3015

Returned for scrutiny.

The Local and Municipal Dept. should be informed that the estimate has not to be scrutinized in the P.W.D. and that this department is not responsible for the issue of G.O. No. 308 M dated 21st Feb. 1896. I should have thought that the proper procedure would have been for them to approve the estimate and ~~return~~ return it to us to check.

CMW
10.3.96

Ord.

The sanction given in the L. & M. Dept. is more with reference to the provision of funds than to the details of the plan & estimate.

It is quite open to this dept. to now scrutinize the latter & to pass any subsidiary orders which may be necessary, before ordering the S.E. to go on with the work.

10/3/96.

S.E.

Are there funds for this year?

16.3.96

As this will take some time to look into & I have a good deal to do & some urgent papers waiting till I came back from [illegible]. I suppose work will not be commenced immediately.

[28]

N.B.—The reply to this communication should be addressed to the Chief Secretary.

LOCAL AND MUNICIPAL DEPARTMENT.

CHIEF SECRETARIAT, MADRAS.

Memorandum.

Dated the 30th March 1896.

No. 406

Clr. 2333 dated
to SAW on 9.3/96

Read again G.O.No.308 M.,dated 21st February 1896. Read also the following paper from the Collector of Salem, dated 14" March 1896, No.1337, forwarding with remarks letter from the Chairman,Municipal Council,Vaniyambadi,suggesting a scheme for the construction of a masonry bridge over the Palar river at Vaniyambadi.

In his letter No.445 W.dated 18th November 1895 read in the G.O.referred to above, the Superintending Engineer states that the cost of increasing the width of the roadway of the proposed bridge would be incommensurate with the advantage to be gained, but does not mention what the additional outlay involved would be. The Public Works Department will be requested to report at an early date the extra cost of making the roadway 12 ft.wide.

W. W. Phillips

Ag.Asstt.Secretary.

To

The Public Works Department.

Sent

P.W. CURRENT No. 3261

Recd: 31.3.96

Bridge should be at least 3' than M.T.L.
In the absence of details of above cost it is impossible to check ~~[illegible]~~ cost.
With these remarks the estimate may be sanctioned.

8/4/96

W

From the linked file it will be seen that the L. & M. Dept. is reopening the question of the the width of the bridge.

These papers might perhaps stand over until the question is settled.

Proposed to make the addition shown in pencil, to the draft memo in linked file.

9/4/96.

10/4/96

CWRS
10.4.96

P.W.D.

d/ 28 April 1896

No.

In reply to memo. from the L. & M. Dept. No 406 dated 30 March 1896, the undersigned has the honour to draw attention to letter from the Supdg Engr IV Circle No 271 W d/15 July 1895, copy of which was forwarded with this office endt No 2529 C d/16 August 1895, in which it was shown that every extra foot of width in the Palar Suspension bridge would involve an additional expenditure of Rs 5,000. The extra cost of making the roadway 12 feet wide would therefore be Rs 10,000.

10/4/96

W.

CWRS
7.4.96.

Reminder No.

08

LOCAL AND MUNICIPAL DEPARTMENT.

No. 430

OFFICIAL MEMORANDUM.

THE undersigned is directed to request an early reply to

Papers sub 6 5 10

~~Memo~~ / Order } No. 308. M. dated 21st February 1896. para. 4.

Subject.

Regarding the execution of a suspension bridge over the Palar in the Vaniyambadi municipality

W W Phillips

FORT ST. GEORGE,
4th April 1896.

Ag — *Assistant Secretary.*

To

The Public Works Deptt.

29/4

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[25]
1,000- 8-2-96.

CHIEF SECRETARIAT
MADRAS.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following papers—

From the Collector of Salem, dated 14" March 1896, No.1337, forwarding with remarks letter from the Chairman, Municipal Council, Vaniyambadi, suggesting a scheme for the construction of a masonry bridge over the Palar river at Vaniyambadi.

at madras

From the Public Works Department, dated 28" April 1896, No.2083 C, giving the extra cost of making a roadway 12 feet wide over the Palar suspension bridge.

Order No.862 M.Mis., dated 21" May 1896.

The Government has already, in G.O.308 M, dated 21" February 1896, sanctioned the construction of a suspension bridge 10 feet wide at a cost of Rs.23,800, towards which it has given a grant of Rs.10,000. There are however two other proposals to be considered.

(1) To increase the width of the suspension bridge to 12 feet.

(2) To construct a masonry bridge.

2. The extra cost involved by the first of these proposals is estimated at Rs.10,000, and of this sum Government is willing to contribute one half, making up a total grant of Rs.15,000. The remainder, Rs.18,800, will have to be met by the Municipal Council. The cost of the second proposal is estimated by the Chairman at only Rs.8,000, but this work cannot be considered until further information, and detailed plans and estimates have been received, and the desirability of the work confirmed by

by the professional opinion.

3. With the remark that the original proposal commends itself to Government, the Council will be requested to again consider the matter and report which of the three plans it wishes to adopt.

(True extract)

Under Secretary, P.W.D.,
for Chief Secretary.

To
The Chairman, Municipal Council, Vaniyambadi,
thro' the Collector of Salem.
.. Public Works Department. ✓

Office [illegible]
Govt of India addressed