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MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. <i>2784</i>	Press ~~Mis.~~
<i>215-216.</i>	
Dated <i>10 - 9 -</i>	<i>1867.</i>

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
10th September 1867.

No. 215. Read the following letter from the Special Executive Engineer, Wynaad, to the Secretary to Government, Department Public Works, dated Luckady, 21st August 1867, No. 362 :—

1. I have the honor to enclose an original Report* by Mr. K. F. Nordmann, Assistant Engineer, late in charge of the North Wynaad Range, regarding the total destruction of one, and damage to a second bridge, on the road from Vythery to Manantoddy, *via* Terriote.

2. In the case of bridge No. 14, the injury has resulted, without question, in the premature filling in behind the abutments before the masonry had properly set, and in all probability from the ignorance of the Superintendent as to the proper mode of doing it. I have myself sometimes been obliged to fill in much sooner than I like, but have found that by doing it in layers sloping outwards from the abutment, and tamping down each layer thoroughly before the next was put on, the risk of injury was very much lessened. I fear necessary instructions to the Superintendent were either overlooked by Mr. Nordmann, or disregarded by the former.

3. As regards bridge No. 9, its stability has always been considered by me very doubtful; but it was too far advanced, before I had anything to say to the works in the North Wynaad Range, for me to attempt to interfere with its completion.

I mentioned my misgivings to Mr. Nordmann, and objected to the principle of its construction, as well as the materials used in toto. I enclose a plan† of the intended bridge, by which it will be seen that the piers were originally each formed of three square pillars of laterite, 3 feet square; and subsequently, by way of strengthening them, the three pillars of each pier were connected by a curtain, built up between, but not bonded into them. Each pier was 24 feet high, and built up without any batter. Besides the very unreliable character of the material used, I pointed out to Mr. Nordmann that the absence of cut-waters, and square front opposed to the stream, must always render it liable to injury from the current, and still more from floating bodies; but he founded his opinion, as regards its security, on the fact that during high floods there was no current, the waters of the stream being merely backwater from the larger adjoining river into which it falls, a fact that he himself had personal knowledge of; he had, however, quite forgotten to take into calculation, that it was only in extraordinary floods that such a state of things could occur; and that, until the main river had been swollen to such extraordinary height, the stream crossed by this bridge must equally, with all the others that flow from the inner slopes of the ghats, be a raging torrent, and must bring with it plenty of debris and floating bodies likely to catch against the square pillars, and do them serious injury. This I believe to have been the real cause of the destruction of the bridge, and not the crushing of the material, the alternative cause Mr. Nordmann suggests; and I consider it due to an error of judgment in adopting

† 1 Revised Plan.

1 Do. Estimate Rupees 6,302.

1 Estimate for re-building the injured piers, Rupees 765.

No 362.

Sp. Sec. Engr. Office Wynand,
Suchady 21. August 1867

From

The Special Executive Engineer

Wynand

To

The Secretary to Government

Department Public Works

Madras

Sir,

No 79 dated 29th
July 1867

I have the honor to receive an original report
by Mr. H. J. Nordmann, Assistant Engineer in
charge of the North Wynand Range, regarding the total
destruction of one, and damage to a second bridge,
on the Road from Tythyan to Wanchintally, via Tiruch.

1 Estimate for re-
building the in-
jured piers No 235.

In the case of Bridge No 11, the injury
was permitted, without question, in the premature settling
in before the abutments before the masonry had pro-
perly set, and in all probability from the ignorance
of the Superintendent as to the proper mode of doing
it. I have myself sometimes been obliged to fill in
much more than 2 ft., but have found that by
doing it in layers sloping outwards from the abutment,
and tamping down each layer thoroughly before the
next was put on, the risk of injury was very much
lessened; I fear necessary instructions to the Super-
intendent were either overlooked by Mr. Nordmann, or
disregarded by the former.

3 As regards Bridge No. 9, its stability has always been considered by me very doubtful; but it was too far advanced before I had any thing to say to the work in the North Wyand Range, for me to attempt to interfere with its completion.

I mentioned my misgivings to Mr. Birdman, and objected to the principle of its construction, as well as the material used in it. I enclose a plan of the intended Bridge, by which it will be seen, that the Piers were originally each formed of 3 square pillars of Lumber, 3 feet square; and subsequently, by way of strengthening them, the 3 pillars of each pier were connected by a curtain, built up of stones, but not bonded into them. Each pier was 25 feet high, and built up without any buttresses. I pointed out to Mr. Birdman that the absence of cut water, and square front exposed to the stream, must always render it liable to injury from the current, and still more from floating bodies; but he founded his opinion as regards its security, on the fact that during high floods, there was no current; the waters of the stream being merely backwater from the larger adjoining river, into which it falls; a fact that he himself had personal knowledge of; he had, however, quite forgotten to take into calculation, that it was only in extraordinary floods, that such a state of things could occur; and that, until the main river had been swollen to such extraordinary height,

Planned Plan
of Bridge No. 9
Estimated for
building the iron
from the 1855-
1856 season
at present

the stream exposed by the bridge must be equally with all the others that flow from the inner slope of the Ghats; be a raging torrent; and must bring with it plenty of debris, and floating bodies, likely to catch against the square pillars; and do them serious injury. This, I believe to have been the real cause of the destruction of the bridge; and not the crushing of the material, the alternative cause Mr. Birdman suggests; and I consider it due to an error of judgment in adopting a form of pier for a bridge over a rapid stream, which is only applicable to viaducts, when a roadway is carried over hollow places; nor was there any reason for it on the score of economy, for the extra care and pains taken to build up each of the four sides of the pillars strong, and square, must tell on the amount of work performed by the builders.

I am unable to recommend the adoption of what Mr. Birdman proposes with regard to the restoration of the Bridge; and I cannot see how we are again to make use of the existing foundations. Their length and breadth, as I consider too little to admit of any safe superstructure being built upon them of the height necessary in this case; and to attempt to widen, and lengthen them, by the addition of fresh masonry, would be almost certain to be followed by unequal settlement, and consequent destruction of the restored masonry. Under the circumstances, I think it would be

better to wait until the bed of the stream is nearly dry, as it will be before the close of the year, and before attempting to decide on anything, to make a thorough re-examination of the site.

I would, however, venture a suggestion as to whether Government consider that it is worth while to go to any further heavy expense on the already costly road, seeing that it is admittedly one of the least used, and least required, of any of the communications in Wyandoo now in progress; for my reasons in mentioning this, I beg to refer to the remarks regarding it in my report, dated 18th July 1867, on the state of the Roads in Progress in Wyandoo.

I have been delayed in sending on this report by having had to wait for particulars from Mr. Hindmann, and for the revised plan of the Bridge, no copy of which resided in my Office; indeed up to the 3rd of June last, no revised estimate had been furnished to me, and as a matter of course, has never been submitted for the sanction of Government. The original estimate for this bridge was Rs 1200, the revised one Rs 202. an estimate for restoration of damaged portions, dated 28th July is Rs 765, while Mr. Hindmann, in his letter dated 29th July, says it will take Rs 1400, additional damage having been sustained between the two latter dates.

As Mr. Hindmann has left Wyandoo, and his

successor Mr. Warner has so recently joined, I have the honor to submit that the preparation of the estimate would be better put off for the present. The estimate for restoration of Mr. 14 Bridge is herewith submitted.

I hope, before concluding, I may be permitted to plead for Mr. Hindmann, the very great difficulties that he has had to contend with in the unhealthy locality where these works were situated, and the insufficient subordinate assistance he was consequently compelled to put up with. Against Mr. Hindmann's personal zeal, and industry, nothing can be said.

I have the honor to be
Sir,
Yours Most Obedt Servant

R. B. D. Kennedy, Captain
Sgt. & Engineer Wyandoo.

135
3-6-67
12-14 of 1867-68
Revised Estimate for Constructing a Timber Bridge of 4 bays near
Amosk. / No 9 / of 120' length, on the Tonto Road. 11

Measurement				Feet	Description of Work	Rate	of each		Remarks
\$	B	O.	P.				Article	Work	
<u>Rough Timber</u>									
16'	1	1	6	96	Piles				
12'	3/4	3/4	4	27	Outside struts to do -				
5'	1/2	1/2	4	5	Struts to the Above Struts				
9'	1/2	1/2	8	18	inside Cross struts to Piles				
				146	Cubic feet of rough timber put up	1 4	182 8		
<u>Sawn Timber</u>									
13'	1/2	1/8	2	4 1/8	} Cross heads or string pieces				
16'	1	1/2	3	24					
13'	1	2/3	9	78	} Corbels or sleepers				
9'	1	2/3	6	36					
35'	1	2/3	6	140	} Beams or girders				
25'	1	2/3	6	100					
8'	1/2	1/2	24	48	Struts to sleepers				
18'	3/4	1/4	12	4 1/2	} Planks for roadway				
13'	3/4	1/4	140	34 1/4					
13'	1	1/8	15	24 3/8	<u>Do behind piles</u>				
480'	1/2	1/4	"	60	Left and bottom rails				
3'	1/2	1/4	46	17 1/4	Poles for railing				
4'	1/4	1/4	24	6	Struts for do -				
6'	1/4	1/8	88	22	Cross rails				
				94 1/2	Cubic feet of Sawn timber measured	2 8	236 1/2	12 1/4	
					And put up				
					1000 nails, 6" long for planking	1 6	93 1/2	12 "	
					50 do 12" do for struts	3 6	10 1/2	15 "	
					1 1/2 Kegs of Coal Tar, and				
					applying the same	20	"	30 "	
					hauling & sinking 6 piles	8	"	48 "	
					hauling, lifting & fixing 6 girders	20	"	120 "	
					Do do do	15	"	90 "	
					Extra Carpenter & body hire for				
					hauling, lifting, filling & fixing				
					Corbels, Cross heads, Struts,	1 4	150	"	
					planking & railing 120'		50	"	
					Playing for Superstructure				
					Carried Over		3136	15 1/4	

at 14.50 = R. 435. Deduct for Painting Rs 73; - Balance Rs 382-

8. Aug 2 / 67 - 2410

1. 1867 of 1868
The amount of Rs 382.50

to guard

the day. 6/10/67

at 14.50 = R. 435

to be paid Rs 382.50

to be paid Rs 382.50

to be paid Rs 382.50

to be paid Rs 382.50

to be paid Rs 382.50

to be paid Rs 382.50

to be paid Rs 382.50

to be paid Rs 382.50

16' 7' 4" 3 1344
 15' 3' 3" 7 3 1218
 24' 3' 3" 9 1944
 3' 3' 3" 9 204
 12' 2' 3" 6 486
 39' 2' " 1 78
 12' 2' 4" 9 2592
 6' 12' " 6 432
 3' 3' " 9 81
 101' 7' 1" 1 707
 90' 4' 2" 1 720
 15' 7' 1/2" 1 157 1/2
 49' 9' 2 1/2" 1 1022
 1260
 6322

Freight Over

3136 54

Masonry

Cubic feet or 44 1/2 Digging foundation and baling water

1 8 74 18

Foundation

Pillars

Masonry for fixing Cross heads

Curtains between pillars

Cubic feet or 136 3/4 Cement in Chumam foundation in water and pier 24 high

5 24 18

Pointing with Chumam

Pointing to upper part of foundation

Do to pillars

Do to Curtains

Do to tops of pillars

Sq. ft or 31 1/2 of squares of pointing with Chumam

6 52 190 158

Staying for masonry

Approaches

45 "

Gards

Cubic yards of Cutting

5 267 9

Cubic yards of Embankment

5 343 12

Smalls at 2 1/2 for cut

151 12 1632

Total

6322

North Weymouth Office
 Chantology 31 May 1867

Her W. Workmann
 Assistant Engineer
 In charge of N. Weymouth

Mr. J. Kennedy, Captain
 Special & Engineer and

13

In a letter from the Supt.
 Engr. Engr to you a d 15/12/67
 d/21. Dec 9. 1867.

To the Secy. to Govt.
 D. P. H.
 Madras

1 H 3223/34

Revised Estimate for
 Constructing a Timber
 Bridge of 4 bays near
 Amsooth/ho 9/ of 120'
 length, on the Tennete
 Road
 Rupees 6302--

Estimate of the probable cost of rebuilding the injured
 piers of No 9 Bridge, on the Tennete Road

Measurement			Number	Contents	Description of work	Rate	Per	Amount	Total	Remarks
L	B	D								
24	3'	3'	3	648	Centre pier, pillars					
12	24	3	2	162	Curtain walls					
24	3	3	1	216	South pier, pillar					
12	24	3	1	81	Curtain wall					
3	3	4	4	9	Masonry for fixing cross heads					
				1116	cu ft of brick laid in hydrant	55		1000	613	12 9
					do mortar					
0	24	10	4	960	Painting with chunnam					
0	12	6	3	216	pillars curtain walls					
0	3	3	4	36	top of pillars					
				1212	Square ft of pointing	6		50	72	11 6
					Scaffolding for masonry				25	" "
16	1	1/2	1	8	cu. ft of sawn timber (cross					
					head) wrought & put up	2 8		C. ft	20	" "
					Removing injured masonry				15	" "
									746	8 3
									18	7 9
					Sundries @ 2 1/2 p cent					
					Total Rupees				765	" "

If Mortaring in chunnam for the whole of the masonry is to be
 substituted for pointing of interstices or joints, a sum of Rs. 362 will
 have to be added to the amount of this estimate; thus: 29 1/2 m of Mortaring
 at Rs. 15 = Rs. 435. Reduced for pointing Rs 73; - Balance Rs 362.

Manantoddy 3
 22 July 1867 8

Kar W. Mordmann
 Assistant Engineer
 In ch North Mysore

M. B. M. M. M. M. M.
 M. B. M. M. M. M. M.

Estimate of the probable cost of rebuilding the injured wing wall of bridge #14, on the Temo Road

Measurement			Number	Cubits	Description of work	Rate Per	Amount		Total	Remarks
L	B	D								
12'	3'	10'	1	360	North west wing wall					
2	2	10	1	40	Buttress to S.					
1 1/2	1 1/2	10	1	22 1/2	Part of buttress of north abutment					
10	1 1/2	3	1	45	Parapet					
				46 1/2	cube feet brick in chimney, using partly old bricks	40	"	1000 ft	187	"
12	"	10	1	120	Plastering to N.W. wing wall					
10	"	4 1/2	1	45	Do to parapet					
				165	Square ft of plastering	15	"	sq	24	12
					Removing injured brick work & erecting scaffolding				8	"
					Restoring embankment behind wing wall				10	"
					Sundry @ 2 1/2 plant				5	4
									229	12
									5	4
									Total	No 235

Manantsooy 3
22^d July 1867 3

Karl W. Wordmann
Assistant Engineer
in charge North Division

Robt. W. Keener Captain
1st Lt. Eng. to guard.

Estimate of the probable cost of rebuilding the injured wing of bridge #14 on the Temo Road

1732237/5

To a letter from the Special Assistant Engineer, August 1867
No 367 dated 22 August 1867
to the Secretary to Govt.
for the North Division

Sub Works Dept.

2/202984
Proceedings of the Madras Government
Under date the 10th September 1867.
Read the following

From the Special & Eng^r
Myndad
(Here enter No 362-21 Aug 1867)

In proceedings No 1305,
of the 25th April 1866, the Gov^t
sanctioned an estimate of
Rupees 58,500, for the completion
of the road from Manantol,
via Teride, to the head of
the Tambachery Ghaut. This
estimate provided for the
construction of two bridges
(Nos 9 and 14) at a cost of
Rupees 3830 and 3240 re-
spectively -
Subsequently, on the re-
commendation of the Sup^r
Engineer of the 7th Division, the
Government approved of a
revised estimate amounting

paper with work
of 1/2 to be retained
above.

N. J.
W. J.

In a letter from the
Mr. E. C. Longbrun
No 362-21 Aug 1867
to the Secretary to
Govt. S. P. B.
Heard.

2/202984

Estimate of the projected
cost of rebuilding the
upward wing wall of
bridge at No 14 and the
downward wing wall
No 235

to Rupees 60,000, which is
-cluded an additional
sum of Rupees 1520 for
bridge No 14, thus raising
its estimated cost to
Rupees 4,760—

With his letter read
at the head of these
proceedings, Capt Kennedy
submits with his own
observations, a letter from
Mr Nordinan, the Asst
Engineer who was lately
in executive charge of
the road, reporting the
destruction of two of the
piers of No 9 bridge,
and the fall of one of
the wing walls of No 14
bridge during the heavy
rains of June last—

Mr Nordinan assigns
several reasons for the
accident at No 9 bridge,
but Capt Kennedy is

disposed to attribute
the piers having been
on a narrow base
without any batter
and to the absence
cutwaters permitting
accumulation of debris
above the work during
time the stream was
flood. In the case
No 14 bridge, the cause
injury is represented
have been the premature
filling in of the
in rear of the abutment

The probable cost
repairing these dams
stated to be Rupees
and 235, respectively.
Kennedy does not
present recommended
expenditure of the
of these sums, as he
it desirable, before
decision is arrived
as to the course to
adopt

adopted in restoring N-9
bridge, that a thorough
examination should be
made of the site when
the stream becomes dry,
which will not be until
the close of the year -

As regards N-14 bridge,
Capt. Kennedy furnishes
an estimate for re-
building ^{major part of the} the wing wall;
but, seeing that the Terete
road is one of the least
important lines of com-
munication ~~which are~~
now in progress in the
Vignaud, he questions
the expediency of incurring
any further outlay. -
In this opinion the
Government are not
inclined to concur. They
sanction the estimate of
Rs 235, with the remark
that the hasty filling in
of earth before the

masonry of the wing wall had
set to offer sufficient re-
distance to the preparation,
evinces want of proper
professional knowledge or
caution on the part of the
Executive Officer

The estimate of Rupees
1420 for repairing the
damage to N-9 bridge
is also sanctioned, and
the work should be speedily
carried out, as the height
of the abutments and
piers shows that the spot
to be crossed must
offer great difficulties
to traffic so long as the
bridge is unfinished -

Adverting to his
remarks in para 4, Capt.
Kennedy is requested to
submit, with the prescribed
Comparative Statement, a
revised estimate for

23

Bridge No 9, including the
amount sanctioned for the
work in these orders—

[Signature]

4 For the Extraction of Documents
4 Capt Kennedy with me
original report

Recd 11/9/67
18
3

915-216
Pub: Works 1867 Department

Pro of Govt for September
No. 2784

Pro of the Madras Govt.
11th September 1867

Passing orders on a letter
with estimates from the
Special Executive Engineer.
Mynach, relative to certain
damages to Bridges on the
road from Mambuddy via
Terriole, to the head of the
Tumbacherry Grant.