(1) பக்கங்களின் எண்ணிக்கை 100

27 (2) புதுக்கித் திருப்பிய நாள் 18/11/84

(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம்

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

பொதுப்பணி துறை

அரசாணை எண். / ~~மு. கோப்புத் தாள் எண்.~~ 3043. அச்சகம் / ~~பல்வகை~~

நாள் : 12-12-1884 ~~198~~ .

(50)

வோ கண்டபடி கையாளவோ கூடாது

கா-1—18,000—15-6-87.

S No. Copy

To

W

3043.

Supg. Engr. IV submits for sanction Estimate of Rs. 484930 for improving the road from Calicut to Vayitri.

Gradients. An inspection of the drawings, sheets 28 to 36, will show you the severe character of the gradients on the Tamracherri Tamracheri Ghât. For about 8 miles there is a continuous rise, varying from 1 in 10 to 1 in 18, unbroken either by a single countergradient or by even a moderately flat bit.

10.68

1 in 18 was accepted in Pro no. 524 W, of 26th. Feby 1884, as the ruling gradient of the line. In his preliminary report, para 19, Mr. Nordmann stated that "the average gradient on the ghaut itself is believed to be not steeper than this (as the line of levels will shew) and need not therefore be interfered with". The sections unfortunately now shew a very different thing. The average gradient on the ghât is about 1 in 17.

When I wrote this the average gradient seemed to me worse than it turns out to be on working it out in full detail. I put up a statement of the gradient of each mile from top to bottom.

The improvement of these grades would involve, it is stated, "immense expense", and in your note on my memorandum on the preliminary report, you stated that funds would not be forthcoming for such a radical but costly improvement as a change of alignment (the only real remedy I should say), so I presume this blot on the system of Wynaad communications must remain.

Yes.

Estimate, &ca. The Estimate is based on the Proceedings above quoted, but provision has not been made apparently for "camping grounds". Possibly such already exist. If not, one or two on the steep ghaut would be a great boon. Convenient depôts for storing metal at easy intervals on each mile are of importance on a ghât such as this, where so much will depend on rapid repair. The cross sections appear to indicate that there are suitable spots for stacking material, so I presume provision for such an item is not necessary.

Yes.

Metalling. 12 feet width of metal has been estimated for throughout as ordered, but I

venture again to say that on the very steep and narrow ghât portion (8 miles of the 39) it would be right to metal the full width of road from gutter to gutter, or from inner gutter to parapet (below which there ought to be formed a small shallow metalled gutter). This would not involve much extra expense, and there is a good deal to be said in its favour. The traffic will hug one side or the other of such a ghât.

I agree.

BREDGES. Three new large iron bridges have been estimated for — one of 2 spans of 40 feet each; one of I span of 55 feet; one of 2 spans of 50 feet each. There are mistakes in the designs of two of these which will be rectified by and bye, but which need not delay the estimate.

Noted.

The first and third, each of 2 spans, are of the double N or whipple-murphy type. The second of one span (sheetNo. 43) is a kind of bow-string lattice-girder. The object of proposing for this stream a girder of a totally different type from the others is not apparent. It seems to me advisable, for many reasons, to have all three bridges of uniform pattern, and that had better be left to the manufacturers at home, who might be ordered to supply girders for the given spans, to carry a given load & a certain kind of roadway. The warren girder, with pin connections, which offers great facility of erection, a matter of importance I should say in the locality of these bridges, would probably be adopted.

Certainly.

For the smaller bridges rolled iron girders are provided, with teak roadway & railings. For these structures it has occurred to me that the wrought-iron road bridges referred to by Capt. Dorward in the notes I put up herewith would be the kind of thing to adopt.

I agree.

BUILDINGS. In connection with the buildings provided for the staff there are two proposals, the first involving an outlay of Rs. 94689, the second Rs. 66329. The former provides for the purchase of land and for the construction thereon of nearly all new buildings; the second provides for the purchase of land with buildings ~~on them~~ which are to be improved. Suptg. Engr. recommends the second alternative, and I presume this will commend itself to you, as the outlay proposed for buildings for a Division which is to last but a limited number of years seems very heavy. It must be remembered, however, that the buildings in this estimate do not appertain solely to the Calicut-Vayitri road, but to the whole system of roads to be dealt with, and to ensure good and economical working, it is always desirable, in such a climate, to house the staff comfortably.

Yes.

3043.

CU

D.W.

13.10.84

3

(11)

Plans sent separately
thro' Messrs Stanes & Co —

Not yet received.
15-10-84

Plans sent in Record
box -
E.A.S.
[illegible] 16/10

W/O
1/11/84

S.A.W.
To begin with, please have
an Index map prepared

C.W.
28.10

3043.

I
Kindly take this in hand
at once

Cy
29.10.84

11 24/10/84

To D.W.

I have gone carefully through these papers respecting road from Calicut to Vayitri - and as you will see I approve generally the suggestions in your note. The amount of the estimate is large, - and must be followed by others, - but if the work of improvement is to be carried out, the question of large expenditure must be faced.

The proper course seems to me to draw up a "Chief Engineer's Note", dealing briefly with the points alluded to in your note, and with other points if necessary.

Then to circulate the papers for orders, with a separate note explaining briefly the history of the proposals &c.

I do not see any Index Map with the papers - and it would be well to have one at once prepared, for circulation. The best plan would be to join together Atlas of India sheets No. 44 & 61 marking on them accurately the course of the road, & any principal villages &c. which are omitted.

The way in which the project has been prepared does great credit to Mr. Todd.

24.10.84

3043. Calicut Vayitri Road

S.a.W.

A para had better be added to E.W's note to the effect that the proper percentages for Establishment & Tools & Plant are 23 + 1, not 25 + 2½ as calculated, but as the charges for the project will fall on Provincial these items have been struck out, leaving Rs. 3,80,337 as the total to be now sanctd by Govt, of which the estimated cost of repairs Rs. 33,300 will be debitable to Local Funds, which in addition will have to contribute the usual charges for Estabt & Tools & Plant to carry out these repairs.

C.S.
8.11.84

D.W.

Para added accordingly, & Ch. Engrs note resubmitted for approval.

A "For Orders" note is also submitted for approval, & circulation to the H. M.

Perhaps W will add a para to the latter stating what amount he would recommend should be provided for the work in the Provincial Budget for 1885.86.

C.S.
10.11.84

To D.W.

Prior to preparing the "For Orders" note on this case required by W, I submit a draft Chief Engrs Note for approval & for such alterations & additions as you may consider necessary.

The following points appear to require consideration, and if thought necessary they may be noticed in the Ch. Engrs note.

The grand total of the estimate is put down at Rs 4,84,930, & is made up as follows:-

Cost of improvements to road	Rs 2,80,708
Establt.	" 70,177
Tools & Plant	" 7,018
Total	Rs 3,57,903

Buildings	Rs 66,329
Establt	" 16,582
Tools & Plant	" 1,658
Total	Rs 84,569

Repairs to road	Rs 33,300
Establt.	" 8,325
Tools & Plant	" 833
Total	Rs 42,458

Grand Total Rs. 4,84,930

The percentage charges on account of establt. & tools & plant have however been calculated by the S.E. at the old rates of 25 & 2½, whereas according to existing rules the rates should be 23 and 1. The correct figures therefore would be as follows:—

Cost of improvements to road	Rs 2,80,708
Establt.	" 64,563
Tools & plant	" 2,807
Total	Rs 3,48,078

Buildings	Rs 66,329
Establt	" 15,256
Tools & Plant	663
Total	Rs 82,248

Repairs to road	Rs 33,300
Establt	" 7,659
Tools & Plant	" 333
Total	Rs 41,292

Grand Total Rs 4,71,618

The question as t
how funds are to be
provided, has not b
been sett [illegible] If th
first decide
out the new work
(Rs 2,80,708) & bu
6 (Rs 66,329) from
Provin [illegible]
separate provision
in the estimate

account of establt. & tools & plant will not be necessary, as all establt. & general tools & plant are met from Provincial.

In the case of "buildings", the percentages are calculated on the total estimated cost, Rs 66,329, but as out of this sum, Rs 13,500 will be purchase money only, the calculation should have been made on the balance only.

"a proposes that ~~the~~ "Repairs" Rs 33,300, will be chargeable to Local Funds, and ~~amount~~ is [illegible]ed that the work be executed by the P.W.D. – Jf

3043.

this arrangement be approved, the Local Fund Board will have to pay the percentage charges on cost of work.

In any case, if the estimates be finally sanctioned by Govt., the sanction will be given as follows –

For road work –	Rs 280,708
" Buildings –	" 66,329
Total	347,037

Repairs —	" 33,300.

When funds are being allotted, the contributions on account of establt. & tools & plant will be levied on such funds as the Local Fund Board may be called upon to make.

The index map ordered by H.M. has been put up.

For orders.

6/11/84

S.A.W.

Please draft disposal generally in sense of Hon: Member's remarks.

The estimates for the road improvements may be sanctioned, but the S.E. S.W. be directed to submit revised proposals for housing the staff

3043.

3.12.84

W.

Draft order submitted for approval.

The H.M. remarks that the proposed residence & outhouses for the Ex. Engr. are estimated to cost nearly Rs 19,000.

These figures are probably taken from proposal No I, under which entirely new buildings are to be constructed.

Proposal No II, which provides for the [illegible] improvement of existing buildings, is however recommended for adoption, & under this the residence and offices for the Ex. Engr. would not cost Rs 12,000.

This remark of the Hon. has therefore not been embodied in the draft order.

C.

5.12.84.

P.S.

This work has not been included in the rough Budget list to be considered in Committee. It would be well perhaps to have it inserted.

C.

3068 W
12-12-84

Rozpath 3043

I find that there is no estimate in the file suitable for the Exr. All enclos. should therefore go back to SS IV —

C.

17.12.84

a

Calicut-Vayitri Road.

In Cir: 11/11/84

To W.

If accompanying Chief Engr's note and memo "For Orders" be approved, it may be well to add a para recommending that provision should be made for the road in the Prov: Budget for 85-86.

CJ.
10.11

3043.

The amount to be allotted may I think be left to be determined after the papers have been circulated.

10.11.84

Public Works Department, 1884-85.

Current No. 8204 (11)
Letter No. 448/E.W.
Dated the 29th September 1884
From the S.E. IV Circle

3043

NOTE OF REMARKS.

1. The accompanying estimate, with plans, survey and levels, provides for improving the road from Calicut to Vayitri, *via* Puddanellum. The amount of the estimate is set down as Rs. 4,84,930.

2. Except in two points, the instructions conveyed in G.O. No. 524 W. of the 26th Feb. 1884 have been carried out in estimate &c., now submitted. With regard to the exceptions, in the first instance how are the two following extracts to be reconciled:- para. 4 of G.O. No. 524 W. of 26/2/84 - "The proposals in paragraph 9 of Mr. Nordmann's report

~~28~~

~~30~~

11

Circ: 12/12 R 12/12/84

O. 13-10-84 to - 22-10-84.

Dw

for improving the gradient of the ghât in places, and his subsequent suggestions for consolidating the surfaces along the whole line are approved." (the difficulty lies in reconciling the first part of the extract with the following) — Extract from para 6 of report accompanying estimate:— "In the Tamrachery Ghaut the Gradients are more severe but as any alteration of the gradients now would involve immense expense it has been decided to let them remain as they are." — In the second instance, it is ruled in G.O. No 524 W. of 26/2/84, para 8, that provision should be made for convenient camping grounds along the road on plains and the ghât, should such places not exist — no allusion is made to

3043

camping grounds in any of the documents submitted — should they exist a note to the effect should have been appended.

3. The improvements to the road are thus divided Gradients; Drainage; Width; Surface; Bridges. An examination of the estimate, plans, surveys and levels shows that the design has been well and fully prepared, and except the two instances alluded to, in accordance with instructions conveyed in G.O. No. 524 W. of 26/2/84. In the matter of the levels a better ratio should exist between the horizontal and vertical scales than that adopted in the long. Sec. — vertical to horizontal :: 1:44 in value, or :: 44:1 in length. This however is of minor detail.

~~29~~
~~31~~
12 ✓

In treating of bridges it is
tated in the report that
he estimates of two of the
ridges require revision
ut it is added that the
evision will not effect "any
reat difference in the
ost; if anything the cost
will be less." — So to save
time the two estimates
have been submitted,
unchanged, by S.E.

5. On the subject of Buildings for Establishment, two proposals are made — One proposal is the purchase of land, and the construction of nearly all new buildings; and it amounts to Rs. 94,689; the other is the purchase of buildings which now exist, and modifying and altering them to suit requirements; and it amounts to Rs. 66,329. S.E. recommends the

3043

latter proposal — e
the purchase of ex
buildings and alte
them as required.

6. 'Establishment' ha
been charged at 25/
cent. on cost of work
by G.O. No. 3422 W of the
30th Nov/83, it should
be at 23 per cent. on cos
of work. Again, 'Tools an
Plant' have been charg
at 2½ per cent. on cost
of work, by the Govt. of
India letter No. 227 A.G. of
the 17th Sept./84 it has
been ruled that the
charge should be at
1 per cent. on cost of
work.

8th Octr/84
BH

13

Somracheri Ghât

3043

Statement showing the Average Rises and Gradients:

From the foot of ghât to the 28th mile stone

Average rise in 100 feet – 6.39 feet; Average gradient – 1 in 15.62.

From the 28th to the 29th mile stone

Average rise in 100 feet – 5.28 feet; Average gradient – 1 in 18.93.

From the 29th to the 30th mile stone

Average rise in 100 feet – 5.80 feet; Average gradient – 1 in 17.24.

From the 30th to the 31st mile stone

Average rise in 100 feet – 5.89 feet; Average gradient – 1 in 16.97.

From the 31st to the 32nd mile stone

Average rise in 100 feet – 5.95 feet; Average gradient – 1 in 16.80

From the 32nd to the 33d mile stone

Average rise in 100 feet – 5.72 feet; Average gradient – 1 in 17.48.

From the 33d to the 34th mile stone

Average rise in 100 feet – 5.76 feet; Average gradient – 1 in 17.36.

From the 34th to the 35th mile stone

Average rise in 100 feet – 6.02 feet; Average gradient – 1 in 16.61.

From the 35th mile stone to the top of ghât

Average rise in 100 feet – 6.12 feet; Average gradient – 1 in 16.33.

– From the foot to the top of ghât –

Average rise in 100 feet – 5.88 feet;

Average gradient – 1 in 17.00.

14 ~~31~~ ~~35~~

BH

3043

P. W. Department

Letter from the S. E. IV Circle No. 448/E.W. dated Septr. 29. 1884.

Do. ——— do ——— No. 457/[illegible] dated Octr. 10.

Note by the Chief Engineer, P. W. Deptt. dated Novr. 10th 1884

I shd like to see the Chief Engineer about this

M.G.D.

For Orders

The importance of connecting the Wynaad with the coast by a road suitable for wheeled traffic has long been pressed on [illegible] by the planting interest. Additional pressure was applied by the gold mining Companies when it was thought that a new & lucrative industry was about to be established and although there is no immediate prospect of-

The accompanying estimate for improving the road from Calicut to Vayitri, via Kudanellum and the Tamracheri ghat, together with a note by the Chief Engineer, is submitted for the orders of Government.

2. ✗A In the papers printed with P.G. No. 1416 W dated 6th June/82, Major General (then Colonel)

Sankey submitted a comprehensive scheme of communications for the development of the Wynaad District, and he estimated the total cost of his proposals at Rs 18¼ lakhs, inclusive of charges on account of housing the staff, compensation for land, establishment and tools and plant.

3. At that time it was resolved to restrict Provincial aid to the completion of the Ootacamund, Naduvatam and Gudalur road, with eventual extension to the heads of the Karkur and Tamracheri ghats.

4. In September 1883 however (Memo. No. 395. E of 26th September (13) a Mr. Nordmann, Executive Eng- was deputed to the Wynaad on special duty, with instructions to carry out the necessary preliminary surveys, and to prepare estimates in the first instance for the improvement of the road from Calicut to Vythiri, which was considered to be of the greatest importance.

5. In Proceedings No. 524 M dated 26th February /84, orders were passed on a preliminary report submitted by Mr. Nordmann, and the estimate now submitted has been drawn up in general accordance with those

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this hope being realized sufficient private capital has been invested in other industries to justify the claim of the planters for improved communication.

What they have is described in para 2 of Col. Sankey's Memo. printed with G.O. 6th June 1882 [illegible]

with one exception he says the roads in the Wynaad ~~[illegible]~~ "are only "fair weather lines some "fairly traced, others indiff[erently] "so – all insufficiently opened "or formed & as a rule quite "unmetalled –" They are thus isolated not only from the coast to which their produce has to find its way for shipment, but also from the general system of roads existing outside Wynaad limits.

The proposed reconstruction of the road from Vythiri to Calicut will to a considerable extent remedy the first defect and later on as funds are available the fair weather roads which radiate from Vythiri as a centre should similarly be improved so as to connect the taluk with the system of roads & railways –

30443

The estimate now submitted may be sanctioned with the modifications proposed so far as as the road is concerned but I think that for the bungalows of the Engineering Staff requires a little consideration.

There is no question but that in a climate like that of Wynaad good weather proof accommodation is essential but this may I think be secured without going to the expense of the continuing buildings which will last for all time whereas ten or a dozen years ought to see the Dept: out of the Wynaad

1027/33

orders. It has been prepared by Mr. A. B. Todd, Assistant Engineer, who took Mr. Nordmann's place when the latter proceeded on furlough in July 1884.

6. The present estimate is divided as follows:

Improvements to Road	Rs 280,708
Buildings for staff	" 66,329
	+ 347,037
Repairs to road (debitable to Local Funds)	33,300
Total	Rs 3,80,337

General Sankey's rough estimate was for

Improvements	Rs 228,000
Buildings, including land	" 68,400
	+ 296,400

and his forecast of the cost of new work was therefore by no means

over

over estimated.

7. The amount of the present estimate is large, and it must be followed by others, but if the work of improvement is to be carried out, the question of large expenditure must be faced.

8. The Supdg. Engineer does not give any details of the staff required to carry out the work provided for in this estimate. Mr. Nordmann in his preliminary report mentioned one Executive Engr., two Assistant Engineers, eight upper Subordinates and two medical subordinates; but this, of course, referred to the requirements for the entire scheme of Wynaad

And then what is to be done with these costly buildings — and they seem to me to be unnecessarily sumptuous — The residence of the Exec: Engineer at Vayitri with stables & offices is estimated to cost nearly Rs 19000 — I think we could make him comfortable for the few years he will be at Vayitri for less money — If not I think we had better hand over the remaking of the road to the L. F. Board and give them the money — They have a first rate Engineer in Mr Andrews and he says he doesn't want any of these bungalows —

H. S.

15/11

By all means give Mr. Todd a word or two of approval for the workmanlike manner in which he has estimated the project

H. S.

communications. If the present estimates be sanctioned, the provision of the requisite temporary establishment will be arranged for by the Chief Engineer in communication with the Supdg. Engineer.

9. An index map showing the course of the road, accompanies the file.

10.11.84

W

(W)

Exd.

I should like the Hon'ble Mr Sullivan to go carefully over this scheme — especially with reference to the suggested bungalows

3043

18 ~~26~~ ~~37~~

~~[illegible]~~

~~[illegible]~~

W d/14.11.84 No 2826 W
W d/6.6.82 - No 1465 W
~~5 E d/26.9.85~~
W d/26.2.84 - 5141
W d/20.12.83 No 3661 W
E d/26.9.83 No 3958
E d/27.8.83 - No 3116

For orders

Circ: 8/12 R 12/12/84

Circ: 11/11/84 R 4/12

P. W. Deptt.

3043

Letter from the Supt. Engineer
V Circle No 448/S.W. d/ 29th Sept/84.
Do do do No: 465 d/ 10th Oct/84.

Note by the Clk.

Engr P.W. Dept

With his letters above quoted, the Supt. Engineer V Circle submits an estimate, amounting to Rs 4,84,930, for improving the road from Calicut to Vayitri.

2. The estimate has been drawn up in general accordance with the orders passed on Mr. Roudmann's preliminary report,

19 28/38

printed with Progs: of Govt: No: 524 W dated 26th February 1884.

3. In para 19 of that report, Mr. Roudmann, in suggesting that all steep gradients above and below the ghat should be converted to at least 1 in 18, stated that "the average gradient on the ghat "itself is believed to "be not steeper than "this (as the line of "levels will show) and "need not therefore "be interfered with". An inspection of the drawings now submitted,

3043

however, ~~display~~ shows the severe character of the gradients on the Tamrasheni ghat. For about eight miles there is a continuous unbroken rise, varying from 1 in 10.68 to 1 in 18; ~~unbroken either by a single counter gradient or by even a moderate level~~, and the average gradient throughout ~~the ghat~~ is found to be about 1 in 17. ~~It is stated~~ in the report on the ~~present~~ estimate, it is stated that the improvement of these grades "would involve "immense expense";

~~3~~

20~~3~~

And as it is not probable that funds will be forthcoming for such a radical, ~~[illegible]~~ and costly improvement as a change of alignment (the only real remedy in the opinion of the Chief Engineer) this blot on the system of Wynaad communications must remain

4th. Provision has not apparently been made in the Estimate for camping grounds, as directed in para 8 of G.O. No: 524 W, dated 26th February 1884. Possibly such already

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3043

exist, but if not, one or two on the steps that should be provided. Convenient depôts for storing metal at ~~long~~ short intervals ~~on each side~~ are of importance on such a ~~ghat~~ line as this, where much will depend on ~~rapid~~ the necessary repairs being executed ~~repairs. The cross~~ rapidly; and the cross sections appear ~~however~~ to indicate that there are suitable ~~spots~~ sites along the road for this purpose. ~~for stacking materials.~~

5. A width of
~~38~~ twelve feet of metalling
~~40~~ throughout ~~the road~~
21 has been estimated

for, as ordered in G.O. No: 524 W dated 26th February 1884; but the Chief Engr is of opinion that, on the eight miles of ~~very~~ steep and narrow ghât, the full width of road should be metalled from gutter to gutter, or from inner gutter to parapet (below which there should be formed a small shallow metalled ~~gutter~~ drain). This would not involve much extra expense, and would be of advantage.

6. Three new large iron bridges have been estimated for; one ~~of~~ with two spans of 40 feet each; one ~~of~~ with one span of 55 feet; and one ~~of~~ with two spans of 50 feet each. There are mistakes in the designs of two of these bridges; but it is stated that the plans & estimates will be revised, and that ~~this~~ such revision will not make any great difference in the cost.

~~29~~ ~~4~~ 22 7. The first and third bridges, each ~~of~~ with two spans, are of the double Now

Whipple-Murphy type. The second, ~~of~~ with one span, is a kind of bow-string lattice-girder. The object of proposing for this bridge ~~lattice-girder~~ a girder of a ~~totally~~ different type from the others is not apparent; and in the opinion of the Chief Engineer, it would be advisable to ~~have~~ construct all these bridges upon the same ~~[illegible]~~ type ~~of uniform pattern~~. This point might be left to the manufacturers in England, who ~~might~~ should be

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3043

ordered to supply girders for given spans, to carry a given load, and a certain kind of roadway; ~~The~~ or the Warren-girder, with pin connections, which offers great facility of erection, a matter of importance in ~~the~~ such a locality, ~~in question, would probably~~ might be adopted.

8. For the smaller bridges rolled iron girders are provided, with teak roadway and railings. For

these structures, it is considered that the wrought iron road bridges referred to in Captain Dorward's notes printed with P.G. No 412 I, dated 22nd April 1884, would be suitable.

9. In connection with the buildings provided for the Staff, two proposals are submitted; the first involving an outlay of Rs 94.689, and the second Rs 66,329. The former provides for the purchase of land, and for the con-struction thereon of nearly all new buildings; ~~and the~~ latter provides for the purchase of land with existing buildings, which are to be improved.

The Supdg Engineer recommends the adoption of the second alternative, and the Chief Engr. supports that recom-mendation, as the outlay proposed for buildings for a division which is to last but for a limited number of years

2843

#1

#2

24

is very heavy. It must be noted how-ever, that the buildings provided for in ~~the~~ this estimate, do not appertain solely to the Calicut-Vayitri road, but to the whole system of roads to be dealt with in the Wynaad; and to insure good and economical working, it is always desirable, in such a climate, to house the staff comfortably.

[illegible]
[illegible]

3043

10. The amount of the estimate as given by the Supt Engineer, (Rs 4,84,930,) ~~is exclusive of~~ includes charges on account of Establishment and tools and plant. These charges have been calculated at the old rates of 25 and 2½ per cent; whereas, under existing orders, the rates should be 23 and 1 per cent respectively — As however the cost of the project, under new work and buildings,

will fall on Provincial funds, separate provision for Establishment and for tools and plant need not be made in the estimate. The total amount to be now sanctioned by Govt is Rs 3,80,337; of which Rs 33,300, the estimated cost of repairs, will be debitable to Local Funds, which will have to contribute, in addition, the usual charges on account of Establishment and tools and

3043

plant, to admit of the work being carried out by the Public Works Department.

11. The manner in which the project has been prepared does great credit to Mr. Todd, Asst. Engineer.

CU
10.11

43
4

26 C

Copy afresh

DW
W

Read the following papers:— p 1

12th Recd /84 No. 3043 W PW
BHWs
Civil Works

No. 448
E.W.

Supg Engineer's Office 4th Circle
Coimbatore 29th September 1884

3043

From
The Superintending Engineer
IV Circle.

To
The Chief Engineer
P. W. Department.

Enclosures 5.
1- Appendix No 1.
2- — do — No 2.
3- List of Plans 55. and Estimates 28. Sent in a Box.
4- Report. 1.
5- One Original letter No 300 of 5th Sep/84 from Mr Todd.

Sir,

With reference to G. O. No 524 W. of 26th February 1884, I have the honor to submit herewith the Estimate for improving the Calicut - Vayitri Road.

2. The report prepared by Mr A. B. Todd Assistant Engineer is so clear, complete, and concise that I need only observe that the Estimates include:—

First, the improvements to the road amounting to Rs 2,80,708; Secondly, buildings required for the Establishment for which

27

two

two proposals are made. — one amounting to Rs 94,689 and the other to Rs 66,329. — The difference between the two proposals is, that the first, provides for the purchase of land and construction of nearly all new buildings; while the second provides for the purchase of certain Properties with the buildings on them and for improving the buildings.

The Estimate further provides for Repairs to the road while the improvements are in progress. — This sum of Rs 33,300, which is exclusive of Establishment and Tools and Plant would be met from Local Funds.

Lastly, the Estimate provides for Establishment and Tools and Plant @ 25 percent and 2½ percent respectively on the cost of works.

3. As regards the alternative proposals in connection with buildings, I have to recommend that the second and less costly plan of purchasing and improving Hind and Co's and the Coola Quee Properties should be adopted.

4. In that case the Estimates to be sanctioned would be for:—

Works	Rs	2,80,708
Establishment	"	70,177
Tools and Plant	"	7,018
Total for Works	Rs	3,57,903
Buildings	Rs	66,329
Establishment	"	16,582
Tools and Plant	"	1,658
Total for Buildings	Rs	84,569
Repairs	Rs	33,300
Establishment	"	8,325
Tools and Plant	"	833
Total for Repairs	Rs	42,458
Grand Total	Rupees	4,84,930

5. I should also point out that the Estimates for Buildings include only accommodation for the Executive Engineer and his Establishment employed in Estimating and carrying out the improvement of all the Wynaad roads; and do not therefore appertain specially to the Calicut-Vayitri road.

As regards Repairs, the Local Fund Department should provide funds not only for the work of Repairs but also for Establishment and Tools and Plant required in connection with the repairs. It would be very inconvenient to have two Departments at work on any one road at the same time.

6. It will also be observed from para 13 of the Report that two of the Estimates of bridges are considered to require alteration, and the plans and Estimates of these will have to be revised; but this will not make "any great difference in the cost; if any thing the cost will be less". As the Estimate has been so long under preparation I have thought it best not to delay it on account of this revision.

3443

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

J. Beatty Colonel R.E.
Superintending Engineer III Circle

29

3043/30

~~21~~

[illegible]

~~20A~~

~~21~~

G.O. No 2821 W. 14-11-81
" " 1417 W. 6-6-82
No 311 E. 27-8-83
" 395 E. 26-9-83
G.O. " 3664 W. 20-12-83
G.O. " 524 W. 26-2-84 Engl
" " 4123. 22-4-84

8204

From

The Superintg. Engineer,
Fourth Circle.

Dated 29th Septr.
Despd 1st Octr. } 1884.

No. 448
EW.

Enc: 5.

Calicut Vayitri Road:-

Submitting estimates amounting to Rs: 4,84,930 for the Calicut-Vayitri Road, with his observations thereon.

Recd: 8/12
Q.S. 444/10 Ca. 11/11/84
C. 13-10-84

Estimate framed by A. B. Todd Esqr. Assistant Engineer of the probable cost of improving the Calicut ~~and~~ Vayitri Road - via Tamrachery Ghatt.

References.

G.O. 2821. W dated 14th November. 1881.
G.O. 1416. W " 6th June. 1882.
No. 311 E " 27th August. 1883.
No. 395 E " 26th September. 1883.
G.O. 524 W " 26th February. 1884.

3043
31

Report.

1. With his No. 43 of the 31st January 1884, the Superintending Engineer 4th Circle submitted a preliminary report from Mr. Nordmann, the late Executive Engineer on Special duty, Wynaad, in which he suggested a plan of operations and brought forward the points upon which he required definite orders, to enable him to proceed with the requisite surveys and estimates for the improvement of communications in Wynaad.

In G. O. No. 524 W. Public Works dated 26th February 1884, orders were passed on the points which Mr. Nordmann brought forward and the accompanying estimate has been framed in terms of these orders.

3. In the G. O. above quoted it was laid down that the Calicut - Vayitri Road through the Tamracheri

Jamracheri Ghaut should first be taken in hand, that the line via Pudanellam should be adopted in preference to that via Chellye and that an Estimate should be framed of the Cost of improvements as indicated.

Reformation of Road.

4. The improvements are included under the following heads

Gradients.
Drainage.
Width.
Surface.
Bridges.

5. **Gradients.** The longitudinal Section of the Road shows that in the plains portion every where the Gradients must be reduced to 1 in 18 by Cutting and filling as it is not found practicable to improve the Gradient by fresh traces.

6. On the Jamrachery Ghaut the Gradients are more Severe but as any alteration of the Gradients now would involve immense expense, it has been decided to let them remain as they are. The Ghaut is most solidly and Substantially built and it is thought that any interference with it would not be advisable especially as the revetments are in Capital order. The cause no doubt of the unsatisfactory Condition of the Ghaut for traffic is want of drainage.

7. **Drainage.** In the first place the road way itself is very much out of Section and the Storm water instead of flowing away in the

Side

side drains, makes its way down the road way, scouring out deep gullies and washing out any materials that may be put into fill them up. The hill side is exceedingly steep in most places and in heavy Storms the amount of water running off transversely to the road way is very Considerable. Special attention has therefore been paid to the provision of Catch drains wherever practicable, i. e., where the hill side does not consist of solid rock, with a view to turning the hill drainage and carrying it off at convenient places through the under drains. Where Catch drains are not practicable the side drains will be made of greater section. To discharge the drainage of the road itself the Estimate provides firstly for forming up the Road with a slope from the Centre to both sides of 1 in 20. Secondly for Clearing out side drains, Thirdly for providing under drains as per G. O. viz. two per furlong where the gradient does not exceed 1 in 16 and one at every 100 feet where steeper.

8. **Width.** The width of the road way throughout the plains portions is not less than 18 feet, but on the Ghaut there are two places where the width will be increased as directed to 16 feet Clear width from inside of parapet to hill side.

9. **Surface.** The proposals in para 19 of the preliminary report having been approved, provision has been made in this Estimate for Carrying them out, except that as directed in ~~A~~ G. O.

G. O. 524 W of 26th February 1884, 9 inches of Metal has been allowed for on the Ghaut and 6 inches Elsewhere. The width of Metalling to be 12 feet.

10 **Bridges.** There are three large bridges on the line which are at present wooden Structures and which are in an unsafe condition. These bridges were inspected by the Superintending Engineer Some time back and he fixed the water-way to be given in reconstructing the bridges. The table below shows the present and proposed water-ways and the Situation of the bridges.

Mile & furlong.		Present waterway.	Number & Span of proposed Girders	Total waterway proposed.
23.	8.	65 feet	2 of 40 feet	80 feet
27.	2.	52 feet	1 of 55	55 "
27.	4.	89 feet	2 of 50	100 "

11 In addition to these there are nine bridges varying in Span from 10 to 21 feet for which it is proposed to provide Simple rolled iron Girders.

12 In designing the bridges the points chiefly Kept in view were, (1st) to have as little timber as possible on account of its rapid deterioration in the Wynaad Climate and (2) to adopt such designs as have already been tried and have been found to answer well. The first bridge in the table is an adaptation of a bridge which it is understood has been erected over the Velpur Canal in the Godavery District, Western Delta, and has been found to answer Satisfactorily. The only modification that has been introduced is in the roadway which has been made of bare 3" teak planking, as recommended by the Superintending Engineer in his No. 43 of the 31st January. The Cross Girders have been made level across and the planking has been Secured to the Cross Girders from below by means of Coach Screws, passing through a ¼" plate rivetted to the top flange of the Cross Girder. The planking is spaced ¼" a-part to allow of water draining off and through the floor. The Abutments and pier are of Stone Masonry, and the Girders will rest on ¾" of lead in a Cast iron bed plate. This bridge was partly drawn when I arrived in the Wynaad and through some misunderstanding of the late Exec: Engineer the Spans were made 43 feet, Similar to the Velpur Bridge, instead of the design being modified for 40 feet Spans. 3043

3043/33

13. The Second bridge in the table was drawn and estimated for before my arrival. The Span is in excess of that laid down by the Superintending Engineer but I have not altered the design for fear of further delaying the Submission of this Estimate. Fresh designs for the above Bridges will however now be prepared. It is not thought that there will be any great difference in the Cost; if any thing the Cost will be less.

14. The

The third Bridge, designed by me, is a modification of the first to suit the increased span. The data for loads have been taken from those recently adopted in the designs for the Iritty Bridge in Malabar. The total distributed mixed load being taken as ·44 of a ton per foot run. A table of stresses in the braces of the girders accompanies the designs and for the strain in the top and bottom booms the formula $\frac{Wa}{8.D}$ has been used. There is a slight excess of strength in the girder which was unavoidable to give room for the rivetting. To summarize the Cost of Improvement we have

Reformation &c. as per detailed Estimate ___ Rs. 230647

Spans	Rupees
80.	17066.
55.	10,068.
100.	17,596.
1 of 10.	309.
2 x 12.	752.
4 of 15.	1968.
1 of 16.	548.
1 of 20.	780.
1 of 21.	820.
Bridging	49,907

___ 49907

Total 2,80,554 Rs.

For 39 miles of road or approximately Rs 7194 per mile.

15. **Buildings.** The designs for buildings accompanying the Estimate were prepared in accordance with the proposals made in the

Buildings

3043
34

the preliminary report which proposals were approved by Government vide para 9 of G.O. No 524 W. dated 26th February 1884.

16. The houses are of wood with horizontal overlapping planked walls. Mangalore tiles or Corrugated Iron (as the Mangalore tiles alone would not keep the place water tight in time of high wind with heavy rain) are used for the roofs of the main portion of the buildings. Corrugated Iron alone for the Verandahs. The reason for using Corrugated Iron for the Verandahs is that the slope is considerably flatter than that of the main roof and tiles would be liable to leak. The flooring is of Cement. Good examples of this style of house may be seen at Luckadi and Pookote. They are very neat in appearance, keep out heat, cold, wind and rain and last from 25 to 30 years.

17. The following buildings have been estimated for in terms of the approved proposals of Mr Nordmann

	Rs	A.	P.
Executive Engineers dwelling houses with out houses	20963	"	"
Do Office & Stores.	10947	"	"
Dwelling houses for Office Establisht.	12202	"	"
1 Inspection Bungalow at Tamrachery with out houses	8276	3	2
3 Dwelling houses for Upper Subordinates — do	24955	5	8
1 — do — for Hospl: Assistt. with — do	8318	7	2
3 Coolie's Lines.	590	"	"
Total Rs	86,252	"	"

18. The house for the Hospital Assistant has been made similar to that for Upper Subordinates.

These

These buildings will answer in a great measure for all the roads contemplated in the Scheme for improving Wynaad Communications although for the present they are included in the Estimate for the Calicut - Vayitri Roads

Compensation

19. Compensation. The site selected by Mr. Nordmann for the Establishment buildings is on the borders of the Pookote Lake. The area he proposed to take up is 28 A. . R. . P. and would cost about ₨ 2800. The land belongs partly to Messrs. Hinde & Co. of Calicut and partly to Messrs. Brown & Co. of Pookote. On Messrs. Hinde & Co.'s land are situated two Buildings, the one a Store which is at present being rented as an Office and the other a Bungalow known as the Bank Bungalow. It is questionable whether the site in the vicinity of the lake is a healthy one, but apart from this as a question of economy I would make the following proposal.

20. Mr. Yonge is willing to sell a bungalow known as Coola Quee with five acres of land for ₨ 7500. Coola Quee is situated on high ground and about a mile from the Munsiff's Court and Calicut Vayitri Road. It would probably be advisable to have the Office, Stores, Upper Subordinates bungalow and lines near the road and I therefore suggest that Messrs. Hinde & Co.'s land only be taken up with the two buildings, and that Coola Quee be bought for the Executive Engineer's Residence. The existing Bank Bungalow would answer for an Upper Subordinate's or Hospital Assistant's house and the Store

Store with slight improvements might be converted into an Office.

30x3
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21. In the absence of the information asked for regarding the actual amount of Compensation to be paid, the value of the land has been assumed at ₨ 100 per acre. The value of the Buildings has been estimated at ₨ 2000 for the Store House and ₨ 3000 for the Bank Bungalow.

22. The area to be taken up according to the first proposition being about 28 acres and the area to be taken up according to the second proposition being about 10 acres the Cost of Compensation will be respectively ₨ 7800 and ₨ 6000.

23. The Comparative Cost of the two proposals is shewn below.

I.	Cost of Buildings as per Estimates.		₨ 86,252
	Compensation for land 28 acres at ₨ 100 per acre	2800	
	Value of Hinde & Co's Buildings.	5000	7800
	Total Rupees		94,052
II.	Cost of Coola Quee property	₨	7500
	Improvements to Bungalow for Exec: Engr's Residence, including repairs to Out houses & construction of new stables.		5870
	Cost of Hinde & Co's Land		
	10 acres @ 100 ₨ per acre	₨ 1000	
	Value of Buildings	5000.	6000
	Carried over	₨	19,370

Brought forward	Rs 19,370
Improvements to Store for Exec: Engineer's Office.	132
Repairs to Bank Bungalow.	434
Cost of Remaining Buildings, Viz:, For Office Establishment.	12,202
1 Inspection Bungalow at Tamracheri with Out houses.	8,276 – 3 – 3
2 Houses for Upper Subordinates with Out houses.	16,636 – 14 – 6
1 House for Hospl: Assist^t with — do	8,318 – 7 – 3
3 Cooly Lines	590
Total Rupees	65,960 –

Difference.	Rs 28,092 –

24. The Cost of the whole project for Improving the Calicut–Vayitri Road will then Stand as follows.

Works.

Original.

(a) Reformation or Completion of 39 miles of road at an average rate of Rs 7194 per mile.	Rs 280,554
(b) Buildings.	86,252
(c) Compensation for land.	7,800

Repairs:

To roads during construction, say for 3 years, according to this Years L. F. Budget @ Rs 11.100 per annum.	33,300
Carried Over. — Total Works.	407,906

8/p 10

Brought forward. — Total Works.	Rs 4,07,906

Establishment.

(Calculated at 25 per cent on Cost of Works	1,01,977

Tools and Plant.

(Calculated at 2½ per cent on Cost of Works.	10,197
Grand Total Rupees	5,20,080

3043/35

or

By adopting the alternative proposal for Buildings.

Works.

Original.

(a) Reformation or Completion of 39 miles of road at an average rate of Rs 7194 per mile.	Rs 2,80,554
(b) Buildings (including Compensation for land)	65,960

Repairs.

To roads during Construction, say for 3 years according to this Years L. F. Budget @ Rs 11,100 per annum.	33,300
Total Works	Rs 3,79,814

Establishment.

(Calculated at 25 per cent on Cost of Works.	94,954

Tools and Plant.

(Calculated at 2½ per cent on Cost of Works.	9,495
Grand Total	Rs 4,84,263

Assist^t Engineer.
Special Wynaad Division.

Specification.

As per printed Copies of Madras Presidency Specifications.

11

3043/37

Special Wynaad Division.

Report to accompany the Estimate for Improvement to the Calicut Vayitri Road.

Dated 5th }
Despatched 6th } September 1884.
Received. }

SUPDG. ENGINEER'S OFFICE
No. 1/1404 R.
8 - SEP. 84
P.W.D.
FOURTH CIRCLE

No. 465/4 W.

Supg. Engineer's Office 4th Circle
Coimbatore 10th October 1884.

From
The Superintending Engineer
IV Circle

3043/38

To:
The Chief Engineer
P. W. Department.

Sir,

In continuation of my letter No. 448 of 29th ultimo, I have the honor to forward a specification which ought to have accompanied the Report, Plans and Estimates for improving the Calicut - Vayitri Road submitted with the above letter.

Enclosure 1

204- ~~5-10-84~~

2. The Specification shows how each portion of the work is to be done and what materials are to be used.

I have the honor to be
Sir
Your most obedient Servant.
G. Beatty Colonel R.E.
Superintending Engineer IV Circle

d/ 26th February 1884.

3. In para: 19 of that report, Mr. Nordmann, in suggesting that all steep gradients above and below the ghat should be corrected to at least 1 in 18, stated that, "the average gradient "on the ghat itself is "believed to be not steeper than this (as the "line of levels will show) "and need not therefore "be interfered with." An inspection of the drawings now submitted, however, shows the severe character of the gradients on the Tamracheri ghat. For about 8 miles there is a continuous unbroken rise, varying from 1 in 10.68 to 1 in 18, and the average gradient throughout is found to be about 1 in 17. In the report on the estimate, it is stated that the improvements of these grades "would involve immense expense," and as it is not probable that funds will be forthcoming for such a radical and costly improvement as a change of alignment (the only real remedy in the opinion of the Chief Engineer) this blot on the system

of Wynaad communication
must remain.

4. Provision has not apparently been made in the estimate for camping grounds, as directed in para: 8 of G.O. No 524 Wd/ 26th Feby. 1884 - Possibly such already exist, but if not, one or two on the steep ghat should be provided. Convenient depôts for storing metal at short intervals are of importance on such a line as this, where much will depend on the necessary repairs being executed

rapidly, and the cross sections appear to indicate that there are suitable sites along the road for the purpose.

5. A width of twelve feet of metalling throughout has been estimated for, as ordered in G.O. No 524 Wd/ 26th February 1884, but the Chief Engineer is of opinion that, on the eight miles of steep and narrow ghat, the full width of road should be metalled from gutter ~~to gutter, or from inner gutter to parapet (below which there~~

~~should be formed in a~~
~~small shallow metallic~~
~~drain~~). This would not
involve much extra
expense, and would be
of advantage.

6. Three new large
iron bridges have been
estimated for; one with
two spans of 40 feet
each; one with one
span of 55 feet; and
one with two spans of
50 feet each. There
are mistakes in the
designs of two of these
bridges, but it is
stated that the plans
and estimates will be
revised, and that

p 16

3043.

such revisions will not
make any great
difference in the cost.

7. The first and third
bridges, each with two
spans, are of the double
N. or Whipple-Murphy
type. The second,
with one span, is a
kind of bow-string
lattice-girder. The
object of proposing for
this bridge a girder of
a different type from
the others is not
apparent; and in the
opinion of the Chief
Engineer, it would
be advisable to construct
all three [illegible] less-

upon the same type.
This point might be left to the manufacturers in England, who should be ordered to supply girders for given spans, to carry a given load, and a certain kind of roadway, or the Warren-girder, with pin connections, which offers great facility of erection, a matter of importance in such a locality, might be adopted.

8. For the smaller bridges, rolled iron girders are provided, with teak roadway and railings. For these structures, it is considered that the wrought iron bridges referred to in Capt. Dorward's notes printed with I.G. No 412 I, dd 22d April 1884, would be suitable.

9. In connection with the buildings provided for the staff, two proposals are submitted, the first involving an outlay of Rs 94,689/-, and the second Rs 66,329/-. The former provides for the purchase of land, and for the construction thereon of nearly all new buildings; ~~and~~ the latter provide for the

purchase of land with existing buildings, which are to be improved

The S.E. recommends the adoption of the second alternative, and the Chief Engineer supports that recommendation as the outlay proposed for buildings for a division which is to last but for a limited number of years is very heavy. It must be noted, however, that the buildings provided for in this estimate, do not appertain solely to the Calicut-Vayitri

3043/44

road, but to the whole system of roads to be dealt with in the Wynaad; and to insure good and economical working, it is always desirable, in such a climate, to house the staff comfortably.

10. The amount of the estimate as given by the S.E., (Rs 4,84,930), includes charges on account of establishment and tools and plant. Those charges have been calculated at the old rates of 25 and 2½ per cent, whereas

under existing orders, the rates should be 23 and 1 per cent respectively. As however the cost of the project, under new work and buildings, will fall on Provincial funds, separate provision for establishment and for tools and plant need not be made in the estimate. The total amount to be now sanctioned by Govt. is Rs 3,80,337/, of which Rs 33,300/-, the estimated cost of repairs, will be

30443/45

debitable to Local Funds, which will have to contribute, in addition, the usual charges on account of establishment and tools and plant, to admit of the work being carried out by the P. W. Dept.

11. The manner in which the project has been prepared does great credit to Mr. Todd, Assistant Engineer.

10.11.84
E.W.

Circ: 8/12 R12/12/84

Circ: 11/11/84. R14/12

[illegible] works

No. 3043 W

Public Works Department

A

From or [illegible]

Proceedings of the Madras Government,
Under date the 12th December/84

3043/46

Read the following:—

Letter from the S. E. IV Circle (H.E. No. 448/EW d/ Septr 29/84) Print with report

— Do ~~Print without encl.~~ do — (" " 465/EW, d/ Octr 10 ") Print without encl.

Note by the Chief Engr P. W. D. (" d/ Novr 10 ") Print

20

This estimate provides for improving the road from Calicut to Vayitri, *via* Pudanellum and the Tamracheri ghat, and is drawn up in general accordance with the orders passed on Mr. Nordmann's preliminary report printed with Pro: of Gvt No. 524 W d/ 26th February 1884.

2. The importance of connecting ~~the~~ Wynaad with the coast by a road suitable for wheeled traffic has long been pressed on the Government by the planting interest, and H.E. the Governor in Council considers that sufficient private capital has been invested in the various industries of the district to justify the claim of the planters to improved communications. The state of the existing roads is described in para 2 of the Chief Engineer's memorandum printed with Pro: of Govt. No 1457W d/ 6th June 1882. With one exception, they are there said to be "only fair weather lines, some

3043/47

"fairly traced, others — "indifferently so, and all "insufficiently opened or "formed, and as a rule "quite unmetalled." The residents are thus isolated, not only from the coast to which the produce of their industry has to find its way for shipment, but also from the general system of roads outside Wynaad limits. The proposed reconstruction of the road from Vayitri to Calicut will to a considerable extent remedy the first defect, and later, as funds become available, the fair-weather roads which radiate from Vayitri as a centre —

p 22

30443/48

should similarly be improved, so as to connect the taluk with the general system of roads and railways.

3. The undermentioned estimates now submitted are sanctioned as follows, subject to the remark contained in the Chief Engineer's note printed with these Proceedings:—

	Amount	Classification	Register Number
(1) Improvements to road from Calicut to Vayitri	R 2,80,708	Communications Original Works	Provl No. 214 W of 1884/85
(2) Repairs to the same road.	" 33,300	Communications Repairs	Local No. 45 W of 1884/85

4. The question of an allotment of funds for the first named work will be considered in connection with the Provincial Budget for 1885/86.

5. With regard to the repairs, the cost of which will fall on Local Funds, the Government concur with the Supdg Engr that the work should be carried out by the P.W. Dept conjointly with the proposed improvements, and it will therefore be considered in the Financial department what sum can be placed at the disposal of the P.W. Dept for the purpose, either immediately, or in 1885/86. The total amount required will be:—

For Works	R 33,300
" Establishment	" 7,659
" Tools & Plant	" 333
Total	R 41,292

6. With respect to the estimate of Rs 66,329 for buildings, the Government agree with the Chief Engr that, in a climate like that of ~~the~~ Wynaad, good weather proof accommodation is essential for the working staff; but, in view of the fact that the work contemplated will probably not extend over more than ten or twelve years, they consider that this object may be secured more economically than by constructing such permanent buildings as those proposed. ~~the contemplated work being calculated to extend over ten or twelve years at the most.~~ The scale of accommodation also appears unnecessarily

3043/49

large, for the limited time the staff will be employed in the locality. The Supdg Engr will therefore, without delay, submit revised proposals for housing the staff.

7. The Supdg Engr does not give ~~any~~ details of the staff required to carry out the work provided for in the present estimates. Mr Nordmann, in his preliminary report mentioned one Executive Engineer, two Assistant Engineers, eight Upper Subordinate and two Medical Subordinates, but the

staff was named with reference to
of ~~course referred to~~
the requirements for the
entire scheme of Wynaad
communications. The
Chief Engineer will
arrange for the provision of
the temporary establishment
which may be applied
for by the Supty. Engr.
as the work progresses.

8. The Govt. concur
in the Chief Engineer's
commendation of the
creditable manner in
which the project has
been submitted by
Mr. Todd.

W.
5.12.84

JW 6/12

Circ: 8/12/84
T 12/12

~~Hon. H. E. Sullivan~~

11-8

12 DEC 84

W

20/12

S.E. IV Circle with ~~f~~ [illegible]
Ex. P.W. Accts ~~[illegible]~~
Financial department
Cons. Engr. for Railways
Honorary Secy. Wynaad
Planters Association.
(~~Chief Secy. for counter initials~~)

30113
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Mr crop
4/11/06
13-9-16

Govt. of (1884) Madras.

PUBLIC WORKS.

487

13/11/58

Dated

Recd.

Encl.

G.O., 12 1884, No. 3

Road from
[illegible] to Vay[illegible]

Orders on letters from
the Supg Engr [illegible]
[illegible] for improvement
& repairs to the [illegible]
[illegible] Pa[illegible]
& [illegible]
[illegible] 90