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(2) Date of repair 25-10-40

(3) Initials of the Referencer

# MADRAS RECORD OFFICE.

## Government of Madras.

Financial DEPARTMENT.

| | | |
|---|---|---|
| G.O. No. | 2273. | Press Mis. |
| 181-182 | | 181-182 |
| Dated | 25-11- | 1875. |

15/16

**Not to be folded or roughly handled**

25-10-40

**Local Funds—Roads.**

No. 181. Read the following letter from Lieut.-Colonel J. F. FISCHER, R.E., District Engineer, Madura, to Major-General G. W. WALKER, R.E., Chief Engineer, Public Works Department, Fort St. George, dated Madura, 19th October 1875, No. 2952 :—

I have the honor to forward, for your information, copy of a letter, No. 2951, dated 19th October 1875, addressed to the President of the Local Fund Boards of this district, stating my views on the state of the roads of this district, both as regards the attempts made to open communications and the actual method of construction adopted.

1 Copy of letter.

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From Lieutenant-Colonel J. F. FISCHER, R.E., District Engineer, Madura, to the President of the Local Fund Boards, Madura, dated Madura, 19th October 1875, No. 2951.

With reference to your endorsement on G.O., of the 24th September 1875, No. 1885, herewith returned, I have the honor to state my views on the state of the roads of this district, both as regards the attempts made to open communications and the actual method of construction adopted.

2. Excepting the whole of the Pulney Hills and a part of Tiroomungalum Taluq with the adjacent Zemindari of Gundamanaickenoor and portions of Ramnad, lines of so-called roads have been opened out in good directions, or are now about to be taken in hand.

3. In regard to the Pulney Hills it is not necessary to say much. An officer has been specially appointed for the duty by the Government; and, considering his well-known qualifications, scientific attainments, professional knowledge, judgment and experience, this part of the district will doubtless be well provided with facilities of communications, if funds are forthcoming for the purpose.

4. I think it very advisable to open a line of road for bandy traffic from Tiroomungalum, *via* Warsanaud, to Oottamapoliem, so as to connect that fertile part of the district with the nearest Railway station towards Tinnevelly, as most of the traffic from the Cumbum valley appears to go in that direction ; I estimate the saving in distance will be upwards of thirty miles for the bandies and as the charge for this is upwards of 4 Annas a ton a mile, the cost is Rupees 7½ additional on every ton of produce by the present route, and if only ten tons a day are carried by the new road the saving in the year would be upwards of a ¼ lakh of Rupees even if the proposed route were so constructed as not to reduce the existing rates of bandy-traffic ; if the money can be borrowed at 6 per cent. it would be worthwhile to obtain 2 lakhs for this purpose, but I believe a very good road can be made for 1½ lakhs, the interest on this would be Rupees 9,000 a year, and the probable saving to the district upwards of 30,000 Rupees a year, so that in six or seven years the whole could be paid off if only the road is made so as to be able to carry at 1½ or 2 Annas a ton a mile throughout the year. No amount of money spent on roads which do not attain some such object is of the slightest use as I will endeavour to explain hereafter.

5. For Ramnad many attempts have been made to construct roads, but, owing to the very great difficulties existing here, these have generally failed. The soil is generally black alluvial or sand, and till last year no material of any kind for metalling had been found, but some sand-stone is now known to be available and more may be found, and I am in hopes that, as soon as the road from Yettivial to Keelakaray is opened, we shall be able to obtain coral for metalling. But for this part of the district, including the Paumbum works and Shevagungah, it is far more necessary to have a special officer than for the Pulney Hills. All the roads leading to the coast pass through these territories, and if the average distance to be traversed is taken at sixty-four miles, which, I believe, is well within the mark, the saving of 1 Anna a ton a mile in the cost of conveyance would be upwards of Rupees 4 per ton, and 4 lakhs a year on a trade of 100,000 tons of exports and imports by no means a large trade for so large a district as this to have. An Engineering establishment,

costing Rupees 15,000 a year, would be a small sum to pay to effect a purpose of this kind; whereas by the present system of keeping so large a district as this totally unprovided with any proper means of progress and supervision it will not be difficult to show that the outlay incurred has been chiefly waste, and there has been little done beyond maintaining a chronic disagreement between the Local Fund Boards and Engineers, the one not knowing how works to be successful should be carried out, and the other having such inadequate means to support them could put no heart into work. It is not perhaps absolutely necessary to construct expensive roads in Ramnad. I am convinced that if the available water-supply of the Vygay were properly utilized and supplemented from the Perryaur it would be quite feasible to have at least one if not two navigable canals to the coast and reduce the cost of transport from 4 Annas to 3 Pies a ton a mile, or 1,500 per cent.; but as under the existing prohibitive orders of the Government nothing of this kind is to be looked into even, I can only recommend that an experienced Engineer with a proper staff and establishment be stationed at Ramnad to provide in some measure for saving the district from the enormous losses it must be incurring for want of the proper means of communications to the coast.

6. Now, in regard to the actual construction of roads in this district, I gladly avail myself of the opportunity to enter a protest against the whole system. I do not believe there is a yard of good road in the whole of it: the system adopted appears to have been to throw up a lot of earthwork and gravel largely sprinkled with unbroken boulder or other field stones, tolerably passable for a light dog-cart in fine weather, but the whole becomes a fine mass of ruts and deep holes in any rains as any tyro in engineering should have known; but the fundamental principle adopted seems to have been to allow Rupees 500 a mile for construction and heavy repairs allotments with lavish complaints of the Department of Public Works, because such a preposterous idea is a total failure which it certainly required no prophet to predict. In England, where the value and importance of roads has been long known for securing the best rents from all lands, a gradient of 1 in 80 is objected to, as it enhances the cost of transport 25 per cent.; but here, in India, where everything depends on the land revenue, this fundamental element of rent is as little considered as the other, the fertilization of the soil, and we actually imagine we can effect a great saving of 200 to 300 per cent. in the cost of transport for £50 a mile without surveys and levels, when England has been glad to pay £5,000 a mile for the same object, and we have none of her great means at hand for accomplishing the same with; it is indeed high time to act on totally different principles.

7. According to Molesworth the resistance in lbs. per ton on different roads, exclusive of gravity, is as below:—

| | |
|---|---|
| For stone tramway ... ... ... ... ... ... ... ... | 20 lbs. per ton. |
| ,, paved roads ... ... ... ... ... ... ... ... ... | 33 ,, ,, ,, |
| ,, metalled roads, average ... ... ... ... ... ... | 55 ,, ,, ,, |
| ,, gravel roads ... ... ... ... ... ... ... ... | 150 ,, ,, ,, |
| ,, soft sand and gravelly ground ... ... ... ... ... | 210 ,, ,, ,, |

as these data were determined for horse-power and bullock-power is only equal to two-thirds; of this one-third must be added throughout for India, thus bringing the ordinary means of traction over the country up to 300 lbs. per ton, and for gravelled roads up to 200 lbs. per ton; whereas if the roads had been properly metalled, 75 lbs. per ton, would have sufficed probably for all purposes, or a saving of from 2 to 3 Annas a ton a mile in the cost of transport might have been made; and if the average traffic on the roads is only 150 bandies, or 50 tons a day, the cost at the present rates of 4 Annas a ton a mile is Rupees 12½ a mile a-day, and it is quite possible to reduce this to Rupees 5—the cost for the year per mile at the former rate is over Rupees 4,500, and by the latter less than Rupees 2,200—so that there is room for a saving of at least Rupees 2,000 a-year a mile to be effected by good roads; that is, that whilst every ton of traffic at existing rates and means costs over Rupees 90 a-year a mile for transport, it is quite possible to reduce this by good roads and a proper and sufficient Engineering Establishment to about Rupees 40, thus effecting a saving to the whole of the district of over 100 per cent. in the conveyance of its produce to port and market as well as in all imports.

*Proceedings of the Madras Government, Financial Department,*
*25th November* 1875.

8. As the value of all freely produced commodities in all conditions of society depends entirely on the quantities of labor require to produce and to bring them to market, a reduction in the cost of the latter of over 100 per cent. permanently must enhance the land revenue by bringing new lands into cultivation even if the settlements are such that a higher rent cannot be demanded from the older or more productive soils; this is not likely, however, as the settlements have most probably been made on the crude unscientific native system of assessing products from land in utter disregard of the scientific economic theory of rent from lands. The condition of the roads and the prohibitive orders of the Government at the instance of the Chief Engineer for Irrigation to prevent the land being fertilized, clearly show this to be the case, so that improvements are nearly impossible; but, if instead of opening roads at Rupees 500 a mile, we spend Rupees 4,000 a mile on an average in constructing them and make them passable throughout the year; there is no doubt a saving of at least 100 per cent. in the cost of conveyance can be effected and this permanent improvement secured to the land. This statement is not, I beg to observe, put forward at random; it has actually been obtained over as bad a bit of country as any to be found in India between Cocanada and Samulcottah by the road constructed by Major Hasted, R.E., and Mr. Larminie. The traffic on this is at the least 1,000 bandies a day, and for three years after it was properly metalled, no maintenance was required, and the road was always passable at all times and seasons of the year without a check to the fastest traffic. Rupees 2,000 a mile effected this at once, and previously thousands of Rupees had been spent in gravelling and maintenance to no purpose at all almost.

9. In order, then, to obtain the greatest benefit from such works as roads, it is first of all absolutely necessary to have a sufficient establishment of Engineers and subordinates, and to work this establishment so as to obtain the best results from them by really constructing roads with the best gradients and of the best materials and completing the bridging of all of them; a road like a beam is no better than its weakest point, and to be of the greatest possible use must be equally good throughout. The system adopted in India and most other countries is to open lines of what people are pleased to call roads, but in England such a practice was abandoned 100 years ago when Telford, MacAdum, and others perfected the system of roads completely throughout the country and so prepared the way for the railways, stimulated all industrial occupations, enhanced the value of land, and made every one's time of the greatest importance. We have begun with the railways and then find out there are no feeders to them, and at the same time prohibit all improvements to fertilize the land, deprive the district of all necessary means of supervision, and then wonder the land revenue does not increase, and do not see that what we are actually spending is almost waste.

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No. 246.

Transferred to the Financial Department.

(Signed) G. W. WALKER, Major-General, R.E.,
*Secretary to Government, P.W.D.*

FORT ST. GEORGE,
28*th October* 1875.

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No. 182. ORDER THEREON, 25th November 1875, No. 2273.

Ordered to be recorded.

(True Extract.)

W. HUDLESTON,
*Chief Secretary.*

Exd. T. O'Connor.

Financial Department. 5

No. 2522

From The Dt. Engineer, Madura.

Dated 19 October, 1875.

FOR ORDERS.

Govt. of Madras.

FINANCIAL.

Dated November, 25th.

Issued

Read.

G.O., 25th November 1875, No. 2273.

NOVEMBER.

Nos. 181-182.

*Local Funds—Roads.*—Letter from the District Engineer, Madura, forwarding copy of letter addressed by him to the President, stating his views on the state of the roads in the district, recorded.

Sanctioned work.

What a pity it is that Fischer with such work instead of writing platitudes

W.E.

Send to Secretary for Govt. in print

Govt Record — Also Generalissimo on Roads — the L.F.B. may retain 8th. may

Vide 25th Nov. No. 2273/8

Dr Engineers report on State of Roads in Madura

FOR ORDERS.

2572
C6/11

288

No 2957 District Engineer's Office
Madura 19th October 1875

9

From

The District Engineer
Madura

To

The President
Local Fund Board, Madura

Sir,

Enclosure 1 / 1 G.O. Ind. Dept.

With reference to your Endorsement on G.O of the 24th September 1875. No 1855 hereunto returned I have the honor to state my views on the state of the roads of this District, both as regards the attempts made to open communications and the actual method of construction adopted.

2/ Excepting the whole of the Pulney Hills and a part of Sivaganga Mungalum Taluk with the adjacent Zemindary of Ramnad Manaickenoor and portions of Ramnad lines of so called roads have been opened

out in good directions or are now about to be taken in hand.

3 In regard to the Survey Hills it is not necessary to say much an Officer has been specially appointed for the duty by the Government and considering his well known qualifications, scientific attainments, professional knowledge, judgment and experience, this part of the District will doubtless be well provided with facilities of communications, if funds are forthcoming for the purpose.

4 I think it very advisable to open a line of road for bandy traffic from Tirumungalum via Warsamund to Pottamapoliem so as to connect that fertile part of the District with the nearest Railway station towards Trinevelly as most of the traffic from the Vembum valley appears to go in that direction. I estimate the saving in distance will



be upwards of 30 miles for the bandies and as the charge for this is upwards of 4 annas a ton a mile the cost is Rupees 7½ additional on every ton of produce by the present route and if only 10 tons a day are carried by the new road the saving in the year would be upwards of a ¼ lac of Rupees even if the proposed route were so constructed as not to reduce the existing rates of bandy traffic- if the money can be borrowed at 6 per cent it would be worth while to obtain 2 lacs for this purpose but I believe a very good road can be made for 1½ lacs, the interest on this would be Rupees 9000 a year and the probable saving to the District upwards of 30,000 Rupees a year so that in 6 or 7 years the whole could be paid off if only the road is made so as to be able to carry at 1½ or 2 annas a ton

a mile throughout the year - No amount of money spent on roads which do not attain some such object is of the slightest use as I will endeavour to explain hereafter.

5 For Ramnad many attempts have been made to construct roads but owing to the very great difficulties existing here these have generaley failed: the soil is generaley black alluvial or sand and till last year no material of any kind for metalling had been found but some sand-stone is now known to be available and more may be found and I am in hopes that as soon as the road from Vettivial to Keelakarai is opened we shall be able to obtain coral for metalling - But for this part of the District, including the Pamburn works and Sheragunguli it is far more necessary to have a special officer than for the Pulney Hills - ale the roads leading to the coast pass through these territories and if the average distance to be traversed is taken at 64 miles, which I believe is well within the mark, the saving of 1 anna a ton a mile in the cost of conveyance would be upwards of Rupees 4 per ton and 4 lacs a year on a trade of 100,00 tons of exports and imports by no means a large trade for so large a District as this to have - An Engineering establishment costing Rupees 15,000 a year would be a small sum to pay to effect a purpose of this kind whereas by the present system of keeping so large a District as this totaley unprovided with any proper means of progress and supervision it will not be difficult to show that the outlay incurred has been chiefly waste and there has been little done

beyond maintaining a chronic dis-
agreement between the Local Fund
Boards and Engineers, the one not
knowing how works to be successful
should be carried out and the
other having such inadequate means
to support them could put no heart
into work. It is not perhaps absolutely
necessary to construct expensive roads
in Kammad. I am convinced
that if the available water supply
of the Nyays were properly utilized
and supplemented from the
Perennial it would be quite feasible
to have at least one if not two navigable
canals to the coast and reduce the
cost of transport from 4 annas to
3 pies a ton a mile or 1500 per
cent but as under the existing prohibitive
orders of the Government nothing
of this kind is to be looked into
even I can only recommend
that an experienced Engineer

5-88

with a proper staff and establishment
be stationed at Kammad to provide
in some measure for saving the 15
District from the enormous losses
it must be incurring for want
of the proper means of communi-
cations to the coast.

6. Now in regard to the
actual construction of roads in
this District I gladly avail myself
of the opportunity to enter a
protest against the whole system.
I do not believe there is a good
road in the whole of it: the system
adopted appear to have been to throw
up a lot of earthwork and gravel
largely sprinkled with unbroken
boulder or other field stones, tolerably
passable for a light dog cart
in fine weather, but the whole becomes
a fine mass of ruts and deep
holes in any rains as any type
in Engineering should have known

but the fundamental principle adopted seems to have been to allow Rs 500 a mile for construction and heavy repairs allotments with harish complaints of the D.P.W because such a preposterous idea is a total failure which it certainly required no prophet to predict. In England where the value and importance of roads has been long known for securing the best rents from all lands a gradient of 1 in 80 is objected to as it enhances the cost of transport 25 per cent but here in India where every thing depends on the land revenue this fundamental element of rent is as little considered as the other, the fertilization of the soil, and we actually imagine we can effect a great saving of 200 to 300 per cent in the cost of transport for £ 50 a mile without surveys and levels when England has been glad to pay £ 3000



a mile for the same object and we have none of her great means at hand for accomplishing the same with - it is indeed high time to act on totally different principles

7. According to Molesworth the resistence in lbs per ton on different roads, exclusive of gravity is as below:-

| | |
|---|---|
| For stone tramway | 20 lbs per ton |
| " Paved roads | 33 " " " |
| " Metalled roads, average | 55 " " " |
| " Gravel roads | 150 " " " |
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as these data were determined for horse-power and bullock power is only equal to $\frac{2}{3}$ of this $\frac{1}{3}$ must be added throughout for India, thus bringing the ordinary means of traction over the country up to 300 lbs per ton and for gravelled roads up to 200 lbs per ton whereas if the roads had

been properly metalled 75 ltrs per ton would have sufficed probably for ale purposes or a saving of from 2 to 3 annas a ton a mile in the cost of transport might have been made and if the average traffic on the roads is only 150 bandies or 50 tons a day, the cost at the present rates of 1. annas a ton a mile is Rupees 12½ a mile a day and it is quite possible to reduce this to Rupees 5 the cost for the year per mile at the former rate is over Rs 4500 and by the latter less than Rupees 2200 so that there is room for a saving of at least Rs 2001 a year a mile to be effected by good roads. that is that whilst every ton of traffic at existing rates and means costs over Rs 90 a year a mile for transport it is quite possible to reduce this by good roads and a proper and sufficient Engineering

establishment to about Rs 40 thus effecting a saving to the whole of the District of over 100 per cent in the conveyance of its produce to port and market as well as in ale imports. 19

8. As the value of ale freely produced commodities in ale conditions of society depends entirely on the quantities of labor require to produce and to bring them to market a reduction in the cost of the latter of over 100 per cent permanently must enhance the land revenue by bringing new lands into cultivation even if the settlements are such that a higher rent cannot be demanded from the older or more productive soils this is not likely however as the settlements have most probably been made on the crude unscientific native system of assessing

products from land in utter disregard
of the scientific economic theory
of rent from lands - the condition
of the roads and the prohibitive
orders of the Government at the
instance of the Chief Engineer
for Irrigation to prevent the
land being fertilized, clearly
show this to be the case - so that
improvements are nearly impossible
but if instead of opening roads
at Rupees 500 a mile we spend
Rupees 4000 a mile on an average
in constructing them and make
them passable throughout the year,
there is no doubt a saving of at
least 100 per cent in the cost of
conveyance can be effected and
this permanent improvement secured
to the land - this statement is not
I beg to observe put forward at
random it has actually been
obtained over as bad a bit of

8.55.

country as any to be found in India
between Coconada and Samulcottah
by the road constructed by Major
Haslet R.E. and M. Varmine
the traffic on this is at the least
1000 bandies a day and for 3
years after it was properly metalled
no maintenance was required
and the road was always passable
at all times and seasons of the
year without a check to the fastest
traffic. Rupees 2000 a mile effected
this at once and previously thousands
of rupees had been spent in
gravelling and maintenance to
no purpose at all almost -

In order then to obtain
the greatest benefit from such works
as roads it is first of all absolutely
necessary to have a sufficient
establishment of Engineers and
subordinates and to work this establish-
ment so as to obtain the best results

from them by really constructing roads
with the best gradients and of the
best materials and completing the
bridging of all of them, a road like
a beam is no better than its weakest
point and to be of the greatest
possible use must be equally good
throughout. The system adopted
in India and most other countries
is to open lines of what people are
pleased to call roads but in England
such a practice was abandoned
100 years ago when Telford, Mac
Adam and others perfected the
system of roads completely throughout
the country and so prepared the
way for the railways, stimulated
all industrial occupations, enhanced
the value of land and made every
one's time of the greatest importance
we have begun with the railways
and then find out there are no feeders
to them and at the same time prohibit

all improvements to fertilize the land
deprive the District of all necessary
means of supervision and then
wonder the land revenue does not
increase and do not see that
what we are actually spending
is almost wasted -

I have &c

(Signed) J. F. Fischer Lt Col RE
District Engineer

(True Copy)

Asst to the Chief Engineer
District Engineer

23

District Engineer's Office
No 2952 Madura 19 October 1875
From
Lieut Colonel J F Fischer RE
District Engineer, Madura
To
Major General G.T.W. Walker RE
Chief Engineer, Dr. W.

Sir,

I have the honor to forward for your information copy of a Enclosure 1 addressed to the President of the Local Fund Boards of this District stating my views on the state of the roads of this District both as regards the attempts made to open communications and the actual methods of construction adopted.

I have the honor to be
Sir
your Most Obt Servant
Lieut Colonel RE
District Engineer

Enclosure 1 in a letter from the District Engineer Madura to the Chief Engineers No: 2952 of 19th Octr 1875.

B 8802/75.

Ch Engr No 2522 of 1/75

24 Sept. 75 Ex. 165-

P. W. 1875 Dept.
Finance
Revenue
No: 6802

The District Engineer
Madura

To The Chief Engineer
for order P. W. D.
Dy

Dated 19th } 30 Octr 1875
Recd - 23. }
Recd 30 Encls: 1 √

No: 2952

No 2522

Encloses copy of a letter addressed to the President F. Fr. Vol. of Madura, stating his views on the state of the roads of this District.
25 Nov No 2273

Recorded -
Dy

To Hyderabad
Trance perused
12 Dec

No 2565 Transferred to the Financial Dept.

Chief Engineer & Secretary to Govt P.W.D.

Secretary to Govt P.W.D.

24 Oct 1875.

c 6/11

Govt. of {187} Madras.

Jud

G.O. 25 Nov 1875 No. 2273

Nos. 181-82

L.F. Roads. Letr from the Dist Engr Madura forwarding copy of letr addressed by him to the President stating his views on the state of the roads in the Dist, recorded—