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MADRAS RECORD OFFICE.

Government of Madras.

F. I. O. DEPARTMENT.

G.O. No.	Press.
16.2.197	Mis.
Dated	18

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Read the following papers —

No 162 From the Acting Superintending Engineer, 1st Division, to the Secretary to Government, Public Works Department, dated Camp at Chettimpore, 13th October 1868, No 140

1. With reference to G O, No 1,289, dated 28th April 1868, I have the honor to inform you that I do not consider that the annual cost of keeping up the Imperial Roads in the 1st Division can be reduced, but that, on the contrary, an increase on the present, by no means excessive allowance, is desirable

2 I am unable, from the statements received from the Executives, to send in a statement in the form which is apparently kept in the North-West Provinces. "Annual renewals" do not form a separate item in our Road accounts, the maintenance grant is supposed to suffice for all repairs, and, by keeping up the metalling, to render such an item unnecessary, and where the maintenance allowance is liberal, and the Executive efficient, the roads improve rather than deteriorate from their original form, where from original defective construction, bad management, insufficient repair allowance, increasing traffic, growing importance, &c, a road requires reconstruction, this is done on special estimates sanctioned by Government.

3 I have no remark to make as to a more economical preservation of our roads, except that as Public Works multiply, and the Public Works Department increases in numbers and in importance, more and better work will be done at less cost than at present

4 In the Godavery District, there is but one Imperial Road, viz, No VI Trunk Road, extending from Kistna boundary at Perrikeed to Vizagapatam District at Toonee, length 120 miles, annual grant Rupees 11,000, this is for the most part unmade, and consists chiefly in a fine avenue, estimates are being prepared for rendering it fit for rapid wheel traffic, when thus made Rupees 200 per mile annual maintenance will be required It has also been proposed to connect the Military station of Simulcottah with the Trunk Roads by lines aggregating seventeen miles, in addition a yearly grant is usually received by the Collector to construct roads in the hill tracts, but this should be regarded partly as political expenditure, as it is chiefly to keep the hill men quiet.

5 The Vizagapatam District is badly off for roads, and its Local Funds are but small, no diminution, therefore, of Imperial grants can be looked for in this quarter Trunk Road No VI traverses the District for 115 miles from Toonee to Chicacole on the Ganjam boundary, portions are made, portions unmade, the whole, in conformity with orders received from the Supreme Government, is to be adapted for rapid wheel traffic, and the necessary estimates have been prepared; a maintenance allowance of Rupees 200 per mile will be required The important roads from Vizagapatam to Ankapilly and from Vizagapatam to Vamulavulsah have and require a maintenance allowance of Rupees 200 per mile, these roads are still incomplete, but plans and estimates have been prepared for their completion, no change can, I think, be made with regard to roads marked 4, 5, 6, 7, the road from Vizianagram to Palcondah, Cheepurpilly might be transferred to the Local Fund List, by which Rupees 4,500 of Imperial Funds would be annually saved.

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6 Trunk Road No 6 passes through Ganjam for a distance of 139 miles from Chicacole to the Bengal frontier near Burcool, it is a made and good road for a considerable portion of this distance, and estimates, &c, have been prepared for rendering it fit for rapid wheel traffic, the annual maintenance required will be Rupees 200 per mile. Roads marked 5, 6, 10, 11, 12, 13, 14, might perhaps fairly be transferred to the Local Fund List, the present charge for them being at present Rupees 10,840, but a new road from Aska to Kurcholy should, I think, receive about 2,500 Rupees annual Imperial allowance, as this road leads to Sumbulpore and Madras troops have occasionally to march that way.

No 163 From the Superintending Engineer, 2nd Division, to the Secretary to Government, Public Works Department, dated Bezoarah, 1st September 1868, No 63

1 With reference to G O, No 1,289, dated 23rd April 1868, I have the honor to state that after due consultation with the several Range Officers in this Division, I am obliged to come to the conclusion that not only is it impossible to reduce the maintenance grants for Imperial Roads, retaining due regard for their efficiency, but that increased allowances are required.

2 I propose reviewing each road separately, and would first ask attention to Trunk Road No VI, the great northern line between Madras and Calcutta, which enters the Division at its 33rd mile, and quits it at the 297th mile. This road has never been made throughout a great portion of its length, though from the 33rd to the 184th mile, and from about the 250th to 270th miles it has, with the exception of about 12 miles, been now nearly completed. For this distance of 171 miles a maintenance grant of Rupees 27,800 is allowed, that is, on an average Rupees 161 per mile, a rate which practically is found most inadequate.

3 I have lately been employed in framing the new estimates required to complete this trunk line, agreeably to Government Order No 3,152, dated 12th October 1867, and have investigated, with considerable minuteness, the rates for work upon it. I find that the average cost of putting down a cubic yard of gravel is as follows—

Digging gravel	RS	A	P.
2½ miles cartage	0	2	6
Spreading, watering, and ramming	0	10	0
	0	2	0
Total	0	14	6

allowing the road to be once really well made, I estimate (bearing in view the heavy traffic on it) that not less than two inches of gravel, five yards wide, should be laid per annum. If so—

$1,760 \times 5 \times \frac{1}{12} = 1488\frac{2}{3}$ cubic yards at
To which $\frac{1}{2}$ a Mile Man for 12 months at Rs. 0 14-6 = Rs 443
" 6-0-0 = " 36

I notice that, in the North-West Provinces, 3,15,370 Rupees are required to maintain and annually renew 847 miles of road, i. e., 372 Rupees per mile, on the same "starvation rate" as what I have now proposed, viz, two inches thickness annually.

It is probable that gravel is there obtainable nearer and cheaper than on Trunk Road No VI, which, after entering the Kistna District, chiefly traverses pure black cotton soil, which yields no material for metalling.

4 With reference to Trunk Road No VII, which leaves Road No VI near Ongole, and has been made for about 42 miles in the direction of Hyderabad, after which I believe it becomes a mere bandy track, I have expressed in a former letter* my opinion that it should be converted into a local line. I cannot conceive how it can be regarded as Imperial, in as far as the railway from Madras will serve every Imperial purpose, and the road from Masulipatam to Hyderabad is kept up from Imperial funds. The Board of Revenue in their Proceedings No 1,877, dated 14th March 1868, agreed in this view. I would therefore recommend that the Imperial exchequer be relieved of its burthen.

* No 104, dated 2nd November 1867, also vide paragraph 10 of Board's Proceedings No 8,016, dated 11th December 1867, recorded in G O, No 689, dated 2nd March 1868, Public Works Department

5 It has lately been determined that the road from Nellore to Cuddapah be considered an Imperial line, funds for its maintenance to the extent of Rupees 3,520† have been granted, but the road is only yet made for 30 miles of its length, and when completed (61 miles) a charge of fully Rupees 200 per mile, or 12,200 Rupees per annum, will be necessary for its maintenance. It is no where clearly defined what constitutes an Imperial line, but in my humble judgment, the road in question is purely a commercial one.

6 The only other Imperial line in this Division is that from Masulipatam towards Hyderabad, 115 miles in length. From Masulipatam to Bazoarah, 43 miles, it has never been made, and passes over little else than deep delta silt, and is scarcely traversable in wet weather. For this portion an allowance of 5,820 is annually granted, i. e., 135 Rupees per mile and though very little can be done with this sum, I do not advocate that more money should be given for it, as the navigation channel runs parallel to it, and forms a first-class water communication for nine months in the year, and eventually it may be expected that it will do so for eleven months. From Bazoarah to the Hyderabad frontier 21,600 Rupees, or 300 Rupees per mile, has been granted since last year, and I hope with this sum that the road may be kept in good order, but some miles have never yet been made, and till they are constructed, it is useless to expend maintenance funds upon them. I had the honor of forwarding an estimate for their construction with my letter No 87, dated 17th September 1867, which Government sanctioned, but up to the present time no money has been granted for the execution of the work.

G O, No 2,994, dated 26th September 1867

7. From the above it will appear that the only manner in which I think it is possible to meet the views of the Government of India, as regards reduction of Imperial expenditure on roads in this Division is—

*Proceedings of the Madras Government, Public Works Department,
12th January 1869*

1st—By transferring Trunk Road No VII to local management

2nd—By considering the Nellore and Cuddapah Road as a local and commercial line, and treating it accordingly

No 161 From the Superintending Engineer, 3rd Division, to the Secretary to Government, Public Works Department, dated Bellary, 14th September 1868, No 2,156

1. In forwarding the accompanying Statement of Roads maintained from Imperial funds, I have the honor to inform you that most of the roads in this Division are unmetalled. The system of maintenance adopted is to keep monthly coolies for each mile or so of the road, to look after the petty repairs. The monthly pay of these men varies from $4\frac{1}{2}$ to 6 Rupees, and, in some parts, it is found necessary to give a woman cooly to aid the male cooly, thus raising the monthly pay to 7 to $8\frac{1}{2}$ Rupees. The balance of the annual grant is expended in the purchase and carriage of gravel or broken stones to the portions most requiring repair. The system is found to answer well in most ranges where the Talook Overseers take an interest in it, and see that the men work regularly.

2. I do not consider that any reduction in the thickness of the metalling is advisable, and would rather increase it, as being, in my opinion, more economical in the end. A thickness of $4\frac{1}{2}$ inches is, I think, the minimum that should be allowed in this country, where carts drawn by bullocks always follow in the same track, and would soon wear through a less thickness of metalling.

3. As regards diminishing the width of surface to be maintained, I respectfully urge that fifteen feet of metalling or gravel with one yard of berm on either side should be the minimum width for embankments, otherwise, the slopes get damaged when carts meet or pass each other. The yoke of a cart is usually about six and a half feet, and across the bullocks is about one and a half feet more, or a total of eight feet. Two carts would, therefore, require sixteen feet, and allowing one foot between carts passing and two feet on each side from edge of road we have twenty-one feet as the width, and the wheels will be just within the metalled or gravelled portion.

4. As a rule I think broken stone should be used wherever procurable at a moderate cost, and if there is likely to be much traffic.

5. On the less important roads, or in such parts as pass over good soil, metalling may, I think, be dispensed with until such time as the increase in the traffic shows that broken stone is necessary.

No 165 From the same Officer dated Bellary, 21st September 1868, No 2,245

1. I have the honor to request you will cause the following entry to be made in the Statement of Roads sent with my letter No 2,156, dated 14th instant, in continuation of that already made in the column of remarks opposite "the Nundy-canama Ghaut" —

"An estimate, amounting to Rupees 44,100, for metalling the road over "this ghaut was sanctioned in G O, No 2,898, dated 7th October 1864, but funds "have not been provided."

*Proceedings of the Madras Government, Public Works Department,
12th January 1869.*

No 166 From the Superintending Engineer, 4th Division, to the Secretary to Government, Public Works Department, dated Madras, 23rd September 1868, No 3,101.

1. With reference to G O's, No 1,289, dated 28th April 1868, and No 2,783, dated 31st August 1868, I have the honor to forward reports from the Executive Officers of this Division affording information (but I am afraid not in all cases exactly all what is required,) regarding the various lines of communication which are maintained from Imperial Funds.

2. The Government of India seek information—

1st—As to the cost of repairing roads

2ndly—Regarding the measures to reduce the charge upon Imperial Funds for this object

3. It is rather difficult at the present juncture, for the subject is in a transition state, to say precisely which are the Imperial Roads in this Division, but at any rate the following will always, I suppose, remain Imperial, and the information given as regards these will no doubt suffice — Miles

1.	Trunk Road No I, Madras towards Bangalore to Salem frontier	124
2.	do No VI, Madras towards Calcutta to Nellore frontier	33
3.	do No VIII, Madras towards Trichinopoly to South Arcot frontier	58
4.	do No X, Arcot to Chittoor and Mysore frontier leading to Bangalore	
5.	do No XI, Chittoor to Cuddapah frontier	30

4. As you are aware, since the abolition of the Road Department, most of these lines, short as they are, have fallen into the charge of several Officers, each having a section, so that some diversity of system may be found to obtain in their general management of them and in the remarks offered on the questions put.

5. The following tabular Statements are framed from the reports of the Range Officers, no particulars are given as regards the sections in Municipal limits

TRUNK ROAD No I

Sections	Length	In what Range	Maintenance	METALLING		Traffic	General Observations
				Width	Depth		
No 1	5	Municipal limits	Not known	6 yards 5 do 4 do	Not known	Carts 2,000 500	The maintenance averaging about 470 Rupees is of course distributed in larger proportion in the middle hood of Madras, where the traffic is heaviest and the greatest width is kept up. Metal quarries very distant. Reductions already twice made in allowance for up-keep. Present allowance barely sufficient, four yards metalling is insufficient, it is too much for one cart and not enough for two.
No 2	50	No 3, Madras District	23,890				
No 3	21	Wallajah, North Arcot District	3,845	6 yards	5 inches	Not given	Width of metalling may be reduced one yard and depth one inch, and the saving given over to No 2 Section. Traffic is somewhat reduced since Municipalities with toll gates were established at Vellore and Wallajahpett, as the carts go round by other roads where there are no toll gates to pass.
No 4	47½	Vellore, North Arcot District	3,269	6 yards	Chiefly repaired with gravel	Not given	The traffic is limited, and the Range Officer recommends that the portion in his limits be made local, but I cannot support this recommendation, for the line is essentially Imperial, and, moreover, the local funds are already greatly overburdened. The road runs by the side of the Railway for a great part of its length in this section.
Total							31,004
Trunk Road No VI, Mail Road to Calcutta							
No 1	5	Municipal limits	Not known	Not known		Carts 900	Estimate passed admitting of repairing and improving to adapt the road for uninterrupted quick traffic for mail carts. No reduction can be thought of unless the road be only widened to seven yards instead of eight yards.
No 2	28	No 1, Madras District	11,039	6 yards	4½ inches		

Trunk Road No VIII, Madras towards Trichinopoly, as far as South Arcot frontier

Sections	Length	In what Range	Maintenance	METALLING		Traffic	General Observations
				Width	Depth		
No 1	4	Municipal limits	Not known	Not known		Not given	Mail road to Pondicherry and Cuddalore. This section connects Madras with the Military Cantonments of St. Thome's Mount and Palaveram, and the traffic is great. Latent carriage road in middle, two granite cart tracks on sides. Some reduction may be made after the line has been converted into a granite metalled line. It may then stand at 1,000 Rupees per mile. No Railway in this direction. 88,671 pounds of broken stone, 30,548 pounds of gravel used annually.
No 2	8	No 2 Range, Madras District	10,269	Average 11 yards	4½ inches		
No 3	27	No 3 Range, Do		8 yards	4½ inches	Carts 500	Quarries two to four miles off. Road all of granite metalling. Maintenance cannot be reduced. Already shifts are made to make the allowance suffice. Water in dry weather has to be brought in carts a long distance.
No 4	19	No 4 Range, Do	6,000	5 yards	4½ inches	Reported as 1,300 carts but this is, I think, a mistake.	Grant quite inadequate, road deteriorating. No renewals. Special estimate for reforming will be submitted soon.

Trunk Road No X, Arcot to Mysore frontier via Chittoor

Sections	Length	In what Range	Maintenance	METALLING		Traffic	General Observations
				Width	Depth		
No 1	54	North Arcot District	972	6 yards	6 inches	Not given	Metalled with broken gneiss. Renewals cannot be undertaken with present grant. Some abatement may be made in depth of coating of granite, but it would be unwise to reduce the width of metalling.
No 2	62	Chittoor Range	10,730	4 yards	4½ inches	Not given	The allotment cannot be reduced. The width of metalled surface is already too small.

Trunk Road No XI, Chittoor to Cuddalore frontier

Sections	Length	In what Range	Maintenance	METALLING		Traffic	General Observations
				Width	Depth		
No 1	11	Chittoor Range	1,776	4 yards	4½ inches	Not given	N.B.—It has been necessary to make further references to the Range Officer. No reduction however can take place. Indeed the metalled surface should be widened to five yards.
No 2	19	Chendragherry Range	4,274	4 yards	4½ inches	Not given	Metalled with broken stone and gravel. Large streams remain unbridged. Re-coating of two miles annually undertaken in addition to the maintenance in good order of whole line.

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6 Hence it will be seen that the cost of maintaining our Imperial Roads varies from 1,280 Rupees a mile to Rupees 70 a mile, according to circumstances of position, of traffic, of facility of procuring materials, &c

7 I have pointed out in the column of remarks some few instances in which reductions may be effected in the allotments for 'up-keep,' but they will be very trifling, for in some sections a four-yard width of metalling must be increased. Nothing less than five yards should ever be allowed I think, simply because anything less does not admit of the free passing each other of two carts.

8 The number and cost of our maintenance gangs cannot be reduced.

9 Some few diminutions of thickness of road coating may be made

10 Broken gneiss is almost invariably in use in the Imperial Roads of this Division, topped with a coating of gravel

11 Metalling can in no case be given up altogether.

12 The most serious evil under which our Imperial Roads lie is in their too speedy transfer to Local Funds, which are wholly unequal to bear the charge, especially of course in bad seasons, when there is loss of lacs of revenue and consequently of road cess

13 I have just been over the North Arcot Local Fund Budget for 1869-70 with the Collector of the District, and I find that almost the whole amount will be absorbed in maintenance, in establishments, tools and plant, &c, leaving but about 9,000 Rupees for new works!

14 I believe it will come to this, that as was lately somewhere propounded, all new roads and bridges on local lines will have to be made out of Imperial Funds, and then 'up-keep' alone provided out of Local Funds. If not, I would say in the words of the Superintending Engineer, 1st Circle, North-West Provinces, "we shall annually run into seriously increasing difficulties, and unless (the above or) some remedy be applied, there must be a collapse."

No 167 From the Superintending Engineer, 5th Division, to the Secretary to Government, Public Works Department, dated Sunkerrydroog, 23rd July 1868, No 73.

1 With reference to the Order of Government of the 28th April, No 1,289, I have the honor to state that the following are the Imperial Roads in the South Arcot District, with their lengths, and the amounts of their maintenance allowances —

	Miles	Rupees
Trunk Road No 8 (Madras to Trichinopoly)	91	18,200
Trunk Road No 9 (Madras to Combaconum)	62	6,200
Cuddalore to Salem frontier by Vindachellam	68	7,900
Do do by Oolundoorpet	65	9,750
Mercanum (Salt pans) to Salem frontier	91	10,100
Tindivanam to Cuddalore by Pondicherry	29	5,800
Cuddalore to the Coleroon	28	4,200
Porto Novo to Trunk Road No 9	16	3,200

2 The highest maintenance allowance is at the rate of 200 Rupees a mile, and several of the roads have only 100 Rupees a mile. Experience having shown the inadequacy of the latter rate for keeping up a road, except under very favorable circumstances, the rate has been increased on some of the roads to 150 Rupees a mile. The pay of the establishments, cost of renewing and repairing the surface, repairing bridges, clearing channels, and maintaining the avenues, are all defrayed from the annual maintenance allowances.

3 As a rule, the surface is formed with gravel, or broken stone, for a breadth of six yards. In some cases, the breadth is only four yards, and some portions of the coast road from Cuddalore to the Coleroon and Trunk Road No 9 are not gravelled at all. Embankments of black soil should always be gravelled to their full width.

4. *Trunk Road No 8* — This road has been formed with gravel or broken stone for the whole distance of ninety-one miles in South Arcot. The traffic on it, in the 2nd Range, is about 450 carts a day, and in the 1st Range, 400 carts. The number is somewhat less in the 3rd and 4th Ranges.

5 The allowance for the twenty-six miles in the 2nd Range is 5,200 Rupees, of which Rupees 2,338 have, on the average, to be paid for the collection and cartage of metal, leaving a balance of Rupees 2,862, or Rupees 110 a mile, to keep the road in good repair for the year.

6 The following is the detailed estimate of expenditure on the twenty-seven miles in the 3rd Range, during 1868-69 —

4,350 cubic yards of gravel averaging Rupee 1-1 6 to Annas 4-6 per cubic yard according to distance, including quarrying and carting, quantity for each mile from 65 to 215 cubic yards, according to its requirements	Rs	A	P
	2,153	4	1
500 cubic yards of sand	102	9	8
7,102 square yards of turfing	147	15	4
4,341 cubic yards of earthwork	271	5	0
Repairs to tunnels and road dams	60	7	11
1 Pygust for 12 months	180	0	0
4 Head coolies	240	0	0
28 Coolies at 2 Annas a day	1,260	0	0
35 Coolies at 1½ Anna a day	984	6	0
Total	5,400	0	0

No reduction can be made in the allowance for this road, unless it be in the portion in the 4th Range, nineteen miles in length, for which 150 Rupees a mile may suffice.

7 *Trunk Road No 9* — This leaves Trunk Road No 8 near Vicravandy, and goes by Punnooty and the Vellar amcut to the Lower Coleroon amcut. The portion north of the Pooniar will be gravelled by the end of the year. Between the Pooniar and Guddilum, the road is only partially gravelled, and south of the Guddilum, to the crossing of the road from Cuddalore to Virdachellam, the soil is good and the road is not gravelled. It is then gravelled to nine miles south of the Vellaur amcut and bridge, and the rest of the way the soil is tolerable. The allowance of 100 Rupees a mile is not sufficient for keeping this road in good order. The gravel has to be carted to every mile, and costs on an average one rupee a cubic yard. The portion north and south of the Vellaur would be quite impassable if not gravelled.

*Proceedings of the Madras Government, Public Works Department,
12th January 1869*

8 *Cuddalore to Salem frontier by Virdachellam*—This road is in very good order as far as Virdachellam, but from that place to the Salem frontier is very bad. It passes over a great deal of bad soil, and requires to be re-gravelled. The allowance is at the rate of 150 Rupees a mile for the first twenty-two miles, and 100 Rupees for the rest. The saving from Trunk Road No. 8 might be transferred to this road.

9 *Cuddalore to the Salem frontier by Oolundoorpet*—From Cuddalore to Trunk Road No. 8 is in the first Range, and the condition of this portion is deteriorating on its allowance of 150 Rupees a mile. The gravel has to be brought across the sandy bed of the Gaddilam, a distance of six or seven miles. The traffic is very heavy and the gravel is rapidly worn away. From Oolundoorpet to the Salem frontier the gravel is obtained more easily, and the traffic is somewhat less, but great difficulty is experienced in keeping up the road on 150 Rupees a mile.

10 The estimate for these thirty-seven miles for 1868-69 is subjoined—

6,560 cubic yards of gravel or pit soil from 50 to 230 yards per mile, at prices from 2 Annas to 8 Annas 9 Pice	Rs	A	P
1,952½ cubic yards of earthwork	1,892	5	6
8 Tunnels constructing and repairing	122	0	6
1 Pigst for 12 months	380	0	0
6 Head Coolies	180	0	0
35 Coolies at 2 Annas a day	360	0	0
37 Coolies at 1½ Anna a day	1,575	0	0
	1,040	10	0
	5,550	0	0

11 *Mercanum (Salt pans) to the Salem frontier*—From Mercanum as far as Tindivanam, twenty miles, the allowance is at the rate of 150 Rupees a mile, or Rupees 3,000 per annum, of which Rupees 1,320 have, on the average, to be paid for the collection and cartage of gravel, leaving Rupees 1,680, or Rupees 84 per mile, for keeping up the road. The traffic is 350 carts a day, chiefly salt. The continuation of this road from Tindivanam to the Salem frontier, seventy-one miles in length, has a maintenance grant of 7,100 Rupees, at the rate of 100 Rupees a mile. Traffic, 250 carts daily. The road is in fair order, but 100 Rupees a mile is scarcely sufficient to keep it up.

12 *Tindivanam to Cuddalore by Pondicherry*—This road is gravelled throughout. The traffic on it is quite as heavy as on Trunk Road No. 8, about 450 or 500 carts a day, besides the mail and quick passenger traffic. No reduction could be made in the allowance. The gravel has to be carted to every mile, and to some parts from a great distance.

13 *Cuddalore to the Coleroon*—This is a continuation of the last road. It has been gravelled to the eleventh mile stone from Cuddalore. Beyond that, no gravel is to be obtained, except at too great a cost, and the surface is formed with clay and sand. The allowance of 150 Rupees a mile is the least that the road can be kept up on.

14 *Porto Novo to Trunk Road No. 9*—This is a useful road, sixteen miles in length, with much traffic. Gravel can be procured for only five miles. The rest is repaired either with clay or sand. The allowance is 200 Rupees a mile. It might be reduced to 150 Rupees, but the gravelled portion will then get out of repair.

*Proceedings of the Madras Government, Public Works Department,
12th January 1869.*

15 *Roads at Bangalore*—The number of miles of road maintained is eighteen, exclusive of those in the fort. The annual amount sanctioned is Rupees 6,670, of which Rupees 5,250 are granted to a Contractor for the maintenance of the roads, the balance being available for fort roads, special repairs, &c. The Contractor is bound to keep up an average of four inches of metal, to renew any portion broken up, within forty-eight hours, to keep clear the sides of roads, drains, &c., and repair the tunnels. The roads have to be kept in better order than is necessary at a distance from a station, and it does not appear that any reduction can be made.

16 I have not received yet any details from the Salem Ranges, and I will report separately on the Salem roads.

17 As regards the suggestions for diminishing the cost of road repairs, I have to state they have all been acted on, as far as possible, in South Arcot.

The thickness of gravel, on most of the roads, is already too little, but the thickness should depend not only on the amount of traffic, but on the nature of the soil below. Nine inches of gravel are not too much on some black soil embankments. The breadth of gravelling has been reduced, in some cases from eighteen to twelve feet, but the result is not always satisfactory, and where gravel cannot be procured, except at a disproportionate cost, the surface of the road is formed with sand and clay. Broken stone is used on most of the Salem roads, and on parts of Trunk Road No. 8 in South Arcot, but gravel of good quality is to be preferred, unless the traffic is very heavy.

18 I am unable to recommend that any of the Imperial Roads in South Arcot should be transferred to the Local Fund at present, as the demands on that fund are already as heavy as it can bear. Many new roads have yet to be made, and the cost of maintaining those already made is increasing every year.

19 The expenditure on roads in this district has increased immensely since the date of the Public Works Commissioners' Report, when the amount was £60, but at that time there were no roads, and now there are nearly one thousand miles of very fair road. The present prosperous condition of the agricultural population must be attributed, in a great measure, to the number and excellence of the roads, which enable the ryots to carry the produce of their fields to wherever they can get the best price for it.

No 168 From the Superintending Engineer, 5th Division, to the Secretary to Government, Public Works Department, dated Salem, 23rd October 1868, No 140.

1 With reference to the Order of Government of the 23th of April, No 1,289, and in continuation of my letter of the 23rd of July, No 73, I have the honor to forward a report on the state of the Imperial Roads in the Salem District.

2 Their lengths and present maintenance allowances are as follows—

	Miles	Rs
Trunk Road No. 1 from Vannembady to the Mysore frontier near Oosoor	68	10,200
Do No V. from do to the Coimbatore frontier at Bhowany	120	12,000
Road from Oosoor to Adamancottah	54	4,050
Road from Salem to Trichinopoly (as far as district boundary)	40	10,000
Road from Salem to Cuddalore (as far as district boundary)	42	6,300

Revised

*Proceedings of the Madras Government, Public Works Department,
12th January 1869*

3 I have lately recommended that the grants for the third and fifth roads in the list be increased to Rupees 5,400 and Rupees 8,400 respectively, and that the grant of the fourth road be reduced to 6,000 Rupees

4 *Trunk Road No I*—This road has been bridged throughout, and the chief masonry works are in good order, except the Malapaady bridge, which was washed away two years ago, and is now being reconstructed. Many of the parapet walls of the small culverts are in need of repair, and three long parapet walls along tank bunds will have to be partially rebuilt. The road surface is in good order, as a rule, but about eight miles are bad and are being remedied, about one-seventh of the whole length of road requires to be thoroughly repaired each year, besides petty repairs to every mile. The maintenance allowance (which has been reduced since the opening of the Railway) is just sufficient to keep this road in repair.

5 *Trunk Road No V*—The principal streams on this road are unbridged, and many of the miles are repaired with an inferior description of gravel. The road is, however, in fair order, and can be kept up on its present allowance.

6 *Road from Oosoor to Adamancottah*—This road is in worse order than any of the Imperial Roads in the district. The allowance of 75 Rupees is insufficient for carrying out the necessary repairs, and an application has recently been made for an allowance of 100 Rupees a mile. The road has been bridged throughout, but the masonry work is not good, and many of the culverts will have to be rebuilt before long.

7 *Road from Salem to Trichinopoly as far as the District boundary*—This road has been bridged and metalled throughout, but some portions are very uneven owing to large stones having been laid down under the metalling. These are being gradually taken up. The traffic on this road has been diminished by the opening of the Railway from Erode to Trichinopoly, and the present maintenance allowance is more than sufficient to keep the road in good order.

8 *Road from Salem to Cuddalore as far as the District boundary*—This road has only been partially bridged, and the surface most of the way has been formed with inferior material. The traffic on it having much increased during the last five years, the road gets much cut up in wet weather. An estimate, accompanied by a traffic statement, has lately been forwarded for an increased maintenance grant.

No 169 From the Superintending Engineer, 6th Division, to the Secretary to Government, Public Works Department, dated Tanjore, 6th July 1868, No 364

1 With reference to reminder No 88, of the 1st instant, I have the honor to inform you that it will not be possible for me to submit the report in the form required by the Government of India, on the various lines of communication maintained from Imperial funds immediately, as the subject involves the preparation of complete estimates for the roads, and unless very carefully made with reference to the nature of the material procurable, and the distance it has to be conveyed to each mile, the estimates will be worse than useless.

2 The estimates have already been called for, and reminders will now be sent to those Officers who have not submitted estimates for the roads in their ranges

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No 170 From the Superintending Engineer, 6th Division, to the Secretary to Government, Public Works Department, dated Tanjore, 21st October 1868, No 747.

1 With reference to G O, No 1,289, dated 23rd April, I have the honor to

2 Reports
4 Statements
7 Estimates

* Remetalling Road No 3 from Trichinopoly to Caroor 41,450
Do Road No 4 from Trichinopoly to Dindigul 33,440
Do Road No 5 from Trichinopoly to Madurai 53,150
Metalling 6 miles of the Road from Trichinopoly to Trunk Road No IX 3,620
Remetalling Road No 1 west of Tanjore 4,800
Repairing masonry works on the eastern portion of Road No 1 680

enclose reports on the Imperial lines of Road in the 6th Division, and with them to forward the estimates noted in the margin,* for metalling those lines which stand most in need of it.

2 I also enclose an estimate for the maintenance† of 41½ miles of Road No 6 from Trichinopoly to Trunk Road No IX, for which no allotment has hitherto been made, though portions of the road have been completed for more than two years.

† G O No 1393 of 5th May

3 I beg that, if possible, an allotment of Rupees 3,600‡ may be made this year for thirty miles of the road east of the Trichinopoly Talook boundary,

‡ Rupees 20 × 120

which have been completed from six months to two years.

REPORT ON THE IMPERIAL ROADS IN THE TANJORE DISTRICT

No I runs from the Trichinopoly boundary to Negapatam

Twenty-one miles of this road lie to the west of Tanjore, and are more or less metalled with gravel or laterite, which is to be found in the vicinity of the greater part of the road. Much of the gravel has been worn away, and requires renewal, and an estimate of Rupees 4,800 is enclosed for its renewal, when this estimate has been carried out Rupees 135 per mile will be required for the maintenance of this line, it provides for the renewal of ¼ inch of new metal annually over the whole surface of five yards, as follows—

	RS.	A.	P.
183½ cubic yards at 4 Annas	45	13	4
Establishment { 1 man Rs 4-0-0 } Is 6-4-0 × 12	75	0	0
{ 1 boy „ 2-4-0 }			
Share of Maistry at Rupees 12	6	13	8
12 × 12			
21	7	5	0
Sundries, masonry works, &c	135	0	0
	135	0	0

East of Tanjore the length of road is 53½ miles. Of this 3½ miles are metalled in the neighbourhood of Tanjore, and for them Rupees 135 per mile as above will suffice.

Six and a half furlongs through the town of Needamungalam are metalled, here the traffic is very considerable, and one inch of renewal over six yards will be required, the metal must be brought from Tanjore, and hence the high rate per cubic yard of metal laid

	RS.	A.	P.
1,424 × 6 × 3/16 = 237½ at Rupees 2½ =	593	5	4
Sundries	6	10	8
	600	0	0

Of the rest of the road some portions pass over embankments, the side slopes of which have to be maintained, and the surface has to be renewed with sand. Other portions pass through sandy ground, and earth has to be procured for the renewal of the surface. Roads of this nature are constantly having the loose particles on their surface blown away by the high winds which prevail during the south-west monsoon particularly, and these require renewal. An estimate is made annually for

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the repair of the road according to its actual requirements, but the following may be said to be a fair estimate for the maintenance of the road —

Establishment { 1 man } { 1 boy } Rs 6 4 0 x 12 =	P
Renewal of earth or sand	75
1 Maistry 12 x 12 =	25
12	12
	110

Near the coast the masonry works require replastering, and some trifling repairs. An estimate of Rupees 680 herewith forwarded provides for them.

It is always difficult to maintain a sanded road in good order. The traffic along the road east of Tanjore, is very considerable, though the line runs tolerably near the Railway. Part of Needumangalam the country is so rich that there is even considerable traffic between the villages which stud the road, and the maintenance proposed above I regard as the minimum amount required for its proper maintenance.

Miles	
2 1/2 Mettel portion at Rupees 135 =	18
1 1/2 do at Needumangalam at Rupees 600	3,325
40 at Rupees 110	600
74 1/2	5,39
	9,815

The present allotment for this road is Rupees 10,200

Road No. II runs from the Grand Anicut to Annicaren Chuttrum, a distance of 82 1/2 miles. Part of the road runs on embankment, part over sandy soil, and part through paddy fields, what has been said with regard to the sanded portion of road No. I is applicable to this road, and the estimate of maintenance there given, viz., Rupees 110 per mile, is required on this road, the traffic along which is considerable.

* 82 1/2 miles at Rupees 110, Rupees 9,075
The present allotment is Rupees 9,900

Road No. IX — 14 1/2 miles of this Trunk Road lie within the Tanjore District, the road connects the Lower Anicut with Combaconum, and passes through a rich country the greater part is on embankment which consists of earth more or less mixed with sand, a renewal of half an inch of sand over the whole surface may be said to be the minimum required.

Side ridging and sectioning constantly require attention, and the following is a fair estimate of the cost of maintenance for one mile —

1,760 x 6 x 1/2 = 146 2/3 Sand at 9 Annas	Rs	A	P
1,760 x 6 = 10,560 Sectioning at 5 Annas per 100 square yards	82	8	0
Side ridging and sanding	33	0	0
	19	8	0
	135	0	0

for some miles the cost of sand is less than 9 Annas, and for some more it depends upon the distance from which the sand has to be conveyed, the saving on this account effected on the portion of the road near the river will cover the cost of maintaining the road-way over the bridges and across the island as a metalled road, with kunjur obtainable from the river—no separate charge is therefore made for this item.

TANJORE,
21st October 1868

14 1/2 at Rupees 135 = Rupees 1,915
The present allotment is Rupees 2,025
(Signed) R F OAKES, Captain, R E,
Superintending Engineer, 6th Division

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No 171 From the Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Coonoor, 6th June 1868, No 63.

- I have the honor to submit herewith three Statements of all communications at present classed as Imperial in the Districts of Coimbatore, Malabar, and Canara, in which I have embodied such

observations and suggestions as I have to offer with reference to G O, No 1,282, of 28th April, the form alluded to in which I have not been able to trace in the correspondence to which it gave cover.

2 Other statements will be forwarded in conformity with Revenue Department Order, No 1,031, of 18th April, when the several Collectors, with whom I have to correspond on the subject, shall have replied to my enquiries. But these statements will not fully answer the views of the Supreme Government, as laid down in the papers printed with the G O, quoted in my 1st paragraph, and reiterated in paragraph 3 of then Proceedings printed with G O, No 1,704, of 29th May. The simplest method of meeting the wishes of the Supreme Government would be entirely to devote Local Funds as far as they will go to the repair of all roads whatever, supplementing them, when insufficient, from Imperial funds, but devoting the bulk of these latter to new works. By so doing, however, all distinction between Imperial and District Roads would be lost, which would again be objected to on all sides. Adhering, therefore, to the proposal last laid down, that none but roads of Political and Military importance shall be classed as Imperial (on which basis the Statements herewith forwarded have been drawn up), it becomes a matter of necessity that the amounts of District funds shall be increased, either by increasing the percentage of existing taxes, or by drawing on additional sources of Road Revenue. The District Road Cess is at present, I believe, levied at only half the rate authorized, which I understand to be one anna in the rupee. But before directly increasing local burthens, it may be as well to see how far indirect taxation by tolls can be increased, such tolls being levied only on works, like carriage ghauts and bridges, by which great natural obstacles have been overcome at a considerable cost to the public, and with corresponding benefit to the trade of the country.

3 Now in Coimbatore District I find several such works, though long since perfected, still free from toll, such as the Hassanoor Ghaut, the Amravutty Bridge on the Madura frontier near Oodamulpettah, and the Bhowany Bridge at the Town of that name. All these are on Imperial roads, and the aggregate levies of tolls on them would suffice to set free their Imperial maintenance allotments for new works. I see no reason why these works should not be taxed at once, or say from 1st January 1869, to give time for preliminary arrangements. And in another year the new Goodaloor Ghaut, connecting the Wynaad with Ootacamund, may be added to their number.

4 In Malabar, the Karkoor, Tambracherry, and Peniah Ghauts, connecting Wynaad with the coast, may be tolled from the date abovementioned, with the certain result of raising sufficient funds. And I am not sure if the existing toll at the Irrity bridge under Perambaddy Ghaut in Coorg, is levied at the rates prevailing on the bridges in Coimbatore District.

5 In Canara we have the Munjerabad, Kodekul, Agoombay, and Coloor Ghauts, all open for cart traffic, still untolled, and the road below the Sumpajce Ghaut insufficiently tolled. They should more than maintain themselves, and contribute for improvement on all lines connected with them.

6 Accompanying are skeleton Maps, showing all Imperial (Military and Political) lines in red, and district or commercial lines in black. Where grants from both funds are proposed in the Statements for any of the former, it is because of the tolls on them which are credited to District funds, and of the traffic requiring double the usual allotment of Rupees 110 per mile, or one anna per running yard, which I take to be the minimum sum, (including petty establishments of Gornashis, Maistries, Head Coolies, Watchmen,) for which roads can be kept up in the 7th Division, except the District Roads below the Coloor and Agoombay Ghauts in Canara, where half that amount will suffice, as I have been able for some years back to recommend large transfers from their existing maintenance allowances for completing the bridge works of these lines.

7 I have only to add that I hold it right not only that all existing sanctions for perfecting the roads now proposed to be transferred from the Imperial to the District List, (excepting such as are about to be reported for transfer under G. O., in the Revenue Department, No. 1,031, of 18th April,) should be worked out from Imperial funds, but that all future estimates of the same nature should be similarly provided with funds, as far as our Imperial resources will admit, and with due reference to relative importance of each line. I think it only fair that roads which are to be maintained in a state of efficiency from District funds raised by the imposition of tolls should be handed over to the District List in a state of completeness, or under pledge of their being worked up to that state as fast as circumstances permit.

No. 172 From the Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Camp at Avanashipolhem, 26th June 1868, No. 75.

In continuation of my letter No. 63, of 6th June 1868, I have the honor to recommend the five arched bridge over the Noyel river, just south of Tirpoor Railway station, and north of the junction of its three approaches from Pulladum, Kongu, and Dharapooram, as a fit place for imposition of a toll, whether considered with reference to the amount of public money on it and the roads convergent at it, or with reference to the revenue likely to be realized.

No. 173 From the Superintending Engineer, 8th Division, to the Secretary to Government, Public Works Department, dated Kodiakanul, 23rd July 1868, No. 996.

1. Referring to G. O., No. 1,289, of 28th April 1868, on the subject of the cost of maintenance on Imperial roads, I have the honor to forward detailed report on the state of the roads in the Madura and Tinnevelly Districts, comprising the 8th Division of the Department Public Works. The delay has been chiefly

caused by the non-receipt of the report from Mr Roberts, first Range Officer of Tinnevelly, whose report was only received on the 12th July.

2 Before entering into the details of each road, I would make the following remarks as to the difference of systems that appear to rule in Madras and North-West Provinces.

3 In the 8th Division no roads are formed, metalled, or repaired with kun-kur. The usual way is to raise the road with the soil out of the trenches, when this has sufficiently consolidated, a foundation of broken stone is laid down, over which gravel is put to a thickness of between six and three inches, according to the traffic. Whereas I see that metal is very often ten to twelve inches, and in some cases twenty inches in the North-West Provinces.

4 Again, returning to the report which accompanies the above quoted G. O., I see a very large item for renewals, as if the roads were allowed to completely fall into disrepair, and that annually sums were allowed on each line for the remaking, this is not the case here, but when the line is once made, only a certain sum is allowed annually on which the road ought to be renewed as worn out.

5 I will take for example the cost of maintenance on the Great Trunk Road from Trichinopoly to Madura and Tinnevelly. The allowance given in the Madura District is Rupees 281½, and is thus expended —

	RS	A.	P.
120 Cubic yards of broken stone	120	0	0
80 Cubic yards gravel	60	0	0
12 Mile Coolies	84	0	0
Superintendence	17	4	0
	281	4	0

The road when originally made was eight yards in width, with six yards metalled with a depth of nine inches. The metal consisting of laterite, friable felspar in the cotton soil covered over by gravel, and all well rolled or tamped.

The wear and tear of this road averages from four to six inches in depth, the daily traffic being over 500 bandies. The road chiefly requires repairs on the bandy tracks, so that the amount of metal resolves itself into $1,760 \text{ yards} \times \frac{1}{2} \times \frac{1}{2} \times 2 = 195$ cubic yards nearly. This the Mile Coolies (one allowed for every mile) put down in the tracks, and at other times are employed repairing and turfing the slopes, keeping the drains clear, spreading a thin coat of sand over the road, filling up the holes, &c.

6 I have given this road as an example, to show the details of the large allowance of Rupees 281 a mile, but it is the only road in the district, and only a portion of it that has so large an allowance, all other Imperial roads having different sums allowed in proportion to the traffic, from Rupees 281 down as low as Rupees 75.

7 I do not myself approve of the system of Mile Coolies, and have abolished them all over the Division, with the exception of the No. 1 Range in Madura. Here they answer, as the Range is compact, and they are continually being looked after, but in most Divisions I have found as a rule that they receive their pay and use the tools and labor in cultivation of land in their own villages, instead of laboring on the roads.

8 I hope, however, in the next Budget to cut down the maintenance allowance considerably.

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9 The first cost of roads appear to me also to be excessive, as a first-class road costs from 3,000 to 4,000 a mile, including the outlay for all drains, bridges under Rupees 2,500. I hope also to cut down this to a very considerable extent, more especially on the local roads, as it is much better to have several second or third class roads than one first-class one, when we are restricted to a certain amount of capital.

10. In the local roads I propose to diminish the width of metal to twelve feet, and then put it only on places where actually required. In many parts of this Division miles and miles of very fair road may be made over red soil merely by putting a drain on the upper side, making cross drains where required, and just levelling the surface.

11 In the 8th Division, it will be seen, nearly all the principal roads (in the Madras District more especially) are Imperial roads, but this has been considerably altered, after carefully going into the subject with the Collectors of Madras and Tinnevely, and a report on the subject is in the course of preparation, cutting down the Imperial lines only to those which are of importance to traffic carried to distant districts of the Madras Presidency and Travancore.

12 I will now show, in detail, the amount of maintenance allowed on each Imperial road, and the state of the road.

Section of Trunk Road No. IV leading from Trichinopoly to the border of Tinnevely, length sixty-four miles.

	RS	A	P
Maintenance allowance			
Expenditure on maintenance last year	16,920	0	0
The road is metalled throughout, and in very good order	17,070	0	0

Ammanaikeenoor to Madras, length twenty-one miles. Maintenance allowance Rupees 3,810.

	RS	A	P
Expenditure on maintenance last year	3,886	5	6
On additional repairs	3,029	0	0

Total 6,915 5 6

The road is gravelled throughout, and except when affected by heavy rain, has been kept in good condition.

Sayelgoody to Madras

Maintenance allowance

Expenditure on do in last year

	RS	A	P
	4,230	0	0
	4,257	6	9

Section of five miles leading out of Madras is a made road, kept in good order, the rest of the road is for the most part unformed, and to make it efficient a general construction will be necessary.

Tondy via Cottamputty to Dindigul, length ninety miles. Section from Tondy to Tripatore, length forty miles.

Expenditure on maintenance in last year

Expenditure on construction

	RS	A	P
	2,419	6	4
	14,999	1	0

Eleven miles of this section have been renewed in the past year. The remaining portion is incomplete, but work of construction in progress on estimate of Rs 36,780. Section from Tripatore to Cottamputty, length eighteen miles. Maintenance allowance Rupees 1,130.

Expenditure in last year on maintenance

Do on construction

	RS	A	P
	1,130	0	0
	10,000	0	0

Eight and a half miles were completed in the past year, and the remaining nine and a half miles are incomplete but now in progress, the estimate being Rupees 26,500.

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Section from Cottamputty to Canavoyputty, length 18 miles

	RS	A	P
Maintenance allowance in last year	1,130	0	0
Expenditure on do	1,130	0	0
Expenditure on construction	10,000	0	0

A length of ten miles is completed in last year and the construction of the remaining eight miles is in progress on estimate of Rupees 33,000.

Section from Canavoyputty to Dindigul, length fourteen miles.

	RS	A	P
Maintenance allowance in last year	720	0	0
Expenditure on do	732	0	0

Expenditure on construction Rupees 9,330-12-0, about six miles of this section have been completed and an estimate of Rupees 10,000 has been made for constructing the remainder, which it is proposed to carry out during the current year.

Tondy via Shevagunah to Madras, length 62 miles.

	RS	A	P
Maintenance allowance in last year	6,220	0	0
Expenditure on do	6,219	7	5
Expenditure on construction in last year	18,738	12	9

Nineteen miles have been reconstructed in the past year the remaining length of 43 miles has been partially maintained as an unmetalled road, requiring very general renewal.

Ramnad to Madras, length 68 miles.

	RS	A	P
Maintenance allowance	4,740	0	0
Expenditure on do in last year	4,739	12	0

Only about 12 miles of this road are really constructed and kept in good order, for the remaining 56 miles the road in parts approach a proper section, at other parts it is little more than a track worn away by the traffic, between the avenue trees, and for 10 miles near Ramnad it is literally a track over black cotton soil. There are tunnels and bridges over most of the river channels and nullah, but the roadway in general requires thorough renewal.

Tirumungalam via Ammanaikeenoor to Pulney, the Coimbatore frontier, length eighty miles. Section from Tirumungalam to Ammanaikeenoor, length twenty miles.

	RS	A	P
Maintenance allowance in last year	2,720	0	0
Expenditure on do	2,773	8	0
Expenditure on construction in last year	16,908	7	0

This section is completed with the exception of one mile, on which work is now being carried on, the estimate for the whole of the section being Rupees 57,500.

Section from Ammanaikeenoor to Pulkanooth, length 23 miles. This portion is for the present left untouched, as an unmade road.

Section from Pulkanooth through Pulney to the Coimbatore District, length 30 miles.

	RS	A	P
Maintenance allowance in last year	1,120	0	0
Expenditure on last year	1,120	0	0
Expenditure on construction in last year	6,242	0	0

on estimate of Rupees 1,07,500, for the whole length from Ammanaikeenoor.

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This section is more or less made throughout, but portions are still incomplete, a length of 14 miles is in good working order, and further work is in progress on the Budget allotment of Rupees 31,650

Meyloor towards Tanjore through Tripatore, length 26 miles.

	RS.	A.	P.
Maintenance allowance in last year	1,320	0	0
Expenditure on do	1,349	0	0

Eight miles of this road are made, and kept in fair order, the rest of the road is incomplete, and in fact unmade.

Cariaputty through Aroopocotta to the Tinnevelly boundary, length 22 miles

	RS.	A.	P.
Maintenance allowance in last year	2,020	0	0
Expenditure on do	2,050	0	0

Fourteen miles of this road are made and kept in good order, eight miles remain incomplete.

Salt branch roads—Morecolum to Ettivial, length eight miles

	RS.	A.	P.
Maintenance allowance in last year	1,206	0	0
Expenditure on do	1,206	0	0

To Mutturagunadapatam, length 4½ miles

	RS.	A.	P.
Maintenance allowance in last year	848	0	0
Expenditure on do	848	0	0

To Vuttanum, length one mile,

	RS.	A.	P.
Maintenance allowance in last year	110	0	0
Expenditure on do	110	0	0

These branch salt roads are not metalled, but are maintained in sufficient order to give access to the Salt stations

TINNEVELLY

Section of Trunk Road No IV, from the Madura boundary to Arambuli on the Travancore frontier, length 104 miles

	RS.	A.	P.
Maintenance allowance in last year	19,180	0	0
Expenditure on do	19,328	0	0
Expenditure on construction in last year	21,898	0	0

on aggregate of estimates amounting to Rupees 34,600

The roadway is now made throughout, having been completed in the past year some portions of the road are in very good order for quick traffic, other parts though are not so good, in consequence of the road having been laid out with stone pavements instead of tunnels, and from the roadway being for several miles constructed of boulders over the black cotton soil, a good deal has been done in substituting covered drains for the open dams, and the boulders are being gradually picked up and broken into round metal

Palamcottah to Tuticorin, length 31 miles

	RS.	A.	P.
Maintenance allowance in last year	3,270	0	0
Expenditure on do	3,270	0	0
Expenditure on construction in last year	17,782	0	0

on estimate of Rupees 1,30,000

The road is completed for a distance of 22 miles out of Palamcottah, and maintained in good order a bridge over the Oopar stream is under construction, and four miles are made on the Tuticorin side.

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Palamcottah to Tenkasi, length 36 miles Section from Palamcottah to Sectapurpanellore, length nine miles

	RS.	A.	P.
Maintenance allowance in last year	970	0	0
Expenditure on do	970	0	0

Expenditure in last year on improvement on estimate of Rupees 2,010

The roadway is made for 4½ miles out of Palamcottah, and in pretty good order, the remainder has been partially made in former years, but is in need of renewal.

Section from Sectapurpanellore to Tenkasi, length 27 miles

	RS.	A.	P.
Maintenance allowance in last year	2,440	0	0
Expenditure on do	2,458	10	4
Expenditure in last year on improvements	8,071	0	0

on estimate of Rupees 21,100.

Nineteen miles of this section are completed and kept up in fair condition, the remaining eight miles are but partially made, and require considerable further improvement, which is now being carried on

Streeviliputur to Tuticorin, length 64 miles

	RS.	A.	P.
Maintenance allowance in last year	12,080	0	0
Expenditure on do	12,211	11	3
Expenditure in last year on construction	5,000	0	0

on estimate of Rupees 11,700

From Streeviliputur to Sator the road is excellent, between Ettiapuram and Tuticorin the road is rough, and the gap of three miles near Tuticorin has been an obstruction to traffic; but the restoration is now nearly completed, on the balance of estimate, viz, Rupees 6,700, appropriated in the present year

No 174 From the Officer in charge of Operations, Wynand, to the Secretary to Government, Public Works Department, dated Lucknow, 10th September 1868, No 499

1 With reference to G O, Nos 1,289 and 2,783, dated 28th April and 31st August last, respectively, I have the honor to state that the maintenance grants at present allotted for roads in this district barely suffice to keep them in passable condition, the climate, with its enormous rain-fall concentrated within so short a period, and the high rates for labor, making the cost of maintaining the roads exceptionally heavy.

2 As soon as the main lines are completed, I would propose to establish tolls, and apply the product altogether to the maintenance of the roads on which they are collected, but this, however, will I fear for some time scarcely suffice without some assistance from Imperial funds

3 By farming out the tolls, and requiring lessees to keep the roads in thorough good order, an efficient system of repair might be established, and the result of two or three years would show whether or not Imperial assistance could be dispensed with

4 I would, however, propose precisely the same system as now prevails in the case of ferries, and put up the tolls annually to auction, but not to pass into the hands of revenue authorities

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No 175 From the same Officer, dated Luckadie, 15th September 1868, No. 519
With reference to your Memorandum No. 123, dated 8th instant, I have the honor to forward a statement showing the cost of maintaining roads in Wynard I have left certain of the columns blank, as none of the roads in the district are yet metalled, and indeed the amount of maintenance per mile of itself shows that no such operations as renewals of metalling could be contemplated With my letter No 344, dated 14th August last, I forwarded one from the Collector of Malabar, showing why, for the present, the cost of maintenance could not be transferred to Local Funds, and in my letter No 499, dated 10th instant, I proposed as soon as the various road were sufficiently completed, to maintain them by a system of tolls

No 176 ORDER THEREON, 12th January 1869, No 83.

CIVIL WORKS, No. 19.

Ordered that these papers be forwarded to the Government of India, and that the estimates submitted by the Superintending Engineer of the 6th Division be returned to that Officer with reference to the recent orders of Government reclassifying the roads in this Presidency. (Here enter No. 84 dated 12th January 1869)

(True Extract)

(Signed) CHARLES A. OKE, Colonel, R. E.,
Secretary to Government

To the Superintending Engineers,
To Captain Kennedy

Exd S T Augustin

No 177.

PUBLIC WORKS DEPARTMENT,
FORT ST GEORGE, 12th January 1869

No 84

To THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT
SIR,

CIVIL WORKS, No 20

From	To	1st Division	2nd Division	3rd Division	4th Division	5th Division	6th Division	7th Division	8th Division	9th Division	10th Division	11th Division	12th Division	13th Division	14th Division	15th Division	16th Division	17th Division	18th Division	19th Division	20th Division
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Do	2nd	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th</								

- XII — Vettanum, on the Madura coast, to Pallanooth, via Devanahalli, Tripattur, Nattam, and Dindigul
- XIII — Paumbem, on the Madura coast to Paulghat, via Rammad, Madurai, and Poolachy, with a branch at Poolachy to Coimbatore
- XIV — The cotton road from Madura to Tuticorin, via Pottapattur
- XV — From Vypaur, on the Tinnevely coast, to Srivelliputtur
- XVI — Tuticorin to Tenkasi and Travancore frontier, via Palamecottah
- XVII — Chittoor to Kurnool, via Cuddapah and Nundial
- XVIII — Chittoor to the Bombay frontier at Hulal, in the Bellary District, via Palmanair, Muttanpillay, Anantapore, Bellary, Hospet, and Hoovinaidgally
- XIX — Bellary to Kurnool
- XX — Calicut to Mangalore
- XXI — Calicut to the Mysore frontier, via the Tambracherry Ghaut and Sultan's Battery
- XXII — Cannanore to the Mysore frontier, via the Penah Pass and Manan-toddy
- XXIII — Cannanore to the Mysore frontier, via Muttanoor
- XXIV — Mangalore to the Mysore frontier, by the Sampaji Ghaut
- XXV — Mangalore to the Mysore frontier, by the Agumbi Ghaut.

3 Besides these there are about 1,200 miles of ghaut and salt roads, but neither these latter nor the main lines are all either fully made or provided with maintenance allowances, and perhaps nowhere is this so much the case as on the line of the Great Northern Road from Madras to the Bengal frontier, which, as the Government of India are aware, has been completed and bridged only in detached portions, and is still far from fit for fast wheeled traffic

4 It is impossible to furnish the information required by the Government of India in the form apparently in use in the North-West Provinces. Annual renewals do not form a separate item in the road accounts of this Presidency, but the maintenance grants are supposed to suffice for all ordinary repairs.

5 The principle on which these maintenance grants are allowed, is to provide for a certain amount of wear of the surface of each road according to the extent of the traffic upon it, and the nature of the material with which it is metalled. The grants vary in amount from Rupees 1,280 per mile to a road metalled to eight yards in width in the neighbourhood of Madras, to Rupees 70 per mile for roads metalled to only five yards in width in other localities

6 When the road has once been made the system of maintenance is to put it under the charge of mile men and coolies, whose duty it is to make all trifling repairs and to dig and collect metal into heaps, which are carted as required, and laid and spread by them assisted by such additional labor as may be necessary. The grants now in force have all been framed on the closest calculation of the bare requirements of the traffic on each road, and it will be observed that the Superintending Engineers are unanimously of opinion that it will not be expedient or possible to reduce any of them.

7 The wear and tear of the surface of a first class road is reckoned at from two to four inches per annum according to the extent of the traffic upon it and the nature of the metal or gravel employed, and, as for each mile of road metalled to a width of only five yards, 488½ cubic yards would be required to replace the smaller ratio of wear, it is evident that the maintenance of Rupees 260 per mile, which may

be taken as the average sum given in this Presidency, will rarely prove more than sufficient even where material is either tolerably easy to procure or has to be carted only a short distance.

8 This Government, I am directed to say, are very fully alive to the advantage of economizing to the utmost the very small assignment of Imperial funds that is made year after year to this Presidency, as compared with the nature and importance of the works of general improvement which are urgently required throughout every one of its districts, and His Excellency the Governor in Council has not failed to endeavour to relieve those funds as far as possible from the burden of maintaining all such roads as can, with the least show of justice to the classes who contribute to the road cess, be transferred to the charge of Local Funds. With this in view, the Government have carefully considered the whole subject in communication with the Members of the Revenue Board, and have transferred from the Imperial to the Local list every road which, in their opinion, can under any plea be so dealt with, but I am to add that if the circumstances of the Local Funds should at any time permit, further transfers in the same direction will be ordered.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government

1
N^o 140
Superintending Engrs. Circuit Office,
Tth Div. Camp Chetterspore,
13th October 1888.
Des^d 28th
From Captain J. Beckley R.E.
As Supg. Engineer, Tth Div.
To Colonel C. A. Orr R.E.
Secretary to Govt, W.D.
Madras.

Sir,
With reference to G. O. N^o 1289 da-
-ted 28th April 1888, I have the honor to in-
-form you that I do not consider that the
-annual cost of keeping up the Imperial
-Roads in the Tth Division can be reduced
-but that on the contrary an increase on
-the present by no means excessive allowance
-is desirable.

2. I am unable from the statements
-received from the Executives to send in a
-Statement in the form which is apparently
-kept in the North West Provinces. "Annual
-renewals" do not form a separate item
-in our Road accounts. the maintenance
-grant is supposed to suffice for all re-
-pairs & by keeping up the metalling to in-
-crease
-render

render such an item unnecessary & where the maintenance allowance is liberal & the Executive efficient the roads improve rather than deteriorate from their original form. where from original defective construction, bad management, insufficient repair allowance, increasing traffic, growing importance &c. a road requires re-construction this is done on special Estimates sanctioned by Government.

3. I have no remark to make as to a more economical preservation of our Roads except that as Public Works multiply and the Public Works Department increases in numbers & in importance. more & better work will be done at less cost than at present.

4. In the Godavery District there is but one Imperial Road viz No. VI Trunk Road extending from Nistara Boundary at Pericherla to Vizagapatnam District at Tones length 120 miles. Annual grant Rs 11,000 this is for

for the most part unmade & consists chiefly in a fine avenue Estimates are being prepared for rendering it fit for rapid wheel traffic. when thus made Rs 200 per mile annual maintenance will be required. It has also been proposed to connect the Military Station of Samulcottah with the Trunk Road by lines aggregating 17 miles in addition a yearly grant is usually received by the Collector to construct roads in the Hill Tracts but this should be regarded partly as political expenditure as it is chiefly to keep the Hill-men quiet.

5. The Vizagapatnam District is badly off for roads and its Local Funds are but small. no diminution therefore of Imperial grants can be looked for in this quarter. Trunk Road No. VII traverses the District for 115 miles from Tones to Chicacole & the Sanjam Boundary, portions are made, portions unmade the whole in conformity with orders

orders received from the Supreme Government is to be adapted for rapid wheel traffic & the necessary Estimates have been prepared. a maintenance allowance of Rs. 200 per mile will be required. the important roads from Vizagapatnam to Ankapilly & from Vizagapatnam to Ramulavolu have and require a maintenance allowance of Rs. 200 per mile these roads are still incomplete but plans & Estimates have been prepared for their completion. no change can, I think, be made with regard to roads marked 4. 5. 6. 7. the road from Chizauagram to Talcondah Chepurpilly might be transferred to the Local Fund List by which Rs. 4,500 of Imperial Funds would be annually saved.

6. Trunk Road No. 6 passes through Ganjam for a distance ^{13.9} 14.2 miles from Chicacole to the Bengal Frontier near Bursool. it is a made & good road for a considerable portion of this distance.

8

16
& Estimates ~~year~~ have been prepared for rendering it fit for rapid wheel traffic. the annual maintenance required will be Rs. 200 per mile. Roads marked 5. 6. 10. 11. 12. 13. 14. might perhaps fairly be transferred to the Local Fund List. the present charge for them being at present Rs. 10,840 but a new road from Aska to Kureholy should, I think, receive about 2,500 Rs. annual Imperial Allowance. as this road leads to Sambulpore & Madras Troops have occasionally to march that way.

I have yes yes

I. Buckley. Asst. Secy.

Asst. Secy. Engineer, T. "Dw."

See in letter

12/14/04 dated 13/04
from the Duke of
the Division to the
Secretary to the
Department

Mr. 4242/08

Letter of
at the Duke of
- from the Duke of
Friedrich

Mr. 4242/08

12/14/04
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List of Roads at present maintained from Imperial Funds.

No.	Name of Road.	Present.		Prop.		Excess Decrease	Remarks.
		Length	Per cent.	Length	Per cent.		
1	Trunk Road No. 6 from Chicoree to Bengal Frontier	142	109.50	142	284.00	114.50	
2	Road from Berhampore to Akha	25	5000	25	5000		
3	Road from Akha to Pimpelcondah	25	3000	25	3000		
4	Roads in the Hill Tracts of Arissa	250	5200	250	5200		
5	Road from Seckah to Korpakla with pass	5	500	5	"	500	To be transferred to Local Funds.
6	Road from Guernahly Salt pans to Jini Chicoree & Calingapatam	2	240	2	"	240	To be transferred to Local Funds.
7	Road from Korpakla Salt pans to Jagganathpur on Road from Chicoree to Salcondah	23½	2350	23½	2350		
8	Road connecting Meeralee on Trunk Road No. 6 with the port of Sompur	6½	6½	6½	6½		
9	Road from Pimpelcondah to Moingundah	8	296	8	296		
10	Road from Chicoree to Calingapatam	16	3050	16	"	3050	
11	Road from Akha to Sompur port & Salt pans	30	4050	30	"	4050	To be transferred to Local Funds.
12	Road connecting Jagganathpur on Trunk Road No. 6 with the port of Sompur	3	300	3	"	300	
13	Road between Akha & Berhampore	16	1600	16	"	1600	
14	Road from Bomalley to Sindhosapur	19	1700	19	"	1700	
Viragapatam Dist.							
1	Trunk Road No. 6 from Sonee towards Chicoree via Ammulavulak	96	10100	96	19200	9100	
2	Road from Viragapatam to Akapilly	20	4000	20	4000		
3	Road from Viragapatam to Ammulavulak	15	3000	15	3000		
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Road from Salomah to
 Paratipun
 Road from Niguanaguan to
 Bowolera
 Road from the Japanese Road
 at the 2nd mile from Niguanaguan
 via Karapea
 Road from Karapea to
 =patun
 Road from Niguanaguan to
 Salomah by Chapupilly

29 1/2	2950	29 1/2	2950	20550	11440
20	3000	20	3000		
9	1800	9	1800		
2	400	2	400		
41	4000	41	4000	4500	To be transferred to Local Funds.
110	11000	110	24000	13000	

Gutierrez District
 Trunk Road to 6 from Salomah
 to El Coma Bone Road

110	11000	110	24000	13000
29 1/2	2950	29 1/2	2950	20550
20	3000	20	3000	
9	1800	9	1800	
2	400	2	400	
41	4000	41	4000	4500
110	11000	110	24000	13000

Total
 29 1/2 2950
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 = 29 1/2 2950
 = 29 1/2 2950

Sup. Eng. Circuit Office
 Mr. C. C. Chatterbone
 13th October 1908

J. Buckley
 W. J. Ingman

16/62

44-68
))))))

Super. Gymn. Coffine et Dr.
Peyronnet

Bayanik

21 1st of June, 1868

From Lieutenant Colonel G. T. Winscom R.C.

Superintendent Engineer and Dr.
Colonel E. A. Orr R.E.

*Superintendent Engineer U.S.
National B. & O. R.R.*

Secretary to Government
D. P. S. R. K.

1882

Ref. Reference to P.O. No 1289.

Sailed 28 April 1891. Have the honor to state

that after our orientation with the venera

Range Officers in this Division. I am

is likely to come to the conclusion that most
of the world will be free. The first

on by so it is impossible to reduce the number of
- France - Grant to for Imperia C. Prussia, &

retaining one Regt^d for their efficiency &c

that increased allowances are required.

2. I propose reviewing each Road.

de lauding and ^{and} first as a relation

to Frank, Nov. VII - the great Northern

linea. he tunc Madra o am. Calcutta, - 1811

entering the Division, at the 33d mile and
at the 204 mile, the Road has

is given it at the 297. mile. The road was
now very narrow. There is a great notion

at its length through from the 33^d to the 184th mile.

are from a bank to 250 to 270 miles, at Leesville,

the exception of about 12 miles being now
 nearly completed. In this distance of 171
 miles, a maintenance grant of Rs. 27,806 is
 allowed. that is, on an average Rs. 161 per
 mile, a rate which practically is found
 most inadequate.

3. I have lately been employed in
 framing the new estimates required to
 complete this trunk line, agreeably to
 Government Order No. 152 of 12th October 1867, in
 which, having investigated most considerable
 maintenance the rates for work required. I
 find that the average cost of putting down
 a cubic yard of gravel is as follows:-

Digging gravel 2-6
 2 1/2 miles cartage 10-
 Reading, watering, & running 2-
 that at 14-6

Allowing the road to be once & really well
 made, I estimate (having in view the heavy
 traffic on it) that not less than 2" of gravel
 5 yards wide should be laid for annual use
 $1760 \times 5 \times 2 = 4880$ cubic yards
 which is a mile. main for 12 months at 6000

Total Rs. 479 7/16

I notice that in the N. W. Province, & 3,53,370 Rs.
 are required to maintain and annually renew
 8 1/2 million road, i.e. 372 Rs. per mile on
 the same starvation rate, as what I have

now proposed. Rs. 2" this may be annually.
 It is probable that gravel is there
 obtainable nearer and cheaper than on
 the N. W. Pro. & the which after entering
 the Krishna District, chiefly traverses some
 black cotton soil, which gives no material
 for metalling.

With reference to the N. W. Pro. & VII
 which leaves Road No. VI, near Ongole, &
 has been made for about 42 miles in
 the direction of Hyderabad, after which

I believe it becomes a more handy track.
 I have expressed in a former letter my
 opinion that it should be connected in to a
 line, i.e. - I cannot conceive how it can

be regarded as Imperial in as far as
 the railway from Madras will carry every
 imperial purpose, and that from
 Masulihattam to Hyderabad did belong
 from Imperial Funds. The Board of

Revenue in their Proceedings of 1877 dated
 14th March 1868, agreed in this view. I would
 therefore recommend that the Imperial
 & charged be relieved of its burden.

It has lately been determined that
 the Road from Bellary to Chitrapur
 be considered an Imperial line & funds
 for its maintenance to the extent of Rs. 3520
 have

No 104 of 1st Nov 1867
 also.
 vide para 10 of B.R.
 Pro. No 5016 of 11th
 Dec 1867 - recorded
 in P.O. No 689 of 2nd
 March 1868

G.O. No 1037
 of 2nd April
 1868

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have been granted, but the Road is only
yet made for 30 miles of its length
when completed 61 miles / a charge of
fully Rs 200 - per mile or 12200 Rs per
annum will be necessary for its maintenance.
It is no where clearly defined what is
constituted an Imperial Line - but in
my humble judgment, the Road in question
is purely a Commercial one.

6. The only other Imperial Line in
this Division is that from Madanapalle
towards Hyderabad 415 miles in length.
From Madanapalle to Rajamahendravaram
it has never been made and has even
less than the Delta district and is
scarcely traversable in wet weather.
For this portion an allowance of Rs 5820
is annually granted, i.e. 125 Rs per mile
and though very little can be done with
this sum, I do not advocate that more
money should be given first, as the
Navigation Channel runs parallel to it
and forms a first class water communi-
cation for 9 months in the year and
eventually it may be expected that it
will do so for 11 months. From Rajamahendravaram
to the Hyderabad Division, 21600 Rs or 300 Rs
per

mile has been granted since last
year, and I hope with this sum that the
Road may be kept in good order, but
some miles have never yet been made,
and till they are constructed, it is useless
to expend maintenance funds upon them.
I had the honor of forwarding an Estimate
for their construction with my letter No 87
dated 17. September 1867 which Government
sanctioned, but up to the present time no
money has been granted for the execution of
the work.

10912994
26 September 1867

From the above, it will appear that
the only manner in which I think it is
possible to meet the views of the Govern-
ment of India as regards reduction
of Imperial Expenditure on Roads in
this Division is

- 1st By transferring from the Road No VII
to Local Management.
 - 2nd By considering the Bellare and
Cuddapah Road as a Local
and Commercial Line and treating
it accordingly.
- A. Hance

Charles Jones Esq.
Superintendent of the
Public Works

Commissioner of the
General Land Office

12 27 1868 Sept 20
Prof. Geo. S. Janney
Thru 3497.

The Superintendent Engineer
2nd Division

The Secretary to Government
Department Public Works
Washington.

Dated 2nd September 68.
Rec'd 12

Sept 68

Refers the impossibility to re-
duce the maintenance grants
of Imperial Roads in this
Division but states that it
may be possible to meet the
cost of repairs by the
transfer of Road VII
and Local Road to Local
Funds.

100.85 254-122, 1868

100.85 254-122, 1868

No. 2156

Supr. Eng. Office 3^d.
B. B. 11th Sept 1868

From,

The Superintending Engineer
3^d. Bureau

To, The Secretary to Government
P. W. D.

Sir,

In forwarding the accompanying statement of roads maintained from Imperial funds, I have the honor to inform you that most of the roads in this Division are maintained. The system of maintenance adopted is to keep monthly by coolies for each mile or so of the road to look after the path, &c. The most of the coolies are men. The wages vary from 4 1/2 to 6 Rupees a month in some parts. It is found necessary to give a woman coolie to tend the male coolies, thus raising the monthly pay to 7 1/2 Rupees. The balance of the annual grant is expended on the purchase and carriage of gravel or broken stones to the portions most requiring repair. The system is found to answer well in ~~some~~ ^{that} ranges where the Talook Officers take an interest in it and see that the work is regularly done.

I do not consider that any reduction in the thickness of the metalling is advisable and would, rather increase as being in my opinion more economical on the end. A thickness of 4 1/2 inches is I think the minimum that should be allowed in this country where carts drawn by bullocks always follow in the same track and would soon wear through a less thickness of metalling.

I have seen

R. W. Webb
Sup of Eng meⁿ
3 Dec

Towards a Continent
of Roads Hamlet from
for me of a 2199 of 2800
April 1880

*Dated viz: 18th mo
Decr 18th "
Exchange And
No 2158*

The Secretary, Esq.
 to
 The Navy, Esq.
 Sir:

Handwritten signature

Nov 83-84-12th Dec 1884

Wade 1868-69. 1/1m

1916

~~P. 7. 365/60~~

26

List of Roads called for in G. O. No 1289 of 28th April 1868.

21

List of Roads

List of Roads	Length			Grant per mile	Amount of present grant	Amount of proposed grant	Remarks.
	Miles	Furlongs	Yards				
Road from Bangalore via Gooly and Kurnool to Secunderabad in Bellary District	106	6	26	150	16050	16050	This road has never been thoroughly metalled but patches have been carried out here and there where the parts were bad. Several masonry works also are much required to be made this road complete. As for the greater part of the way the road passes over good soil, the maintenance is found to be sufficient on the whole to keep the road in fair order and I would strongly deprecate any reduction until the road has been thoroughly and properly metalled. Several of the Nullahs also require masonry works.
Do. Do. Kurnool District	53			150	8250	7950	A portion of this road is being metalled this year on an estimate of Rs 6032 the remainder has had a thin coat of metalling put on the different parts at various times from the maintenance grant and I would deprecate any reduction from the Annual grant per mile until such time as the road has been well and thoroughly metalled.
Road from Bellary to Mysore frontier beyond Herrahalli.	14	4	22	200	3000	2900	This road has never been properly finished or metalled. about 29 miles is over red soil and are easily kept in good order as are also the 2 1/2 miles through paddy fields where the road has been well made. The remaining distance is over black cotton soil, and only small sums having been occasionally doled out, this road has never even put into proper order, and is a source of constant complaint. The Cotton traffic over it is at times very heavy being about 2000 bales per diem. If the road was completed the maintenance grant would be sufficient but at present it is quite inadequate. All the large Nullahs are without masonry works and there are two Tanny rivers - the Pinnar and Muggay Rivers - which have to be crossed, and being each of them about 700 yards broad, cause great delay to the traffic.
Road from Bellary via Gooly and Cuddapah to Madras Bellary District	89	5	135	200	18800	18000	
Do. Do. Cuddapah District. Kept in repair as far as the Municipal limits	56		165	200	10900	10900	

List of Roads

Length
of
Grant
per
mile
Amount of
present
grant

Amount of
proposed
grant

Remarks

From Cuddapah to North Arcot frontiers

69 2 66

200

13900

13850

Between the Bellary frontier and Cuddapah the greater portion of the road is in very fair order except between the Bellary frontier and the Chikravutti River (about 6 miles) which is almost impassable during the wet weather. If completed the maintenance for this portion might be reduced to Rs 100 per mile.

From Cuddapah to the North Arcot frontiers the road is in fair order with the exception of a portion between Godoon and the North Arcot frontiers. If this piece of road was completed the maintenance grant might be reduced to Rs 100 per mile.

This road has never been regularly metalled but patches here and there have had a thin coat put on from the maintenance grant. Several masonry works are required for which Estimates are being prepared, as also for the metalling of this road along which at times there is a heavy traffic. The ferry across the Tongaludora River is near Hampasawgar and is into the Nizam's Country, but the traffic prefers going further up the river to a place called Toodumully about 7 1/2 miles west of Hampasawgar where there is a ferry direct into the Dharwar Collectorate. I would strongly deprecate any reduction in the maintenance grant.

This road leads to the Sanitarium of Ramandroog - about 13 1/2 miles of it is in the Soudoor Raja's territory - there is a small river near Gatinahutti which after heavy rains comes down as a torrent and delays people sometimes for two or three days - a bridge was built but the piers were undermined and carried away. In consequence of the hilly nature of the country, as also the Ghant, a good maintenance grant is required, particularly as the road has never been metalled.

This road is the Ghant leading down to the town of Hospett and the greater part is in the territories of the Soudoor Raja. It has never been metalled and so a good maintenance grant is required to keep the road in fair passable order.

Road from 3rd Mile Stone from Bellary via Tournagul and Hospett to Hampasawgar on right bank of Tongaludora River

63

200

12600

12600

Tournagul to Ramandroog - 20

200

4000

4000

Ramandroog to Hospett - 12

200

2400

2400

List of Roads

Length
mi. $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$ 1
Grant
per
mile
amount
of present
grant
amount of
proposed
grant

Remarks.

Ramandroog to foot of Naglaform 3
Ghaut -

200 600

600

This is a short Ghaut on the south side of Ramaria. never
mullay. Range. it is in the ^{the} Doodar Territory and is chiefly ^{mess-}
used for the carriage of supplies to Ramandroog from ^{mile}
the Villages to the South - being all Ghaut and not ^{used-}
metalled, I would deprecate any reduction in the mainte- ^{and}
nance grant - several

Coosatunny to Kumply 20

100 2000

2000

This road turns off from the Bellary & Dharwar ^{rec}
road near the 12th mile stone, and passes through the village of ^{low}
Dargee to Kumply on the right bank of the ^{fav-}
River. It is a portion of the road from Bellary to ^{also}
Kullaghee and Chola poor on the Bombay Presidency ^{ground}
It has never been metalled, and a number of small ^{the}
masonry works are required -

Bellary via Adonry to
Madanaram on right 70
bank of Toonyaludra -

150

10,800

10,500

On the portion from Bellary to Mata on the banks ^{black}
of the Muggry River, a distance of about 11 $\frac{3}{4}$ miles ^{by}
metalling has been laid at different places from ^{time}
time, and about 4 miles has been thus done - the remainder ^{has}
is moorund over black, cotton soil, and it is with great ^{with}
difficulty that the road is kept passable with the ^{W. of}
present grant - For about a mile beyond the Muggry ^{Bellary}
River the road passes through a sand drift, and a ^{near}
good deal of expenditure is incurred on this part - beyond ^{ravine}
that it is over black, cotton soil with deep ballahs ^{very}
for about 11 miles - this part has a coating of moorund ^{is then}
and, cuts up very much, during the wet weather - The ^{the}
road then passes over red soil for about 9 miles and this ^{difficult}
part is kept easily in repair - From thence there is a ^{works}
another strip of black cotton soil of about 12 miles, a ^{order}
strip ^{of} red soil of about 16 miles and then ^{17 miles}
again black ^{for} 9 miles - There are no Bridges over ^{1 of}
the Nullahs, and at some of them the traffic is ^{for}
occasionally delayed - The maintenance grant is only ^{last}
just sufficient to keep the road passable -

List of Roads	Length in miles	Grant per mile	Amount of present grant
Road from ^{No. 7-982} 28-6-18 en-above Road to Kurnool in the Bellary District.	12	1	33 150 1650
" " & Kurnool District	57	4	125 150 8250
Gooty to Raichore from Gooty to Jomagherry } Bellary District.	7		100 700
" Auspury to Adoni }	12	1	197 150 1800
& Jomagherry to Auspury in Kurnool District	24		105 100 2500
Road from Bellary to Anantapur part of Trunk Road No. XII	40	3	210 100 5200

amount of
proposed
grant

Remarks . . .

1820 { This road is in very fair order, and has about 10 miles, covered with a coat of metalling of about $4\frac{1}{2}$ inches in thickness - the remainder is gravelled. The Annual grant per mile is not at all too much, as water is difficult to procure -

7740 { This road has never been regularly metalled and Estimates are now being prepared for metalling the worst portions - Several masonry works, are also required -

From Gooty to Jounmagherry the road passes over pebbly soil, and the maintenance grant suffices to keep it in fair order from thence to Puttykonda the ground is, chiefly favorable but several masonry works are required, as are also between Puttykonda and Auspary where however the ground is, chiefly black, Cotton, and it is with difficulty that the road is kept passable with the present grant of Rs 100 per mile. From Auspary to Adony is, chiefly over black Cotton soil, and the road never having been properly constructed or metalled it is found difficult to keep it in order with the present grant. The traffic on this road has increased very much in the last few years. it is the outlet from the Rancher Doab, and Cotton tracts N W. of Adony to Marwar, and Bangalore via Gooty. The road turns off from the Marwar, and Bellary

from the Calicut
Adenry to Marwar, and Bangalore via Gooly -
This road turns off from the Madras and Bellary
road near Cuddapah at 13- ⁴/₁₀ from Bellary near
the Village of Joladarasy, and passes through Coravaconda
and Odraperoor. For about 20 Miles from Joladarasy
the road passes over black Cotton Soil over which only a thin
coat of gravel or sandurini has been spread and the
consequence is that during wet weather it is very difficult
to pass, along the Kullahs: also require masonry works:
the maintenance grant is insufficient to keep it in order.
After this the road passes over red soil for about 17 miles
where masonry works have been constructed at most of
the water courses, and then again over black Cotton for
about 10 miles until at about 2 Miles from Anantapur
the soil is again red. The masonry works on these last

5200

List of Roads.

Length Grant Amount
in Rs. for of
Mile Amount proposed
grant

Remarks.

Antapoor to Cuddapah
frontier near Dimpetla
part of Trunk Road No. XII 28

Road from Cuddapah frontier
near Dimpetla via Kudroo
to Ling also part of Trunk Road
No. XII 76

12 miles are merely of a temporary construction of stone pulley
in mud and require constant repairs - the roadway is a
also very narrow, and I have repeatedly noticed that where
Carts meet some have to go down the slope. The mainte-
- nance grant is insufficient at present for this road:-
I have directed to submit an Estimate for completing
this road and then the maintenance grant ought to
be enough to keep it in order. In the 39th mile from
Bellary the road passes through the Pamar River. In
some years ago a quantity of stone was collected for
a Bridge, seven piers of which have been founded
and raised about two feet, above bed of River, but
nothing has been since done:-
This is a part of Trunk Road No. XII which requires
to be completed. Small sums have been at times granted
from the discretionary allowance for improving the
worst portions but these have not been sufficient to do
much good. There is no grant per mile for this road
and I have merely entered it as being a portion of a
Trunk Road under my charge.
This road appears not to have been constructed on
any Estimate. Previous to 1857/60 sums were allotted
from the discretionary allowance with which a track
was opened up - in G.O. No. 898 of 15th April 1859 a
grant of 100 Rs per mile for 65 miles appears to have
been allotted which in G.O. No. 1443 of 2nd August 1861
was increased to 76 miles, and with this allowance the
road has been made what it is. Fortunately the soil
is good for the greater part of the way, but running
as it does across drainages this road requires constant
looking after, it is a very important line of road and
running as it does right through the Kudroo Taluk
and being the direct line from Chittoor via Palma
near to Bellary I think something should be
done to put it into proper order.

100 7600 7600

List of Roads	Length			Grant per mile	Amount of present grant	Amount of proposed grant	Remarks
	1/2	1/4	1/8				
Road from Pongunoor frontier near Madanapully to Royacholi	50			120	6000	1560	From the Pongunoor frontier through Madanapully to Lingalloor, a distance of about 13 miles, the road is a portion of the line from Bellary through Raddree (Trunk Road No. XII) and should be added to it. From Lingalloor to Royacholi (37 miles) is proposed to be transferred to Local Funds, and so in the column of proposed grant, I have only entered 13 miles, at Rs 120 per mile or Rs 1560.
Madanapully to the Mysore frontier near Sigatole	8			100	850		
Cuddapah via Royacholi and Belur to North Arcot excluding Coovul Cheruvu Ghant	70			200	14000	15000	Proposed to be transferred to Local Funds. This road has been metalled throughout its length. The annual renewals are so mixed up with the repairs that it is stated to be impracticable to separate them. The present grant suffices to cover cost of the necessary repairs and also such trifling renewals, as may from time to time be necessary. If reduced an Estimate for re-metalling would soon be requisite, and so I would deprecate any reduction as I have always found the latter in time, principle the most economical.
For Coovul Cheruvu Ghant	2			10	1000		
Road from Royacholi to Raddree	10			100	1000		Proposed to be transferred to Local Funds. As far as Chitwail, about 11 miles, the road is pretty good but beyond that place it is little more than a track. It is proposed to be transferred to Local Funds.
Tullumpett to top of Rampoor Ghant	19	1	66	100	2000		
Road from Cuddapah to Bellary Road	40	6		200	8200	8200	This road turns off from the Bellary and Cuddapah road at about 3 1/2 miles from the latter place. It has never been regularly metalled, but work is done annually in removing the boulder stones as they crop up and metalling the worst portions. Several masonry works are also required.
Kazupett on last mentioned road to the Kurnool frontier near Changulmury (Road from Cuddapah to Kurnool)	24	6	110	125	3125	3125	
Cuddapah frontier near Changulmury to Bellary on Road from Kurnool to Ongole (Road from Cuddapah to Kurnool)	35	7	94	100	3650	3600	This piece of road has lately been completed but as the portion done some years ago the large stones that had been laid at the bottom, are now working up and gone a deal of work. This road has never been completed, and being over black cotton soil it is difficult to keep it passable in fact there are constant complaints about it, an Estimate of Rs 44,029 was sanctioned in G.O. No. 141 dated

List of Roads.

Length Grant Amount of
per of
mile present grant
Amount of
proposed
grant

Remarks.

Kurnool to Gawzoolapully on East
side of Nundy Canama Ghant } 57 100 5700

Nundy Canama Ghant 22 300 6600

East side of Nundy Canama
Ghant near Eastnamashetty pully } 31 6 138 100 3200

Bellary Cantonment Roads -

Supd Engineer's Office 30 Dal
Bellary
The 1st September 1868.

dated 15th January 1867 but funds have not been allotted, and as the maintenance grant is quite insufficient to keep in order an unmade road what has been already done is gradually deteriorating and unless the money is allotted soon a larger Estimate will have to be submitted.

The greater portion of this road is over black cotton soil, and has never been completed or metalled. The maintenance grant is quite insufficient as I have already stated in my letter No. 1632 of 10th September 1867 on which an Estimate for the same is called in S.O. No. 1604 of 20th May 1868.

This Ghant is unmetalled and there is a portion near the middle which cannot be made on account of a portion of the pavement ~~has~~ having slipped down. Estimate of Rs 17100 was submitted and has been sanctioned in G.O. No. 1741 dated 11th June 1867 but no funds have been allotted.

From Eastnamashetty pully to Cumlum, and the Nellore frontier the road is in fair order & material being handy the repairs can be carried out with the present grant but it would soon deteriorate if the allowance was reduced.

14660 Transferred to the Municipal Commissioners of Bellary.

A. W. C. Major &c
Superintending Engineer &c

No 2245

Superintending Engineer's Office
3^d Division - Bellary
The 21st September, 1868

From,

Residing Engineer
3^d Division

Secretary to Government
Public Works Department
Fort St. George

I have the honor to request you
will cause the following Entry
to be made in the Statement of
Receipts sent with my letter No 2156
dated 14th Instant, in continuation
of that already made in the Column
of Remarks opposite "the Muddy-
Canama Ghat".

"An Estimate amounting to Rs 100
for erecting the Road over
this Ghat was collected in G.O. No
2898 dated 7th October 1864 but funds
have not been provided".

I have the honor to be
Sir
Yours obedient Servant
A. M. S. S. S. S.
Super. Engineer 3^d Div.

Received by L. H. H.

Rs 3602/00

Recd of Rs 3602/00
for m. G.O. No 2109/68
20th April 1868.

Recd of Rs 3602/00

the day of my
17th 1868

1868.68

No. 3101.

Sup. J. Eng'g Office. 11th D^o
Madras 23. September 1868

From,

Colonel A. J. M. Boileau R.E.
Superintending Engineer 11th D^o

To,

Colonel G. A. Orr R.E.
Secretary to Government P.W.D.
Fort Saint George

Sir,

With reference to G. O. No. 1209 dated
28th April 1868 and No. 2783 dated 31st August 1868
I have the honor to forward reports from the Executive
Officers of this Division affording information
(but I am afraid not in all cases exactly
all what is required) regarding the various
lines of communication which are maintained
from Imperial Funds--

2 The Government of India
seek information:-

1st As to the cost of repairing roads

2^{ndly} Regarding the measures to reduce
the charge upon Imperial Funds
for this object--

3 It is rather difficult at the present
juncture, for the subject is in a transition state

Enclosures
7 Letters

Received by
Mr. J. M. Boileau
11th D^o

Received by
Mr. G. A. Orr
11th D^o

Received by
Mr. G. A. Orr
11th D^o

Received by
Mr. G. A. Orr
11th D^o

Received by
Mr. G. A. Orr
11th D^o

Received by
Mr. G. A. Orr
11th D^o

Received by
Mr. G. A. Orr
11th D^o

Received by
Mr. G. A. Orr
11th D^o

to say precisely which are the Imperial Roads in this Division, but at any rate the following will, always, I suppose, remain Imperial, and the information given as regards these, will, no doubt, suffice.

- 1 Trunk Road N^o. I. Madras towards Bangalore. — 12 1/2
- 2 do N^o. VI Madras towards Calcutta. — 35
- 3 do N^o. VIII Madras towards Trichinopoly. — 58
- 4 do N^o. X Arcot to Chittoor and Mysore. — 30
- 5 do N^o. XI Chittoor to Cuddapah frontier. — 30

As you are aware, since the abolition of the Road Department most of these lines, short as they are, have fallen into the charge of several Officers, each having a section, so that some diversity of system may be found to obtain in their general management, and in the remarks offered on the questions put.

The following tabular Statements are framed from the reports of the Range Officers, no particulars are given as regards the sections in Municipal Limits

Trunk Road N^o. I.

Trunk Road N^o. I

Sections	Length	In what Range	Maintenance	Metalling		Traffic	General Observations
				Width	Depth		
N ^o . 1	5	Municipal Limits	Not known	Not known			The maintenance averaging about 450 Rupees is of course distributed in large proportion in the neighbourhood of Madras, where the traffic is heaviest and the greatest width is kept up. Metalling is very distant. Deduction already twice made in allowance for up steep descent allowance barely sufficient. Metalling is insufficient; it is too much for one cart and too much for two.
N ^o . 2	50	N ^o . 3 Madras Dist.	23,090	6 yards 5 do 4 do	6 inches	Carts 2000 500	
N ^o . 3	21	Madras Dist. N. Arcot Dist.	30,45	6 yards	5 inches	Not given	
N ^o . 4	17 1/2	Madras Dist. N. Arcot Dist.	32,69	6		Chiefly repaired with gravel	The traffic is limited and the Range Officer recommends that the portion in his limits be made local but I cannot support his recommendation, for the line is essentially Imperial and moreover the local funds are already greatly overburdened. The road runs by the side of the Railway for a great part of its length in this section.
Total			31,004				

Sections	Length	In what Range	Maintenance	Metalling Width	Depth	Profile	General Observations
1	5	Municipal Limits	Not Known	Not Known			
2	28	No. 1 Madras Dist.	11030	6 yds	4 inches	Curbs 900	Estimated based on nothing of repairing and improving the road for uninterrupted traffic for mail carts. in the No reduction in the thought of unless the road be only widened to 17 yards instead of 8 yards.
1	4	Municipal Limits	Not Known	Not Known			Mail Road No. VIII Madras towards Trichinopoly, as far as Street Frontier
2	8	No. 2 Range Madras Dist.	10269	Average 11 yds	4 inches	Not given	Mail Road to Pondicherry and Cuddalore. This section connects Madras with the Military Comdants of Saint Thomas, Mount and Palawan and the traffic is great. Native carriage road in middle two granite setts. Some reduction may be made after this line has been converted into a granite metalled line. It may then stand at 1000 feet per mile. No railway in this direction. 88671 feet of broken stone, 30,365,000 lbs of gravel was annually quarried 2 to 4 miles off. Road all of granite metalling. The maintenance cannot be reduced. Ready carts are made to make the carriage suffer. Water in dry weather was to be brought at least a long distance.
3	27	No. 3 Range do do		8 yds	4 inches	Curbs 900	
1	19	No. 4 Range do do	6000	5 yds	4 1/2 inches	Refund as granted quite inadequate, and deteriorating. 1300000 lbs of gravel estimated for 10 years. will be submitted soon.	

Sections	Length	In what Range	Maintenance	Metalling Width	Depth	Profile	General Observations
1	5 1/2	North Arcot District Mullayark Range	972	6 yds	Curbs Not given		Metalled with broken granite. Renewals cannot be undertaken with present grant. Some abatement may be made in depth of coating of granite, but it would be unwise to reduce the width of metalling.
1	62	Chittoor Range	10,730	4 yds	4 inches	Not given	The allotment cannot be reduced. The width of metalled surface is too small.

Sections	Length	In what Range	Maintenance	Metalling Width	Depth	Profile	General Observations
1	11	Chittoor Range	1776	4 1/2 in.	4 1/2 in.	Not given	It has been necessary to make further reference to the Range Officer. No reduction can take place. Indeed the metalled surface should be widened to 5 yards.
2	19	Chundrayy Range	4274	4 1/2 in.	4 1/2 in.	Not given	Metalled with broken stone and gravel. Large streams remain unbridged. Recovery of 2 miles annually undertaken in addition to the maintenance in good order of whole line.

6. Hence it will be seen that the cost of maintaining our Imperial Roads varies from 1200 Rupees a mile to Rupees 70 a mile, according to circumstances of position, of traffic, of facility of procuring materials &c.

7. I have pointed out in the Column of Remarks some few instances in which reductions may be effected in the allotments for 'up-keep', but they will be very trifling, for in some sections a 12 yard width of metalling must be increased. Nothing less than 5 yards should ever be allowed. I think, simply, because anything less does not admit of the free passing each other of 2 carts.

8. The number and cost of our maintenance gangs cannot be reduced.

9. Some few diminutions of thickness of road coating may be made.

10. Broken gneiss is almost invariably in use in the Imperial Roads of this Division topped with a coating of gravel.

11. Metalling can in no case be given up altogether.

12. The most serious evil under which our Imperial Roads lie is in their too speedy transfer to Local Funds, which are wholly unequal

unequal to bear the charge, especially of course in bad seasons when there is loss of loss of Revenue and, consequently of Road Cfs.

13.

I have just been over the North West Local Fund Budget with the Collector of the District, and I find that almost the whole amount will be absorbed in maintenance, in Establishments, Tools and Plant &c., leaving but about 9000 Rupees for New Works.

14. The line it will come to this, that as was lately somewhere propounded, all new Roads and Bridges on Local Lines will have to be made out of Imperial Funds and their 'up-keep' alone provided out of Local Funds. If not, I would say in the words of the Superintending Engineer 1st Circle North West Provinces "we shall fall annually into seriously increasing difficulties and unless (the above or) some remedy be applied there must be a collapse."

I have the honor to be

Yours most obedient Servant

A. H. Vileau, Col. R.E.
Supg. Eng. S. D.

Statement of Cost of maintaining Roads in ^{h^o 4} or Chingleput Range Madras District -

Road	Length	Inability		Cost	Main	Total	Remarks
		of	Annual of	Annual	Annual		
		Annual	Annual	Annual	Annual		
Southern Link road h ^o VIII from South bank of the Palur river to Acheruak.	19	hils	2856	hils	6000	6000	

The width of road maintained on this portion of Link road h^o IV is five yards. The average number of Carts along that traverse it is up of 1200 per day. The maintenance grant per mile per annum is Rs. 31. about 26 Rupees per month. The greatest distance from which meta grants are obtained are 4 and 16 miles respectively - The grant is not sufficient for even the petty repairs which on the enormous traffic along this line requires constant attention. The renewal of any portion of the road from the maintenance grant has never been undertaken in this range in consequence of the inadequacy of the yearly grant and the condition of road is therefore annually growing worse - the top coating the latter portion of it (the second section towards Acheruak) has worn out in many places and the surface become very uneven. An estimate for the renewal of this portion was set up with my letter h^o 137 dated 5 August 1867. I do not think it would be of any use considering the large amount of traffic to give a top coating than is provided for in the above estimate. Rs. 5 3/4 inches. -

48 Range Office
Chingleput
(2. July 1868)

A. D. Leggat
Executive Engineer 48 Range

C-200000/65-68.117

1166

C-100000-857-125

From the Secretary to the Government of Madras to the Secretary to the Government of Madras, dated 11th July 1868, No. 3101.

Enclosed for the Secretary to the Government of Madras, dated 11th July 1868, No. 3101.

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Enclosed for the Secretary to the Government of Madras, dated 11th July 1868, No. 3101.

125-369575

39

2nd Range Office North Creek 28.3
Taling Chundraghery
Camp, Rangunatak
27th July 1868

125

From
The Executive Officer in charge
of 2nd Range North Creek
To
The Superintending Engineer
4th Division.

Sir,
I have the honor to acknowledge
the receipt of your Memo No 1506 dated 1st May
last, forwarding Government Proceedings calling
for a review of expenditure on Roads, maintained
from Imperial Funds, and in reply to submit the

following:
G.O. No 3405 dated 28 Nov 1867
Road from Pottum 2
to Rajalapuram
Road from Pottum
to Pottum
Road from Pottum
to Kottalapuram

Of the remainders chargeable to
Imperial Funds, I beg to submit a Report, and
detailed Statement of repairs carried out from
maintenance grant, last year, as I think a better
data could not be gone upon, to review the method
adopted.

Respectfully,
Superintending Engineer

Stationery
of Executive Officer
in 2nd Range North
Creek
Road
27th July 1868
4th Division
The Executive Officer
in charge
of 2nd Range North
Creek

Road Survey Orissa 117

Road NW from Chittoor to Cuddapah from Mile 109 to 127-19 Miles at 225 Rs per Mile Maintenance Rs 4274 sanctioned by G.O. No 1005 dated 19th June 1856.

This important Road, by which the Traffic of Cotton, Indigo, Sugar, Jaggery, gram and other commodities have been largely

exported and imported from it to Cuddapah was, up to the opening of the NW Line of Railway to Cuddapah, the main line of Traffic, and is yet extensively used. It is metalled, to the whole length, with broken stone and gravel, and is in very good order. The larger streams across Road have not as yet been bridged.

The maintenance grant is generally expended in re-creating a couple of miles of Roadway and sundry repairs throughout length, as shown below, the various nature of work and value noted, includes the wages of gangs of coolies kept up through the year.

Earth Work

Filling in corrosion of Roadway	Rs	90	6	6
Removing Dust	Rs	55	-	6
Clearing Channels	Rs	76	6	9
Repairing sides of Road	Rs	21	3	9
Levelling Road	Rs	420	6	9
<u>Metalling</u>				663 8 3
4090 Cysds Jelly	Rs	177	2	8
Carting do	Rs	93	-	-
<u>Carried over</u>		2705	8	663 8 3

Brought forward	Rs	2705	8	663 8 3
1960 Cysds Gravel	Rs	150	6	-
Carting do	Rs	106	8	-
Spreading Jelly	Rs	306	-	-
do gravel	Rs	19	10	0
Tamping	Rs	35	15	6
Purchase of Tools. Rammers Iron	Rs	27	1	-
Sundries, repairing shed	Rs	19	7	3
Wages of Ryquats & Sup ^{ts} Road/repairs	Rs	240	8	-
	Rs	4274	8	-

Road N^y branching from Road NW at 109 Mile. Posthalpet to Kuncumbady. Miles 38 $\frac{1}{2}$ Maint^{ce} spaces allotted at 100 Rs per mile Rs 3850 sanctioned by G.O. No 2395 dated 22nd December 1856

This Road branching from the 109 mile of Road NW intersects the Chendragherry Taluk and is largely used by Pilgrims coming to the shrine of

Sripully, it is daily rising in importance as to traffic since the opening of the NW Line of Railway to which a branch Road from the Sripully Railway Station metalled & opened two years ago, connects it. It calls for metalling or a grant of 50 Rupees more a mile to gravel it to a greater depth, the present average being about 3 inches. It is in pretty fair order, with a few exceptions, the whole length has neither been tunnelled nor bridged over, altho' there are numerous Rivers & streams. Since the past 3 years however, portions of the grant have been expended in the construction of Tunnels across the smaller streams which are being worked.

Revenue Eng. ...

worked up from either sides of Roadway - the most important being taken in hand first -

The work carried out last year is given

below. -

Earth Work

Filling up pits Corrasion	Rs 361 10 =
Leveling Road	507 14 6
Clearing Channels	318 4 3
Sectioning Road	323 4 9
	1511 16 2

Gravelling &c

67 Cys of broken Lelly used over Tunnels	17 1 6
4229 3 Cys gravel, including Cartage	799 3 6
900 do sand	12 14 3
Spreading gravel above	81 2 1 1/2
Water Cart	9
Lamping	32 3 6
	951 8 10 1/2

Masonry

Construction of Tunnels & repair of Road	
Walls	951 4 1
Purchase of Tools	52 1 6
Wages of Pyguts	380 13 = 1384 2 7

Rs 3846 13 =

Road No 13 from Nuggery to Cuddapah 38 1/2 miles at 50 Rs per Mile - The Road has not been completely formed

for about 8 miles towards the latter portion, leading into Cuddapah District; but, simply traced thro the jungles of Balapally and Namadur. A new set of tunnels were originally constructed, of these, some were foundations

foundations laid; others built up to height of side walls and one has Arches, turned, but ^{without} spandrels - Face wall, now parapets built up; at these places the Road has been turned for traffic -

8. The system adopted with reference to this Road, in expenditure of the allotment, has been to complete such portions of Roadway formed by gravelling, and taking up, the construction of the minor Tunnels, in these portions which for the past year has been begun.

9. Earth work to some extent in the vicinity of Ballapully, where Road has not been opened, has been executed, but the allotment is too small to carry out all that the Road needs to put into order; without, there is no hindrance to Cart, Traffic. Estimates to complete Bridges, were submitted, but not sanctioned.

* Dated 18 July 1856

10. The Road runs parallel to the NW. line from Nuggery and is very much pitted and may well be called a "Railway Trench" leading as it does almost to every station from Nuggery to Cuddapah. I would suggest the maintenance grant being raised from 50 Rupees to Rupees 150 per Mile, to enable me to carry out more extensive repairs and get Road into thorough order.

11. The work done last year, is given below -

Earth

Secretary Eng. & Survey

Earthwork

4586-2½ Cys forming Roadway
and filling in Corrosion } 503.13 1½
Clearing Channels— 121 11
Leveling Road— 68 15 11
Sectioning do— 61 2 4 815.10 4½

Graveling

1327-7 Cys gravel— 99 12 3
Carting do— 92
Spreading do— 40 10 9
Water Cart— 1 8
Dumping— 23 6 256 15 8

Surfing

2090.12 Sggs Surfing— 64 8 1½
Water for do— 7 6 71 12 1½

Cutting Jangle

19537 Sg. yds Jangle— 52 11 10 52 11 10

Removing Pickety Pears

5275 12 Sggs Pickety Pears— 86 6 86 6
Tools - Iron Panniers— 28 6 7
Refixing Mats— 8 4 9 6

Masonry & Stone work

Construction of Tunnels— 454 8 5

Wages of Pyjuts in Supp Road— 177 1 4
186 8
Rs 1957 8

2^d Range Office N. Arcot

From
The Executive Officer in charge
of 2^d Range North Arcot
To The Superintending Engineer
H. Division

Pr No 3695/68
Dated 27th July 1868

At 31st July 1868
Report and detailed
Statement of repairs to 3 Roads
chargeable to Imperial Funds,
carried out from maintenance
grant last year, and of their
expenditure in reference to the
Proceedings of Madras Govt
No 1289 dated 28 April 1868.

I have the honor to be
Sir,

Your most obedient servant

J. S. S. S. S.

Executive Offr 2^d R. N. C.

H. 60

To H. A. C.
H. 30. Chittoor Range Office
Chittoor 4th May 1868

From
The Executive Engineer
Chittoor Range
To The Superintending Engineer
G. H. C.

Return of the
Rebels of the
made to
from their
Office & not
to B. O. -

Sir
In reply to Government Order No. 345
2^d instant. I have the honor to enclose a list of
roads in this range, only two of which are repaired
from Imperial Funds. They are portions of the
main roads from Madras to Bangalore, and
from Vellore to Cuddalore.

The allowance for Carriage is Rs. 182-5-0
and 201-9-7 per mile respectively for the
maintenance of a road 8 yds wide and metalled
generally for 4 yds. I do not think any reduction
can be made on these lines of important traffic
by which the railway at Chittoor (Vellore)
is largely fed and thereby an indirect return
to Government produced.

I have the honor to be
Sir
Your most Obedient Servant
J. H. C. L. 60. 4. 20
Executive Eng. Chittoor Range

1279-
From

The Spectator's Engr

Home Range

The Spectator's Engr

Address

Sir

Adverting to your endorsement
No. 506 dated 1st May 1868 and No. 3
No. 1287 dated 28th April 1868, I have
the honor to give the following in-
formation regarding the various lines
of Communication in my Range
which are maintained from Imperial
funds

Trunk Road Section from Municipal limits
No. VIII. of Madras to 12th Mile stone at
Paloveram.

This section consists of a laterite
Carriage road varying from 6 to 7
yards in breadth, and two granite
tracks for Carts, one on each side
of the Carriage Road, varying from
4 to 5 yards in breadth.

The

Enclosed a list of
roads in the British
Range with reference
to No. 506 of 12th
August

No. 369 of 1868

Dated 4th May 1868
Approved J. C. J. 1868

From
The District Engineer
of the Madras District
to the District Engineer
of the Madras District

The total breadth kept up varies from 10 to 12 yards.

I would recommend that the whole of the road be metalled with granite to a breadth of 8 yards & $\frac{1}{2}$ would not be so smooth for Spring Carriages, but it would last much longer.

The maintenance allowance for this section is Rs 10269. This will be expended as follows:-

Renewals of laterite road lineal yards 10025 at Rs 1.50 per

Cubic yard Rs ————— 4008.46.

Renewals of granite road lineal yards 9975 at Rs 1.80 per

Cubic yard Rs ————— 4144.80.

Materials and labor for patching the road at intervals

repairing Culverts &c Rs ————— 1744.12.5

Paid for work done last year Rs ————— 371.7.1

Total Rs ————— 10269.00.

This is merely the Cart track of the Trunk No. VIII which is carried outside (1 $\frac{1}{2}$ mile)

Road from Lillo to Vandalme Choultry

outside of the Containment of Saint Thomas Mount

The maintenance allowance of this portion is Rs 1990, and is spent in renewals.

The traffic on this road is very heavy.

Road from Nungambakam to Courtallur

This road is 12 miles long and is part of the old road to Bangalore. As far as Paroor (6 miles and 1285 yards) it is metalled with Laterite, after that with granite.

In time I hope that the whole of this road will be metalled with granite.

The good laterite quarries in the neighbourhood are nearly exhausted, and the traffic is rather heavy.

The maintenance allowance is Rs 5419 which is spent as follows.

Renewals of road with granite

lineal yards 4968 at Rs 1.80 per

Cubic yard Rs ————— 2778.00.0

Materials and labor for patching the road at intervals & repairing

Culverts &c Rs ————— 2641.00.0

Total Rs ————— 5419.00.0

These are merely
Carriage drives, the
traffic on which
is comparatively
slight and uncertain.

1. Road from Elphinstone
Bridge to its junction with
the road from Mowat near
the Mallory Gate.
2. Road from Elphinstone's
Bridge to Elliotts Beach.
3. Do from Mowat along Bridge
to Gundy Park.
4. Do in Gundy Park.

The lengths and maintenance
allowances are as follows.

1 - Mile 3.21199	Maintenance allowance	
	Rupers	1164.
2 - do 1.783	-	328
3 - do 0.900	-	201
4 - do 3.209	-	708.

The money is spent in slight
renewals and patching where necessary.

Asst Engrs Office
The Mowat
18 May 1868

I have the honor to be
Sir

Your most Obedt Servant

J. Howard Lieutenant
Asst Engr. Mowat Range

no 3695/68

From
The Assistant Engr.
Mowat Range.
To The Supy Engineer
4 D. Kendras.

Dated 18th
Recd
Dec 19th 1868
J.H. 27/1868

For information
regarding the various
series of communications
in the Mowat Range.

23
Out with other
replies as recd.
B

N^o 138

47

From

The Sub Engineer

(N^o 3 Range) Madras District

To

The Super Engineer - G. M.

Sir,

Yours N^o 506 of 10th May last

Under the recent classification of the Roads of this Range as Imperial and Local lines, those hereunder named are the only ones that now are maintained from Imperial grants

Imperial lines

N^o 1 or 11th in Trunk Road. Maintenance grant

Rs 23890.

N^o 8 or 10th in Trunk Road. Maintenance

grant Rs 14830

Quarry Roads to N^o 1 Trunk Road. Maintenance

grant Rs 1650.

Proconum Road. Maintenance in part of this

Range Rs 1171

I beg to submit the following observations regarding each, with reference to the Proceedings of Govt. which accompanied yours under acknowledgment, the sum and substance of which suggests a further reduction of the maintenance Imperial grants.

1. N^o 1 Trunk Road - This line is 50 Chukis in length and is divided into three sections as regards its maintenance that is to say, commencing from Chodva the 1st section for 12 Chukis is maintained 6 yds in width the 2nd section for 24 Chukis 5 yds in width, and the 3rd section for 14 Chukis the extreme western for 4 yds in width - The traffic on this Road

as was taken last year, indicated 1025 carts from
decem, increasing from nearly 500 on 3rd section to nearly
2000 on 1st section, for decem -

The general depth of metaling maintained is 4¹/₂ inches.
The great distance generally of the quarries is a
supply this line, make metaling on expensive terms.
on the 1st section, the distance is from 5 to 12 miles,
on 2nd section 1 to 7 miles, on 3rd section 3
to 8 miles -

The maintenance ground of this line does not permit
of any reduction, as already, it has been twice
clipped and reduced to a starvation rate. The
proximity of the Railway was made. The grounds, for
such reduction, but they to state that the Railway
has not effected the cart traffic of the line, and
will it, since landowners must find employment
for their servants & cattle, when cultivation
is stayed, and it is cheaper to them to employ
their own carriage, since some to them is not
money apparently -

As shown above the quarries are so far distant
that the metal is very costly, and I am raising
from experience that the present grant barely
suffices whenever practicable, I am obliged ad-
ready to reduce the depth of metaling, in order
to make ends meet and considering also that
the masonry works of the line have to be
tended, to out of the same grant, and ponds and
water carts maintained in the dry months, the
distribution of the grant yearly to the best
advantage, is already a difficult operation -

II. N^o 8 Trunk Road. - This line is 24 miles
in length, and being a road some is maintained
at one uniform width of 6 ft of metaling, at
4¹/₂ inches depth - The traffic on this line

taken last year showed 801 carts daily, ranging
from about 600 at the Phungles end, to 1000
and more at the Chadrach end.

The distance of quarries on this line is very
uniform averaging from 2 miles the nearest,
to 4 miles the farthest. - But notwithstanding
this advantage, the cost of the metaling is greater, since
it is all granite requiring large rates both in
quarrying and laying, than does laterite. The
difference of rate is almost 50 per cent over the
laterite.

I cannot at present see any method for reduc-
ing this grant as it is already low enough, and
I find much difficulty in making it serve all
purposes yearly. The depth of metaling has
been reduced, in some cases too to make the
funds run as far as possible. In the dry
months the cost of maintenance is very heavy,
as water carts have to be kept up on every mile
and ponds maintained and the masonry works
have also to be looked to from the same means.

III. Quarry Roads to C^o's Road. These need
no particular notice, and the grant must be
left intact, as very much remains to be done,
to complete the lines. Several large culverts,
which cannot be deferred longer, are needed,
and these are being put in gradually. There
is no intention of bridging each line wholly, but
only the more important crossings are above
referred to, as requiring culverts -

IV. Arcanum Road - Under the interpretation
given to "Imperial Lines" by the Government
of India this line must from next year
be transferred to local maintenance. But
it should first be completed. It will be
remembered that half this road width was given
up for the Tramway. Really two thirds

width was taken for what was left of the Road,
and Bulverts, scarcely permitted a cart passing.
most of the Bulverts have been widened, with in
the last two years, and the Road, likewise, but to
some extent been widened also, but much remains
yet to be done. The Tramway Company are
excavating for forming their embankments in the
just a 1 1/2 foot of the Road, banks at the 1 1/2 ft. wall.
of widening is an expensive item now -

2 Generally with reference to the Trunk Roads
I wish to submit that the depth of metaling cannot
be reduced, below 1 1/2 inches, as the traffic is heavy,
every fourth and fifth year, a renewal of the metal
is necessary, without the above depth of metal, and
the maintenance grants do not permit of that
renewal at those intervals -

The width of metalled surface cannot be reduced
either particularly on No 1 Road, where 2
considered already insufficient, on the 3 section
4 yards is too much for 1 cart & not enough for two,
and consequently the carts keep on one track
in the centre and destroy that portion very
fast - on heavy lanes, this short width is a
mistake, and the roadway ought to be formed
of two carts running freely. I have been
endeavouring to see how I could well manage
to pay the extra width by degrees, without asking
for supplemental grants - on No 2 Road also, as
I find I cannot make the maintenance cover
as it ought, I was thinking of asking for reduction
the width wht.

It will be seen therefore that the grants of the
two Trunk lanes, must remain intact, if their
efficiency is not to be diminished, and that
maintained in good and creditable repair -

The cost of labor and material is not what it was,
when the present maintenance was computed,
and increases the working cost at the present
time, which must be borne in mind -

I consider the Trunk Roads very important
lanes, and as such must be maintained as
metalled lanes. - Broken Stone is used, on both
lanes, not "Kunkur" -

The "working cost, Establishment" for
constantly/regularly attending to the general
repairs costs about 4 Rs. per mile per annum,
on the average - The material used, in those
repairs cannot be averaged exactly as the
cost not only depends on the distance of
quarrying of each mile, but to the state of the mile,
for after the first year after recoasting, the
ratio of repairs, increases year by year, very
greatly and on the fifth year, it is almost
as well to renew the metal wholly over the whole
mile - an average calculated, for three years
gives from 10 to 24 Rupees per mile per
annum for labor and material, for repairs
above referred to.

3 It has been my endeavour since I joined
the Range, to obtain accurate data, in the matter
now under reference, and accordingly Station
books are kept up, which show the working
of each mile, every day in the year. It is too soon
to deduce any calculations therefrom, that can be
of value, but I hope some day to lay the matter
before you -

I have the honor to be
Sir
your most obedt servant

1st 3 Range Office
Dronamallee
8th July 1868

W. C. C. C.
Sub Eng. N. 3 Range Chudra S. S.

N^o. 526 *Draw* *Camp Ruttian 2 July 1868*
N^o. 1 Range Office
The Assistant Engineer 54
In charge N^o. 1 Range
Colonel A. J. M. Baidan R.E.
Superintending Engineer to B^o.

With reference to the Proceedings of Government
 N^o. 1289 dated 28th April 1868 and your Memo N^o. 306 and
 Enlosure 1526 dated 1st May and 29th June respectively. I have the
 Statement honor to enclose a statement of cost of maintaining
 Imperial roads in N^o. 1 Range of the Madras District
 and to report that neither the thickness or breadth of
 metalling can be reduced but on the contrary it has been
 found necessary to widen trunk road N^o. 6 for road
 which traffic from eight to fifteen feet to twenty
 four and eight feet.

The cost of maintaining will in consequence
 have to be raised from Rs. 400 to Rs. 600 per mile

As the ordinary coat of metal, to roads in
 this District, is 4 1/2 inches in thickness and never more
 than 6 inches, it is generally found necessary to reform
 trunk roads, with an average traffic of 650 carts a day,
 with metal, about every five or six years

53

29, 9336/1

1/2336
Draw
The Assistant Engineer
In charge N^o. 1 Range
Superintending Engineer
N^o. 1 Range
Madras District
Cost of maintaining Imperial Roads
N^o. 1 Range of the Madras
District
Attest
22 July 1868
Done

The Estimate cost of re installing the road No 6 is Rupees 71443 and the present annual Maintenance Rupees 11030 which is insufficient and will not admit of more than two miles being renewed yearly as the whole amount is required for repairs

I have the honor to be

Yours most Obedt Servt

H. J. Goodchap Assistant Engineer

In Charge No 1 Range

Report on the state of the roads in the Hallajah Taluq of the Hallajah Range of North Arcot District, called for in Proceeding of Government No 1289 dated 28th April 1868. Received with your Endorsement No 506 dated 1st May 1868.

Trunk Road No 1 or the Great Western Trunk Road, from Chaddas District frontier to the junction of Palat and Pomey Rivers at Tengal 21 miles. Surface Metalled with stone Jelly with gravel, and sand over it. Width 6 yards. Metalled.

Average thickness of metal at present 5 inches. Renewals impossible with present Repair Estimate. Rupees 183-9-7 per mile.

Trunk Road No 10 from Ramneepett to Pomey River at Truchlum 5 1/2 miles. Surface Metalled with stone Jelly with gravel and sand over it. 6 yards wide. Average thickness of metal at present 6 inches. Renewals impossible with present repair Estimate Rs 176-11-7 3/4 per mile.

Road from Arconum Railway Station to Polur 9 miles. Surface 5 yards wide. Gravelled 4 yards. Average thickness of gravel at present 5 inches. Renewals impossible with present Repair Estimate Rupees 203-11-8 per mile

1st Over leaf Statement No 1 will show at a glance. I hope the materials and Labor required to keep the above mentioned roads in fair working order. Coolies are only one man and one woman per day per mile for 300 days annually, with a lower number it would be impossible to keep all in working order, as the man and woman has to fill up all ruts and holes as soon as formed, water and keep the roads surface level also both side channels clear where required, this system has answered well during the last six years, and may be continued as the most satisfactory economical and suitable method of roads repair for Bullock traffic. Statement No 2 is merely an abstract of No 1.

2nd No reductions should be made in the number of Gang Coolies. The thickness of metal should be carefully attended to and kept up the width of surface should not be diminished on any account under 6 yards. Broken stone is only used on the two great Trunk Roads its cost is the lowest gravel roads stand well only where light traffic, also light horse roads so where stone jelly can be had at a moderate cost the economy in using it need not be questioned.

3rd Rupees 564-9- is shown for repairing masonry works on the Arconum.

From The Assistant Engineer

In Charge No 1 Range

The Superintendent Engineer

No 369/68 4. Arconum

Dated 2nd July 1868

Forwarded to the Superintendent Engineer

of cost of maintaining road

roads in No 1 or District

Range Hallajah District

From the
2d of Feb 1861.

Statement of Lacout & Materials for the maintenance of Imperial Roads.

[illegible]

The above calculations is made on the supposition that the amount deducted by the Controller for City Civil Establishment will be returned to meet the cost of August to mid. G. O. No 1093 dated 4th April 1888.

12.

Statement of cost of maintaining roads in c. No. 101 - Valley and Range of c. North West District
 1st Division Public Works Department.

Road.	Length.	Quantity of annual filling, gravel & sand, annual renewal, annual renewals - once.	Total
Trunk Road No. 1 from 53½ to 75½ mile.	21	5470½	3844 3844
No. 2 from 70¾ to 75½ mile.	5½	1482	972 972
Arconum Road as far as Polut	9	1781½	1833 1833
Total	"	"	6649

Ha Allahyiah Range Officer
 Ranneespet 20th July 1888.

to the amount of \$108
From

Hallajah Range Office
Rannapett 20th July 1868.

Conductor, D Booth Supervisor,
In charge Hallajah Range of A
The Superintending Engineer,
1st Division
Madras.

With reference to the Proceedings
of Government No 1289 dated 28th April 1868, re-
ceived with your Endorsement No 596 dated 1st
May 1868 and your reminder No 1526 dated 29
June 1868, I most respectfully beg to attach
the statement called for. I hope it is what
you require. I am really sorry for the delay
which was caused by a misconception that
the short length of all those roads in Hal-
lahah and your personal knowledge of the
system of repair rendered any report
from me unnecessary. However since the
receipt of your reminder all that is
possible has been done to make the state-
ment now forwarded worth having.

To avoid delay and reminders when
replies are absolutely necessary. In lieu of
your present Endorsement (for information
and guidance) be pleased to enter, reply
awaited this will remove all doubts.

I beg to Remain,

Ser.

Your Most Obedt Servant
D Booth Supervisor,
In charge Hallajah Range of A

North West District.

Mr. MacGregor Range

Statement of

Salaries & Materials

for the maintenance

of Imperial Roads

in the Hallajah Range
of A.

msm

Sleeping Kings Office, 5th Dr.,
Sawberry Way 23rd July/8

N^o 73

From

*The Superintending Engineer,
5th Division.*

7

The Secretary to Government
Department of Public Works

See,

With reference to the order of Government of the 28th of April N^o 1289 I have the honor to state that the following are the Imperial roads, in the South Arcot District, with their lengths, and the amounts of their maintenance allowances:—

Maintenance Allowances.	miles	Rupers
Trunk Road. No 8 / Madras to Trichinopoly	91	18,200
Trunk Road. No 9 / Madras to Combaconum	62	6,200.
Cuddalore to Salem frontier by Tiruchellam	68	7,900.
Cuddalore to — do — by Volundoorpet	65	9,750
Mercaunum / salt pans / Salem frontier	91	10,100
Tindivanam to Cuddalore by Pondicherry	29	5,800
Cuddalore to the Coleroon —————	28	4,200
Porto Novo to Trunk Road. No 9 —————	16	3,200

2 The highest maintenance allowance is at the rate of 200 rupees a mile, and several of the roads have only 100 rupees a mile

12h. 3695/68

North Street District

Chas. W. Halliday & Co.

From,

Charles D. Douthett

On Church Village at Dorchester
Oct 10

20.

The Liberty Bell

4th Division

Kindred
O. S. S. S.

Recd N. July 1888

4/108

One of the best

[Handwritten signature]

My dear Mr. Whitcomb

Call for it your endorsement.

4506 and remainder of 1526

Adm'd 1st May and 29 June

1868 *unpublished* & *unseen* all

Will be found correct.

27th Nov 1892 at 11.66.

mile. Experience having shewn the inadequacy of the latter rate for keeping up a road, except under very favorable circumstances, the rate has been increased on some of the roads to 150 rupees a mile. The pay of the establishments, cost of renewing and repairing the surface, repairing bridges, clearing channels, and maintaining the avenues are all defrayed from the annual maintenance allowances.

3 As a rule, the surface is formed with gravel, or broken stone, for a breadth of 6 yards. In some cases, the breadth is only 4 yards, and some portions of the coast road from Cuddalore to the Coleroon and Trunk Road No 9 are not gravelled at all. Embankments of black soil should always be gravelled to their full width.

4 Trunk road No 8

This road has been formed with gravel or broken stone for the whole distance of 91 miles in South Arcot. The traffic on it, in the 2nd range, is about 450 carts a day, and in the first range, 400 carts.

The

The number is somewhat less in the 3rd and 4th Ranges.

5 The allowance for the 26 miles in the second range is 5,200 rupees, of which, Rs. 2,338 have, on the average, to be paid for the collection and cartage of metal, leaving a balance of Rs. 2,862 or Rs. 110 a mile to keep the road in good repair for the year.

6 The following is the detailed estimate of expenditure on the 27 miles in the 3rd range during 1868-69.

4,350 Cys of gravel averaging Rs 1-1-6 to and 4-6 per Cys according to distance including quarrying and carting, quantity for each mile - from 65 to 215 cys according to its requirements	2,153 4 1
500 cys of sand	102 9 8
7,102 square yards of turfing	147 15 4
4,341 Cys of earth work	271 5 "
repairs to drains and road drains	60 7 "
1 Payquid for 12 months	180 "
4 Head coolies	240 "
28 Coolies at 2 annas a day	1260 "
35 coolies at 1 1/4 annas a day	984 6 "
Total rupees	5,400 "

No

No reduction can be made in the allowance for this road, unless it be in the portion in the fourth range nineteen miles in length, for which 150 rupees a mile may suffice.

Trunk Road No 9

This leaves Trunk Road No 8 near Vicerandy and goes by Punrooty to the Vellur Annicut to the Lower Coleroon Annicut. The portion North of the Pooniar will be gravelled by the end of the year. Between the Pooniar & Guddilum, the road is only partially gravelled and South of the Guddilum, to the crossing of the road from Guddalore to Tirdachellam, the soil is good and the road is not gravelled. It is then gravelled to nine miles South of the Vellur Annicut and bridge, and the rest of the way the soil is tolerable. The allowance of 100 rupees a mile is not sufficient for keeping this road in good order. The gravel has to be carted to every mile, and costs on an average one rupee a cubic yard. The portion North and South of the Vellur.

would

would be quite impassable if not gravelled.
8 Guddalore to Salem frontier by Tirdachellam. This road is in very good order as far as Tirdachellam, but from that place, to the Salem frontier is very bad. It passes over a great deal of bad soil and requires to be regravelled. The allowance is at the rate of 150 rupees a mile for the first 22 miles, and 100 rupees for the rest. The saving from Trunk Road No 8 might be transferred to this road.

9 Guddalore to the Salem frontier by Oolundoorpet. From Guddalore to Trunk Road No 8 is in the first Range and the condition of this portion is deteriorating or its allowance of 150 rupees a mile. The gravel has to be brought across the sandy bed of the Guddilum, a distance of six or seven miles. The traffic is very heavy and the gravel is rapidly worn away.

From Oolundoorpet to the Salem frontier the gravel is obtained more easily and the traffic is somewhat less, but great difficulty is experienced in keeping up the road on 150 rupees a mile.

The

10 The Estimate for these 37 miles for 1868/69 is subjoined:—

6560 cubic yards of gravel or pitsoil from 50 to 230 yards per mile at prices from 2 annas to 8 annas of price	1892 5 6
952½ Cuds of earth work	122 6
8 tunnels constructing and repairing	380
1 Pygmy for 12 months	180
6 Head Coolies	360
35 Coolies at 2 annas a day	1575
37 Coolies at 1¼ annas a day	1040 10
	<u>5550</u>

11 Mercanum (Salt pans) to the Salem frontier.

From Mercanum as far as Tindivanam, 20 miles, the allowance is at the rate of 150 rupees a mile, or Rupees 3000 per annum; of which Rupees 1320 have, on the average, to be paid for the collection and cartage of gravel, leaving Rupees 1680, or Rupees 84 per mile, for keeping up the road. The traffic is 350 carts a day, chiefly salt. The continuation of this road from Tindivanam to the Salem frontier, 71 miles in length, has a maintenance grant of 7100

rupees, at the rate of 100 rupees a mile. Traffic 250 carts daily. The road is in fair order, but 100 rupees a mile is scarcely sufficient to keep it up.

12 Tindivanam to Buddalore by Pondicherry.

This road is gravelled throughout. The traffic on it is quite as heavy as on Trunk Road No 8, about 450 or 500 carts a day, besides the mails and quick passenger traffic. No reduction could be made in the allowance. The gravel has to be carted to every mile, and to some parts, from a great distance.

13 Buddalore to the Coleroon.

This is a continuation of the last road. It has been gravelled to the eleventh mile-stone from Buddalore. Beyond that, no gravel is to be obtained, except at too great a cost, and the surface is formed with clay and sand. The allowance of 150 rupees a mile is the best that the road can be kept up on.

14 Porto Novo to Trunk Road No 9.

This is a useful road, 16 miles in length, with much traffic. Gravel can be procured for

for only five miles. The rest is repaired either with clay or sand. The allowance is 200 rupees a mile. It might be reduced to 150 rupees, but the gravelled portions will then get out of repair.

Roads at Bangalore.

¹⁵ The number of miles of road maintained is eighteen, exclusive of those in the Fort. The annual amount sanctioned is Rupees 6670 of which Rupees 5250 are granted to a Contractor for the maintenance of the roads, the balance being available for Fort roads special repairs &c. The Contractor is bound to keep up an average of 4 inches of metal, to renew any portion broken up, within 48 hours, to keep clear the sides of roads, drains &c. and repair the tunnels. The roads have to be kept in better order, than is necessary at a distance from a station, and it does not appear that any reduction can be made.

I have not received yet any details ¹⁶ from the Salem Ranges, and I will report separately on the Salem roads.

As regards the suggestions for ¹⁷ diminishing the cost of road repairs, I

I have to state they have all been acted on, as far as possible, in South street.

The thickness of gravel, on most of the roads, is already too little, but the thickness should depend not only on the amount of traffic, but on the nature of the soil below. Nine inches of gravel are not too much on some black soil embankments. The breadth of gravelling has been reduced, in some cases, from 18 to 12 feet, but the result is not always satisfactory, and where gravel cannot be procured, except at a disproportionate cost, the surface of the road is formed with sand and clay. Broken stone is used on most of the Salem roads, and on parts of Trunk road N^o 8 in South street, but gravel of good quantity is to be preferred, unless the traffic is very heavy.

¹⁸ I am unable to recommend that any of the Imperial roads in South street should be transferred to the Local Fund at present, as the demands on that fund are already as heavy as it can bear. Many new roads have yet to be made, and the cost of maintaining those already

fo already made is increasing every year.
ei The expenditure on roads in this 19
is district has increased immensely since
r the date of the Public Works Commissioners'
p Report, when the amount was £69, but
at that time, there were no roads, and
th now there are nearly one thousand
is miles of very fair road. The present
th prosperous condition of the agricultural
p population must be attributed, in a
to great measure, to the number and
th excellence of the roads, which enable the
o ryots to carry the produce of their fields,
to wherever they can get the best price for
it.

I have the honor to be
Sir,
Your most obedient servant
Edwd Lt Colonel R.R.
Superintending Engineer, 5th Div.

P.B. 1368
 Pro. of Civil Engineer
 No. 280

From
 The Superintg. Engineer
 5th Division.

To
 The Secretary to Govt
 D. P. W. B.
 Dated 23rd July 1868
 Received 28th

Reporting on each of the
 Imperial Roads, in South
 West and Bangalore,
 agreeably to G. O. No 1289
 of 10th April 68
 Nos 83, 484, 125 June 1868

Atty

C. 2nd 222/68 R. 11

No 140

Supg Engr's office, 5th Div,
 Salem, 23rd Oct 1868

From
 The Superintg. Engineer,
 5th Division.

To
 The Secretary to Government
 D. P. W. B.

Sir
 With reference to the order
 of Government of the 28th of
 April No 1289 and in
 continuation of my letter of the
 23rd of July No 73, I have the
 honor to forward a report on
 the state of the Imperial roads
 in the Salem District.

Their lengths, and present main-
 tenance allowances, are as follows.

High Road No 1 from Vanienbadu		
to the Mysore frontier	miles	Rs.
near Ossor.	68	10,200
No 2 from do to the		
Coimbatore frontier at		
Shonany	120	12,000
Road from Ossor to Idaman.		
Cottah	54	4,050

Road from Salem to Trichinopoly
(as far as district boundary) 40 10000
Road from Salem to Vuddalur
(as far as district boundary) 42 6000

I have lately recommended that the grants for the third and fifth roads in the list be increased to Rupees 5400 and Rs. 8400 respectively, and that the grant of the fourth road be reduced to 6000 rupees.

Trunk Road No. 1. This road has been bridged throughout, and the chief masonry works are in good order except the Kallakandy bridge, which was washed away two years ago, and is now being reconstructed. Many of the parapet walls of the small cuttings are in need of repair, and three long parapet walls along tank bunds will have to be partially rebuilt. The road surface is in good order as a rule, but about eight miles

are bad and are being retolled. About one seventh of the whole length of road requires to be thoroughly repaired each year, besides petty repairs to every mile. The maintenance allowance (which has been reduced since the opening of the railway) is just sufficient to keep this road in repair.

Trunk Road No. 5. The principal streamers on this road are unbridged, and many of the miles are repaired with an inferior description of gravel. The road is however in fair order and can be kept up on its present allowance.

Road from Ottom to Adamancottah. This road is in worse order than any of the Apperall roads in the district; the allowance of 75 rupees is insufficient for carrying out the necessary repairs, and an application has recently been made

made for an allowance of 100
rupees a mile. The road has
been bridged throughout, but
the masonry work is not good
and many of the culverts will
have to be rebuilt before long.

Road from Salem to Trichinopoly
as far as the district boundary

This road has been bridged
and metalled throughout, but
some portions are very uneven
owing to large stones having
been laid down under the
metalling. These are being
gradually taken up. The
traffic on this road has been
diminished by the opening of
the railway from Erode to
Trichinopoly, and the present
maintenance allowance is
more than sufficient to keep
the road in good order.

Road from Salem to Gudalur
as far as the district boundary

This road has only been partially
bridged, and the surface most
of the way has been formed with
inferior material. The traffic on
it having much increased
during the last five years, the road
gets much cut up in wet
weather. An estimate, accom-
panied by a traffic statement,
has lately been forwarded for
an increased maintenance grant.

I have the honor to be,
Sir,

Your most obt. servant

Edmond A. Col. R.E.
Supg. Engineer, 5th Div.

1364— Supr. Reg. Office 6th Feb 1868—
San Jose 6th Feb 1868—

From,
Capt. - H. F. Parker R.S.
Super Engineer 6th A =

Col. C. & Orr. D.S.
Secretary to Government.
D. R. W.

Sir,
With reference to Reminders,
No 88 of the 1st instant, I have the
honour to inform you that it will
not be possible for me to submit
the Report, in the form required by
the Government of India, on the ma-
jor lines of Communication
maintained from Imperial Ponds
immediately, as the subject involves
the preparation of complete Estimates
for the Road & miles very care-
fully made with reference to the ma-
ture of the material, promissable
& the distance it has to be conveyed
to each mile, the Estimates will be
worse than useless. —
M. L. 1. I have already

The Estimates have already
 been called for & I am inclined to
 now be sent to those officers who have
 not

Wm. Hall Esq
 of Boston
 Dear Sir
 The Secretary informs
 of the 21st of Nov

To the Secretary to
Government
S.M.

Obed 23rd }
 Dec. 26 } 1858

140

Reporting each of
the Imperial Guard in

Deben equally 647
 28.12.89 28.12.90 19.1.91

✓ No 83487-12

e-2 undervorn 68 CQ. 110

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✓

Yours most Obedt Servant
A. F. Anderson Capt 475.
Sup Engineer 6th D.

202002/6800-11

10169

[illegible]

0100 83-851.4211

Dec 31st 1880
Remd-90.345/100

1874.

the late T. J. ...

1891

D. M. B. 48

to I run from the Trichinopoly boundary
to Nagapatam.

21 miles of this Road lie to the west of Tanjore and are more or less over-taken with gravel or laterite which is to be found in the vicinity of the greater part of the Road. Much of the gravel has been worn away & requires renewal & an Estimate of Rs 4,800 is enclosed for its renewal, when this Estimate has been carried out Rs 135 per mile will be required for the maintenance of this line - it provides for the renewal of $\frac{3}{4}$ of new metal annually over the whole surface of 5 yards as follows -

183 $\frac{1}{3}$ Cys at 4 annas ————— 45-13-4
 Establt. { 1-man 4-... } 6-4-0 x 12 = 75-0-0
 { 1-boy 2-4-0 }
 Share of Ministry @ 12% 12-0-0 } 6-13-8
 { $\frac{12 \times 12}{21}$ }
 Sundries - masonry works - 7-5-0
 135-0-0

East of Sangre the length of Road
is $53 \frac{7}{10}$ miles — of this $3 \frac{5}{8}$ miles
are installed in the neighbourhood of
Sangre & for them Rs-135 per mile
as above will suffice.

6½ furlongs through the Town of Kie.
Lanungalam are installed - here
the traffic is very considerable &
1" of renewal over 6 yards will be
required the metal must be brought
from Lanjore & hence the high rate
per cubic yard of metal laid.

$1424 \times 6 \times \frac{1}{36} = 237 \frac{1}{3}$ at $R\frac{1}{2} 2\frac{1}{2} = 593 - 5.4$
 Sundries 6 - 10.8
 600 - 0.0

An Estimate is made annually for the repair of the Road according to its actual requirements, but the following may be said to be a fair estimate for the maintenance of the Road. —

Renewal of Earth or Sand - 23 -

$$\frac{1 \text{ Kaistry} - 12 \times 12}{12} = \frac{12}{110}$$

Near the Coast the Missouri Works
require replastering, & some trifling
repairs. An Estimate of Rd 680. here
with forwarded provided for them.

It is always difficult to main-
tain a sand road in good order -
The traffic along the Road East of Tan-
jore is very considerable though the
line runs tolerably near the Railway
East of Nedumangalam the country
is so rich that there is considerable
traffic between the vil-
lages which stud the Road & the
maintenance proposed above I
regard as the minimum amount
required for its proper maintenance.

Miles
 $24\frac{5}{16}$ Installed portion at Rs. 135 = 3,325.
 $\frac{13}{16}$ — — at Nedamangalam } 600.
 at Rs. 600
 49 — at Rs. 110 — 5,390.
 $74\frac{7}{16}$
 Total — 9,315.

The present allotment for this Road is Rs. 10,200.

Road No. 2 runs from the
 Grand Anicut to Annicaran chikku a
 distance of $8\frac{1}{2}$ miles. Part of the
 Road runs on Embankment, part
 over sandy soil, & part through paddy
 fields. What has been said with
 regard to the sanded portion of Road
 No. 1 is applicable to this Road &
 the Estimate of maintenance there
 given viz. Rs. 110 per mile is required
 on this Road, the traffic along which
 is considerable.

$8\frac{1}{2}$ miles at Rs. 110 — 9,075

The present allotment is Rs. 9,900

Road No. 1X — $14\frac{3}{16}$ miles of this
 Embank Road lies within the Tanjore District.
 The Road connects the Lower Anicut
 with Combarom and passes through a

rich country. the greater part is on
 Embankment which consists of
 Earth more or less mixed with sand
 a renewal of $\frac{1}{2}$ an inch of sand
 over the whole surface may be said
 to be the minimum required.

Side ridging & Sectioning con-
 stantly require attention & the following
 is a fair Estimate of the cost of main-
 tenance for one mile.

$1760 \times 6 \times \frac{1}{72} = 146\frac{2}{3}$ Sand at 9 Annas = 82.8
 $1760 \times 6 = 10,560$. Sectioning at 500 — 33
 per 100 Sq yds. —

Side ridging & Sundries — 19.8
 135 — — —

for some miles the cost of sand is
 less than 9 Annas, & for some more
 it depends upon the distance from
 which the sand has to be conveyed.
 the saving on this account effected
 on the portion of the Road near the
 River will cover the cost of main-
 taining the Roadway over the Bridge
 & across the Island as a installed
 Road with knicker obtainable from
 the River - no separate charge is
 therefore

therefore made for this item -

14 ³/₁₆ at Rs. 135 = 1915 -

The present allotment is Rs. 20,25 -

Supers' Office 6th Dec 1915
Tanjore 21st October 1915
N. T. V. at Capt. R. E.
Supers' Office 6th Dec 1915

Report on the Empirical
Roads in the Tanjore District

1915. 4/13/16

To the Secretary to Government
P. W. Department

From the Sd/- Engineer of the
6th Division dated 21st 10/10/15
1868 Jfr 747

Enclosure No. 1 in a letter

1868. P. W. D.

7
Report on the Imperial Roads
in the Trichinopoly District -

It may be generally stated
that, with the exception of Trunk Road
No. VIII, the Roads in the Trichinopoly
District have never been properly in-
stalled - the, so called, installed Roads
have in many places been installed
only for a few miles from Trichinopoly
itself and where Instal does appear
elsewhere it is instal which has
been provided from the Maintenance
Allowance and has been put on in
thin layers of such material as
has been procurable in the vicinity
of the Road, in some places the
Instal consist of gravel at others
of felspar at others of a species
of decomposed or decomposing furis
at others of gravel more or less
mixed with earth and at others -
again of small laterite -

2 — The tires of the wheels of the
ordinary Country Carts are too narrow and

and the loads are too light to admit of the consolidation of granite placed on the surface or the formation of Macadamized Roads. broken granite stone forms a good sub-stratum when well tamped or rolled but for the surface gravel or laterite is found to be the best material. great care is of course necessary to prevent these two materials from getting mixed up together, and while, therefore, a few cubic yards of stone are provided annually to fill up any hollows which may be formed in the Road's surface below the outer coating of gravel or laterite, it is the latter only which requires renewal and hence the entries in the Form I in column 3 are not really correct; it depends upon the traffic and the nature of this surface material whether $\frac{1}{2}$ " or $\frac{2}{3}$ " or 1" or more of renewal is annually required.

3 — To form really good Roads in Trichinopoly the surface should consist of 6" of stone under $1\frac{1}{2}$ " or 2" of gravel or laterite

laterite: where stone cannot be procured there is usually decomposed granite. 9" of this well laid & tamped forms a good surface.

4 — The metal is found at various distances from the lines of Road and at various depths from the surface & hence its cost varies in almost every mile. The best quarries are now known and the rates entered in the Estimates are deduced from a detailed Estimate prepared for every mile of Road.

5 — The traffic on all the Imperial lines of Road is very considerable & a width of 6 yards of metal is required on all the lines. a width of 8 yards being necessary for the portion of Trunk Road No VIII which is common to Roads 1, 2, 3 & 6. It may eventually be found necessary to increase the width of the Madras Road to 7 or 8 yards.

6 — Trunk Road No VIII. This Road is in very fair order. the average thickness of metal is about

about $4\frac{1}{2}$ ". It would be well could this be increased to $7\frac{1}{2}$ " or 9" but the metal has now become tolerably well consolidated and it is believed that the re-metalling of the Road may be indefinitely postponed - if the surface material is restored annually as provided for in the following Estimate

Estimate for one mile of Road

In Trichinopoly Taluk.

8 Cyp ^s of Stone at 1-1 Anna	8-8-0
308 - gravel at 15 Annas	288-12-0
$1\frac{1}{4}$ Man & 1 Boy - 7×12	84-0-0
Maintenance $\frac{12 \times 12}{10}$	14-6-4
Sundries	4-5-8
	<u>400-0-0</u>

Estimate for the portion in the Pambalore Taluk -

220 C ^{ts} gravel at 14 Annas	192-8-0
1 Man & $\frac{1}{2}$ boy 5×12	60-0-0
Maintenance & head coolies $\frac{48 \times 12}{36}$	16-0-0
Masonry work & Sundries	6-8-0
	<u>275-0-0</u>

10 miles at Rs 400 — 4000-0-0

36 — at Rs 275 — 9900-0-0

7 — Road from Trichinopoly to Sainje —
No 1.

13 miles of this Road lie in the Trichinopoly District - the Road is metalled partly with Stone & partly with gravel or laterite. the thickness of surface material varies from $2\frac{3}{4}$ " to 7" the Road for the most part passes through good soil & material for its repair can be procured in its neighbourhood or within 2 or 3 miles of the Road -

The following maintenance is required for the Road and it will admit of the Road being kept in good order without any special Estimate for the restoration of the metal where it is now very thin -

For one mile -

8 Cyp ^s of Stone at 15 Annas	7-8-0
220 - gravel at 8 - "	110-0-0
1 Maintenance $\frac{12 \times 12}{13}$	11-1-3
$\frac{1}{2}$ Man at Rs 4 4×12	24-0-0
1 Boy - " - 2	24-0-0
Repairs to masonry works	4-6-9

Total Rupees 180-0-0

For 13 miles - 13×180 — 2340-0-0

8 — Road No 2. — from
Trichinopoly to Salem —

This line follows the North Bank
of the Cauvery sometimes running
on the Embankment itself and
sometimes below it, but no where
more than a mile from the River.
It is, as a rule, in very good order
though the thickness of the metalling
is not more than from 3" to 4½" thick.
It may be necessary hereafter to
submit an Estimate for increasing
the thickness of the Mettal throughout
but the more urgent wants of other
Roads prevent this being done at
once and it is believed that the main-
tenance Allowance as proposed below
will serve to keep the Road in good
order for many years —

8. Cys of Stone at Rs. 1.6.0 — 11.2.0

220 — " — Gravel — " — " — 13.0.0 — 178.12.0

1. Maistry — 12 x 12 — 16.0.0

1. Man at 4 Rs. — 48.0.0

1. Boy, — " — 2 — 24.0.0

Masonry works & Sundries — 12.4.0

For 9 miles at Rs. per 290 — 290.0.0

— 29 — " — " — 250 — 2610.0.0

Total — 7250.0.0

9860.0.0

Rate in
Mussory —

The total length of the Road is 38
miles. the Mettal near Trichinopoly
has to be brought from a greater
distance than that in the Mussory
Taking and hence the reduction of
the rate for the last 29 miles from
Rs 290 to 250 per mile. —

9. — East of Trunk Road No VIII

Road No 2 is continued through the
Sringham Island to the Grand Am-
cut. This line is unmetalled & is
maintained as a Sanded Road. —
the traffic along it is very heavy &
a great part of it runs along the
North Embankment of the Cauvery. —
It would be well were these 9 miles
metalled, but Rs. 20000 would
be required to mettal it & other
more important requirements will

finish first be met — Rs 120 per

mile is now allotted for the Road

Rs is still required for its mainte-

nance. This portion of Road No 2

was omitted in the list of Imperial

Roads forwarded on the 6th July 1868.

it forms the connecting link

between No 2 in Tanjore & No 2 in

Trichinopoly.

10 — The Revenue Board have proposed that the line via Lorie to Salem should be regarded as an Imperial line and that to Caron as a local line. The latter is a main line of communication while the former is a comparatively unimportant line and is not the only line between Trichinopoly & Salem as Road No 2 connects those towns. I have therefore included No 3 as an Imperial line and have omitted the Road via Lorie.

11 — Road No 3 — from Trichinopoly to Caron — Of this Road there are 40 miles in the Trichinopoly District. The greater part of it hugs the Cany South bank & in some places passes along the top of the River embankment; except in the neighbourhood of Trichinopoly it has never been metalled but a great part of it runs through stony or gravelly soil. This Road was much cut up by the heavy carts conveying Railway plant up to Caron & along the extension beyond, before the Railway line was opened. The surface of the Road should

75
should be thoroughly reformed throughout its length & an Estimate of Rs. 41450- is submitted for its reformation when this work is carried out. Rupees 310 per mile will be required for the main maintenance of the line in the Trichinopoly

16 x 370 — Salug and Rs. 225 per mile in the Pulitatal Salug. The difference is due chiefly to the greater distance from which metal has to be brought in the former Salug. The thickness of metal at present on the Road varies from $2\frac{1}{2}$ " to $4\frac{1}{2}$ "

Estimate of Cost of repair per mile

8 Cys of Stone @ Rs 1.4	10-0-0
220 — gravel — 15	206-4-0
1 — Main & boy — 6 x 12	72-5
Maintenance & head Cooly $\frac{22 \times 12}{10}$	16-8
Repairs to masonry works & chundies	5-4
	<hr/> 310-0-0

12 — Road No 4 — from Trichinopoly to Dinidigul — 4.2 miles of this Road pass through the Trichinopoly District. The Road has never been properly metalled, it passes for the most part through a Country in which stone or gravel or decomposed rock can be obtained at no great distance from the Road. the thickness of the metal now on the Road averages only from $\frac{3}{4}$ to $2\frac{1}{4}$. The Road passes through a dry Country and it is difficult to obtain water or to repair the Road except during the monsoon or after the fall of heavy rain: the Road is in bad order and must be metalled throughout. an Estimate of Rs 30440 for metalling it is submitted when this has been carried out the Road may be maintained for Rs 6470 — as follows:

Estimate for one mile in Trichinopoly.

146 $\frac{2}{3}$ Cys of gravel at 10 annas	91-10-8
1 Man & 1 Boy at 6 x 12	72-0-0
Mainistry & head Cooly 27×12	21-9-7
Masonry works & Sundries	9-11-9

In Trichinopoly 176

146 $\frac{2}{3}$ gravel or timber at 6 annas	55-0-0
1 Man & 1 Boy at 5 x 12	60-0-0
Mainistry 12×12	11-1-3
Masonry works & Sundries	3-14-9
$15 \frac{1}{2}$ miles at Rs 195 =	3022 $\frac{1}{2}$
26 $\frac{1}{2}$ — — — 130 =	3445
	6467 $\frac{1}{2}$

13 — Only a renewal of $\frac{1}{2}$ of gravel or decomposed rock is allowed for renewal — this may have to be increased when the 12 or 14 miles, in the Madura District, which are now unformed are completed the last 8 miles of the Road in the Trichinopoly District are now under construction and will be completed in 1868/69. In Low jungle streams on this line are unbridged & a large number of forams supply the places of Bridges over many of the drainage or surplus streams which cross the line of Road — these streams are a constant source of danger to the Road as their waters are too often swollen by the breaching of tanks many

many of which are the property of
Zamin-dars and others.

14. — Road No 5 — from Trichinopoly to Madras — 44 miles
of this Road lie in the Trichinopoly District. the Country it passes through is very similar to that described above through which the Dindigul Road passes, though a part runs through soil much impregnated with soda; only about the first 8 miles of this Road have been properly metalled & there has been gradually diminishing in thickness owing to the insufficiency of the maintenance allowance to renew the gravel as fast as it has been worn away; the road is consequently in very bad order & an Estimate of Rs. 50150 is submitted for its restoration where necessary & for the renewal of the surface material elsewhere. When the Estimate has been carried out Rs. 300 per Annum per mile will be required to maintain it.

The

15. — The portion of this Road in the Tirunelveli District is in excellent order & the traffic along the line is very considerable while the material for the surface which may be obtained near the line of Road is not of very good quality & the renewal of $1\frac{1}{2}$ of gravel or decomposed rock will be required Annually.

Estimate for 1 mile.

8 cubic yards of Stone at 11 1/4 ad — 5.10.

440 — " — gravel — 7 1/4 — 199.6.

440 — " — " — 6 x 12 — 72.

Trucking & head Coolies 22 x 12 — 18.13.9

Masonry works & Sundries — 4.2.3

300 —

44 x 300 = Rs. 13200.

16. — Road No 6 — from Trichinopoly to Trunk Road No 18 near the Lower Arun at 150 miles from Madras distance 64 miles. The Road branches from Trunk Road No 18 at 34 1/2 miles from Trichinopoly its actual length is therefore 59 1/2 miles. This Road has never been metalled and is only partially bridged. it passes thro.

through soils of various nature -
5th to 15th miles sandy - here & there
interspersed with black cotton -

16, 20 & 21 - Stony & gravelly -

17 to 19 - 22 & 23 - Black cotton -

24 & 29 - gravelly -

25 to 28 - Black cotton -

30 to 32 - Hard red soil & gravel -

33 & 34 - gravel & stone -

35 to 41 - Black cotton soil -

42 to 44 - Hard red soil & gravel -

45 - Black cotton -

46 to 64 - Red soil & gravel -

The formation of the last 12 miles

of this Road is in progress & will be com-

pleted in 4 months -

17 - The first 12 miles of the Road pass

through a rich country & the traffics

considerable. Elsewhere the traffic

is not very heavy at present but is

likely to be so, as soon as the line is

completed & much traffic from South

Arcot will find its way to Trichinopoly

by this line. Where gravel or pit soil

is obtainable it will be used to form

the surface. The parts through black

cotton soil must be tamped, those through

sandy

sandy soil must be provided with
clay. Details Estimates have
been prepared for every mile & the
average of maintenance comes to
Rs 120 per mile or Rs 7140 for 59 1/2 miles
as shown in the Estimate forwarded
with the accompanying letter for main-
taining 4 1/2 miles of the Road -
18 - Except for 48 miles in the Trichi-
nopoly Tracing - there has been no main-
tenance allowance for this line & the
portion through the Perambalur Taluk
which passes for the most part through
black cotton soil & is very much
intersected by drainage streams &
which was completed in 1868 is in-
capable - It is proposed therefore
to supply 7 Road Dams, to reform the
6 miles of Road where necessary & to
gravel this portion of the Road only with
material from the 24 & 29 miles &
an Estimate of Rs 3620 for this
purpose is submitted. The Estimate
which is now nearly completed pro-
vided for no masonry works from
the 30th to the 64th mile. a few have
been put in where the line passes
in rear of tank banks & intercepts the

the passage of water to the fields but
these have been carried out chiefly
in hand - in ancient or by unpaid labor -
If the portion of the line in Pannabalu
is overhauled & Rs 120 per mile is allotted
for maintenance it will be possible
to maintain this Road in very serviceable
order. Of the large masonry works the
two over the Murthiyar & Coilemaday
have appeared in the Budget for years
& it would be well to provide them
when funds are available, but the
Murthiyar may remain unbridged
for the present. The line intersects
many drainage streams which are
for the most part shallow & have sandy
beds, they may for the present be pro-
vided with Road dams, but if the
traffic on the line proves hereafter
to be very considerable, dams for the
most difficult streams may then be
provided.

Supdys Mr 6th D^o 3
Tampre 21st Oct/68
W. H. A. Ke. Capt. R. E.
Supdys Mr 6th D^o 4

1868. P.W.D

Enclosure No. 4 in a letter

From The Supg. Engineer of the 6th
Division dated 21st October 1868
No. 747.

To The Secretary to Government
P.W. Department

No 4132/68

Report on the Imperial
Roads in the Trichinopoly
District.

No 747
Supg. Engrs Office 6th Division
Tanjore 21st October 1868
From,

Captain R. F. Oakes R.E.
Superintending Engineer 6th D.

Colonel C. F. Orr. R.E.

Secretary to Govt. D.P.W.

Sir,

With reference to G.O. No 1289,
dated 23rd April, I have the honor
to enclose Reports on the Imperial
lines of Road in the 6th Division,
& with them

Reinstating Road 1 1/2 m. from	41450-	to forward
Do - Do - 1 1/2 4 from Trichinopoly to Dindigul	33440-	the Estimates
Do - Road 1 1/2 m. from Trichi-	53150-	noted in the
no poly to Kadma		margin for
Reinstating 6 miles of the Road	3620-	restoring
from Trichinopoly to Trunk		those lines
Road 1 1/2 m. -		which stand
Reinstating Road - 1 1/2 m. work	4800-	much in need
of Tanjore		of it -
Preparing masonry works	680-	I also
on the Eastern portion of		enclose
Road 1 1/2 m. -		an Estimate

* G.O. No 1393,
of 5th May - for the maintenance of 4 1/2 miles of
Road No 6 from Trichinopoly to Trunk
Road

Road No. 14 for which no allotment
has hitherto been made though portions
of the Road have been completed for
more than 2 years.

I beg that, if possible, an allotment
of Rs 3,600 may be made this year 1868-69
for 30 miles of the Road East of the
Trichinopoly Taluk Boundary which
have been completed from 6 months
to 2 years.—

I have the honor to be

Sir,

Your Most Obedt Servt

J. P. Gates Capt. R.E.

Supr Engineer B. D.

P. W. Dept.
Public Works Department.
Pro. of Govt. Engineer
From The Supr. Engineer
B. Division

To The Secretary to Government
P. W. Department

Date 21st
Received 24 } October 1868.

No. 747

Enclosures 13

Submits (enclosed) Reports
on the Imperial lines of Road
in the Division, called for in G.O.
No. 1289 dated 23rd April.

Ans. 83-884-12 Jan 1869

No. 170

c. 2nd Dec 1868 P. W. 115

1866 D.R.M.S.

Enclosure No. 5 in a letter
 from the U.S. Engineer of the
 6th Division dated 21st March
 1866 No 747

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Statement of Cash of Maintaining Imperial Roads in the Sickingof District

No.	Name of Road.	# Days	Miles of Annual Travel	Quantity of Gravelly Material in Cubic Yards	Cost		Total	Remarks.
					Annual	Maintenance		
VIII	Trunk Road from Trichinopoly to Madras	46	5	11080	9903	3997	13900	
I	Road from Trichinopoly to Tanjore via Tirupur	13	1½	2964	1528	812	2340	
II	Do from Do towards to Salem via Musiri	38	4¾	8664	5927	3933	9860	Summated Road.
	Do from Do Eastwards to Pand Aruvit	9	"	"	"	1080	1080	
III	Do from Do to Cassam	40	5	9120	6928	3432	10360	
IV	" " to Indigul	42	2½	6160	2899	3591	6470	
V	" " to Madurai	44	7	19712	9020	4180	13200	
VI	Do from Trichinopoly to Trunk Road No 1X near the above	59½	"	"	"	7140	7140	do do
	Aruvit							
	Total						64350	

Superior
Sawyer 21st October 1883

1st Lt. Wm. S. Capt. Wm. S.
Superintendent 6-1-18

1868
J. W. D. D.

Enclosure No. 6 in a letter

From the ship Engineer of the
6th Division dated 21st October

176
8981

To The Secretary to Government.
O. W. Department.

Pr. 4132/68

1851
Natural exhibiting
the proposed and present
allotments for the Imperial
Road in the Breckinridge District

1990 1991 1992 1993

Supd Eng'g Office 6th Division
 Langjoo 21st October 1885

Supd Engineer 6th Div.
 11.7.20 Capt. R.E.
 Langjoo 21st October 1885

		Present Proposed		Savings		Remarks	
		Length		Allotment			
VIII Trunk Road from Trichinopoly to		46	14,000	13,900	100	Formerly 40 miles. now reduced to 38. the difference 2 miles being summe to 12 200	
I Road from Trichinopoly to Langjoo		13	2,275	2,340	65		
II Do from Do (Westwards to Pottan)		38	1,000	986	14		
III Do from Trichinopoly to Caron		40	840	1,036	196	Formerly 43 miles. now reduced to 42. the difference 1 mile being summe to 12 200	
IV Do from Do to Singul		42	4,300	640	2,170		
V Do from Do to Chasna		44	1,050	1,320	315		
VI Do from Do to Trich Road to 11		592	2,160	7,140	4,980	The present allotment provided for only 18 miles -	
Total		52265	64350	12325	240		

Restricting & limiting the proposed and present allotments for the Superintendant in the Trichinopoly District.

Restricting & limiting the proposed and present allotments for the Superintendant in the Langjoo District.

		Present Proposed		Savings		Remarks	
		Length		Allotment			
IX Trunk Road from Comba		14 3/4	2,025	1915	110	Formerly 13 1/2 miles, but including the bridge over the river amount the length is 14 3/4.	
I Road from Langjoo Eastwards to Pargahat		53 1/4	7,800	9,365	885	Formerly 52 miles, but the correct length is 53 1/4 miles as now measured.	
II Do - Westwards to Trichinopoly		21	2,400			Formerly 20 miles, but the correct length is 21 miles as now measured.	
Total			22125	20305	1820		

Supd Eng'g Office 6th Div.
 Langjoo 21st October 1885

Enclosure No. 3 in a letter
from the Surg. General of the
6th Division dated 21st October
1866 No. 747.
J. A. Deane Esq. to Government
J. A. Deane Esq.

Statement of Cash of Maintaining Imperial Roads in the San Jose District.

Total	20,205
-------	--------

1.77 a New Capet. R.R.
Suppl. Engg. 6. 4. Division

No 63

Supy. Engineer Office
Commo. 5th June 1868.

Colonel C. W. Walker R.E.
Superintending Engineer 7th Division
To
Colonel G. A. Orr R.E.
Secretary to Government R.E. Madras.

Enclosures
3 Road dists.
3 Skeleton Maps.

I have the honor to submit herewith 3 sheets of all communications at present classed as Imperial in the Districts of Coimbatore, Malabar, and Canara, in which I have embodied such observations and suggestions as I have to offer with reference to Ld. No. 1209 of 20th April, the form attached to which I have not been able to trace in the correspondence to which it gave cover.
2. Other statements will be forwarded in conformity with Revenue Department Order No. 1031 of 18th April, when the several Collectors with whom I have to correspond on the subject, shall have replied to my inquiries. But these statements will not fully express the views of the Supreme Government as laid down in the papers printed with the list, quoted in my first para, and reiterated in para 3 of their Proceedings printed with Ld. No. 1704 of 29th May. The simplest method of meeting the wishes of the Supreme Government would

1008 C. W. A.
Enclosure No. 2 in a letter

From the Supy. Engineer of the
6th Division to 2nd Div. Secy.
1868 No 747.

To
Secretary to Government
R.E. Madras.

7/32/68

Received of each of
Manufacturing Engineer & Co.
in the Madras District.

6
7
1008 C

be put entirely to devote local funds as far as they will go to the repair of all Roads whatever, supplementing them, when insufficient, from Imperial funds, but devoting the bulk of these latter to New Works. By so doing, however, all distinction between Imperial & District Roads would be lost, which would again be objected to on all sides. Adhering therefore to the proposal last laid down that none but Roads of Political and Military importance shall be classed as Imperial (on which basis the Statements herewith forwarded have been drawn up) it becomes a matter of necessity that the amounts of District Funds shall be increased, either by increasing the percentage of existing Taxes, or by drawing on additional sources of Road Revenue. The District Road Levies at present, I believe, levied at only half the rate authorized, which I understand takes one Rupee in the Rupee. But before directly increasing local burdens it may be as well to see how far indirect taxation by Tolls can be increased; such Tolls being levied only on works, like Carriage Chauts and Bridges, by which great natural obstacles have been overcome at a considerable cost to the public, & with corresponding benefit to the trade of the Country.

Now in Coimbatore District I find several such works, though long since perfected, still free from Tolls, such as the Hassanur Chaut, the Chiravuthy Bridge on the Madura River near Dodamulpettah, and the Bhowany Bridge at the Town of that name. All these are on Imperial Roads, and the aggregate levies of Tolls on them would suffice to defray their Imperial Maintenance. I have no reason why these works should not be taxed at once, or say

from 1st January 1869 to give time for preliminary arrangements. And in another year the New Contador Chaut, connecting the Wynad with Ootacamund, may be added to their number.

4. In Malabar, the Karkon, Tambachan, and Perik Chauts, connecting Wynad with the Coast may be tolled from the date above mentioned, with the certain result of raising sufficient funds. And I am not sure if the existing Toll at the Irity Bridge under Perambaddy Chaut in Coorg, levied at the rates prevailing on the Bridges in Coimbatore District.

5. In Coorg we have the Manjerol, Kodikul, Azoombay, and Coloor Chauts, all open for Cart traffic, still untolled, and the road below the Simpajee Chaut being freely tolled. They should more than maintain themselves, and contribute for improvement on all lines connected with them.

6. Accompanying are Skeleton Maps showing all Imperial (Military and Political) lines in Red, and District or Commercial lines in Black. Where grants from both funds are proposed in the Statements for any of the former it is because of the tolls on them which are credited to District Funds, & of the traffic requiring double the usual allotment of Rs 10 per mile, or 1 Anna per running yard, which I take to be the minimum sum (including petty establishments of Comarties, Maintries, Head Cooks, Watchmen) for which roads can be kept up in the 7th Division, except District Roads below the Coloor and

Assembly Chamber in Calcutta where half that
amount will suffice, as I have been able
for some years back to recommend large
transfers from then existing Maintenance
Allowances for completing the Bridge works
of these lines.

I have only to add that I hold it right
not only that all existing sanction for per-
fecting the Roads now proposed to be trans-
ferred from the Imperial to the District dist.
(excepting such as are about to be reported for
transfer under L.O. in the Revenue Dept.
No. 1031 of 18 April) should be worked out
from Imperial funds, but that all future esti-
mates of the same nature should be simi-
larly provided with funds, as far as our
Imperial resources will admit, and with due
reference to relative importance of each line.
I think it only fair that Roads which
are to be maintained in a state of efficiency
from District funds raised by the imposition
of tolls should be handed over to the
District dist. in a state of completeness
or under pledge of their being worked up
to that state as far as circumstances
permit.

I have the honor to be

Sir,

Your most obed. Servant

Charles Col. R.R.

P. M. 1868 Dept.
P. M. 1868 Jan 21/78

The Chief Engineer

To The Secretary to Govt

D. P. M.
Madras

No 63

Dated 6 June 1868

Recd W. B. D.

Incl: 6.

3-8-1868

Proposed revisions
in the List of Imperial
Roads in the Combeaton,
Malabar & Canara
districts -

100 83-431-12 Jan 1/69

1/171

C. 12 M. 500/18 Q. 117

Remar No. 1.

From DeLamond, by Goodwin Grant is
Goodwin

11 11 from the Mysore frontier, by the Kasaragod

— 02 — from Lathymur, by Spadbury, 50
from Lathymur, by Spadbury, 50
the Brode Railway Station, with Branch
from Chocoma, 35 to 62.

1. 50 - from Oadunulpetta, by Sharapuram and 50
62. Sharapuram to Guntur

7th - from Erodes Railway Station to Collegal and
Mysore frontier, by Bangalore Hunt } 90
8th - from Channarayana to Mysore and tota- } 50
D. A. H. P. (Poonchabae)

7 - 52 from Cross Railway Station to the fork

10 Dr. Frank road N. Δ from Waller Centurium
to Centuride also covering with Cornucop
St. John and Lombard Railway bridge

11--52-- from Dombatal, by Bulladum to Longfin--
12--51-- from Awersey, Railway Station to
Oden, Elberton, via Durbadam and

Prosperity
Mohammed Station Roads

13 Wellington Road

14 Denmar Road

15 Road from Concord to Hingham
16 do do ditto from New Bedford to

17 D. from Washington, D. C. arrived
Not arrived
 so ~~to be: *Not arrived*~~ *to be: *Not arrived**

18
 v: your family
 to Hong Kong
 The wife of Thomas G. Woods

19. *Spindle Column, in form of*
total of Imperial Grants as proposed
minus the sum in New Works

Subsiding to 1000 ft. 4. 20. 3

2573	2860	1430	Francis Macnamund and Wellington with Bayne.
------	------	------	---

2970 - 3300 - *completely saved from the period 1840 to 1860*

4,402 Estimate of the 5000 purchased in 1884 \$4057
5380. { 28,700, 1884. total worked out from this.
} Personal Funds.

10

5440 4600. Connected Empire with the Machine of God -

1

5,940	66 00	George Briggs tote built from Hospital funds and Colled.
-------	-------	--

4909	9900	Swirling, random of No. 7200 from deep end Funds still worked out.
5090	1320	Comment the public.
5090	1320	Comment the public.

[illegible]

9405-10,450 - - - - -
and the South. -
In alluvial near Political line of

84.15 7350
Communication should stoppage of
the Railway occur &

4158

4p20

Alumby selected by J. J. J. J.

3950 - 4100 and dipping? for minerals of the local kind.

1524	1760	1760
1188	1320	

Mt. Long Hills Iron Road.

Year	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	

DATE	AMOUNT	REMARKS
4/25	10.20	
		1. Amount collected for transfer
4/24	14.50	17th Local Govt.
4/25	10.20	

[illegible]

25307.	29,400.	Amount of present concerns
50,286.	20,140.	To be raised by additional Solls.
	<u>29,400.</u>	

Lept. : Sugarcrowy. 84. 3

Revenue Dept 19 & 1901

Working Communication class.
as no expenditure in the Budget
of 1898-99 with note of ac-
cisions.

Added 6th June 1898.
West.
The strong to Government
of 1898. Madras.

of
open
The Deputy Engineer
of the Division
D. N. 2/15/18

Cost of Communications classed as expenditure in the Budget of 1898-99 with note of proposed amounts.

Name of Road	Miles	Estimated Cost	Remarks
1. Road from Mangalore to Karikal. Portion of the Military road from Mangalore to Hurrepur by the Agency Grant.	32	3168	3520
2. Cotton road Grant, comprising the Cotton Grant, in fender and branches.	62	6138	3410
3. Military road, to connect Mangalore and Cannanore, having trunk Road No. II near Pan Mangalore by Villa, to head of River and Canal Communication near Hopedroog.	48	4752	5280
4. Mullathur road Grant, comprising the road diverging from the foot of the Agency Grant with branches of trunk Road No. III, and continuation from Maray on trunk road No. II to the foot of the Mungarabed Grant.	88	8712	3020
5. Road from Benthral to the Channarayana settlement Grant on the Mysore Frontier.	40	3960	4400
6. Trunk Road No. IV from Mangalore to the foot of the Mercara Grant.	42	4158	4620
7. Road from Mangalore to the Mercara Grant.	86	6534	7260
Total		37222	23540
		11330	
		25952	

Amount to be expended on New Works
Superintendent's Office of "D. N. 2"
Cannanore June 1898
D. N. 2/15/18
D. N. 2/15/18
D. N. 2/15/18

Wm. H. H. H.

the first of the year 1885
the first of the year 1885
the first of the year 1885

92

From J. M. 2/13/89

the first of the year 1885

the first of the year 1885

the first of the year 1885

the first of the year 1885

the first of the year 1885

the first of the year 1885

at 11 21/3 AM
The Supt Engineer
7th Division

The Secretary Government
O.P. W. Madras

Dated 6th June 1868
Recd.

Let of Communication
dated as Imperial in the
Budget of 1868-69 with note
of arrival.

June 12th 1868 L. S. 171.

1075
From ^{of} Superintending Engineers Office 7th
Camp Avanashipollam 26 June 1868
Colonel G. M. Walker R.E.
Superintending Engineer 7th Div.
To Colonel C. A. Orr R.E.
Secretary to Government D. D. J.

Sir,
In continuation of my letter No 63 of 6th
June 1868, I have the honor to recommend the 5 arched
bridge over the Noyel River, just south of Tirpore
Railway station, and north of the junction of its 3
approaches from Pulladum, Tonghurn, and Tharuv
pooram, as a fit place for imposition of a Toll, whether
considered with reference to the amount of public
money on it and the roads convergent at it, or with
reference to the Revenue likely to be realized.

I have the honor to be

Sir

Your most obt servant

G. M. Walker Colonel R.E.
Superintending Engineer 7th Div.

3 In the 8th Division no roads are ~~formed~~

60
C. 220. 000
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837.

Recombinado de Stachys
Chidivensis et Chapt
Rosa, que d'indica de infirm.
Recombinado de Stachys
Chidivensis et Chapt
Rosa, que d'indica de infirm.

2000/6822.11

112

Nov 83-484-1259-169

C. 22nd Decr 1882

formed, metalled, or repaired with kunkhar.
 The usual way is to raise the road with
 the soil out of the trenches, when this has
 sufficiently consolidated, a foundation
 of broken stone is laid down, over which
 gravel is put to a thickness of between 6
 and 8 inches according to the traffic.
 Where it is found that metal is very often
 10 to 12 inches, and in some cases 20
 inches in the N. W. Provinces.

4 Again returning to the report which
 accompanies the above quoted C.O., I
 see a very large item for renewals as
 if the roads were allowed to completely
 fall into disrepair and that annually
 sums were allowed on each line for the
 remaking; this is not the case here but
 when the line is once made only a certain
 sum is allowed annually on which the road
 ought to be renewed and worn out.

5 I will take for example the cost of
 maintenance on the great Trunk road from
 Pichinopoly to Madura and Tiruvellly. The
 allowance given in the Madura District is Rs 281 1/4
 and is thus expended -

| | |
|-------------------------|-------------|
| 120 Cys of Broken Stone | 120 |
| 80 Cys of Gravel | 60 |
| 12 Mule Coolies | 84 |
| Superintendence | 17-4 |
| | <hr/> 281-4 |

96 The roads when originally made was
 8 yards in width with kunkhar metalled
 with a depth of 9 inches. The metal consist-
 ing of laterite, splable felspar in the cotton
 soil covered over by gravel and all well
 rolled or tamped.

The wear and tear of this road
 averages from 4" to 6" in depth the daily
 traffic being over 500 bandies. The road
 chiefly requires repairs on the bandy tracks
 so that the amount of metal resolves itself
 into 1760 yards $\times \frac{1}{3} \times \frac{1}{6} \times 2 = 195 \text{ yds}$ nearly.
 This the mule Coolies (one allowed for every
 mile) put down in the tracks and at other
 times are employed, spaining and turning
 the slopes, keeping the drains clear, spreading
 a thin coat of sand over the road, filling
 up the holes &c.

6 I have given this road as an example
 to show the details of the large allowance
 of Rs 281 a mile, but it is the only
 road in the district and only a portion
 of it that has so large an allowance, all
 other imperial roads having different sums
 allowed in proportion to the traffic from a
 Rs 281 down as low as Rs 75.

7 I do not myself approve of the system
 of

of mile Coolies and have abolished them
all over the Division with the exception of
the 1st Range in Madurai. Here they
answer, as the Range is compact and they
are continually being looked after, but
in most divisions I have found as a
rule that they receive their pay and use
the tools and labor in cultivation of land
in their own villages, instead of laboring
on the roads.

8. I hope however in the next budget to cut
down the maintenance allowances considerably.

9. The first cost of roads appear to me
also to be excessive as a 1st Class road costs
from 3000 to 4000 a mile including the
outlay for all drains, bridges under Rs 200.

I hope also to cut down this to a very con-
siderable extent more especially on the
local roads as it is much better to have
several 2nd or 3rd Class roads than one
1st Class one, when we are restricted to
a certain amount of Capital.

10. In the local roads I propose to
diminish the width of mettal to 12 feet
and then put it only on places where
actually required. In many parts
of

of this Division miles and miles of very
fair road may be made over red soil merely
by putting a drain on the upper side, making
cross drains where required and just levelling
the surface.

11. In the 8th Division it will be seen
nearly all the principal roads (in the Madurai
District more especially) are Imperial
roads but this has been considerably altered.
After carefully going into the subject with
the Collectors of Madurai and Tirunelveli
and a report on the subject is in the course
of preparation cutting down the Imperial
lines only to those which are of importance
to traffic carried on to distant districts of
the Madras Presidency and Travancore.

12. I will now show in detail the
amount of maintenance allowed on each
Imperial road and the state of the road.

Section of Trunk Road No. IV
leading from Tiruchirappalli to the border of
Tirunelveli. length 64 miles.
Maintenance allowance Rs 16,920
expenditure on maintenance last year Rs 17,070
(The road is metalled throughout, and in
very good order)

Ammanickum

Ammanakkenoor to Madurai, length 21 miles
maintenance allowance Rs 3840.

Expenditure on maintenance last year Rs 3884-5-6

on additional repairs Rs 3029-5-6

(Total Rs 6915-5-6)
The road is gravelled throughout, and except when affected by heavy rain, has been kept in good condition.

Sayelgoody to Madurai

Maintenance allowance Rupees 4230.

Expenditure on M. in last year Rupees 4257-6-9

Section of 5 miles leading out of Madurai is a made road, kept in good order; the rest of the road is for the most part unformed; and to make it efficient, a general construction will be necessary.

Tondy via Cottampully to Dindigul
length 90 miles

Section from Tondy to Tripatore
length 40 miles: expenditure on

maintenance in last year Rs 2414-6-4

Expenditure on Construction Rs 14999-1-11

11 miles of this section have been renewed in the past year: the remaining portion is incomplete; but work of construction is in progress on estimate of Rupees 36780.

Section from Tripatore to Cottampully
length 18 miles: maintenance allowance

R.

R. 1130: expenditure in last year
on maintenance Rupees 1130

on Construction Rupees 10000

8 1/2 miles were completed in the past year; and the remaining 9 1/2 miles are incomplete but now in progress the estimate being Rupees 26500-

Section from Cottampully to Canavaypully
length 18 miles: maintenance allowance
in last year Rupees 1130

expenditure on M. Rupees 1130.

Expenditure on Construction Rupees 10000

a length of 10 miles is completed in last year; and the construction of the remaining 8 miles is in progress on estimate of Rs 33000.

Section from Canavaypully to Dindigul
length 14 miles: maintenance allowance
in last year Rupees 720

Expenditure on M. Rupees 732.

Expenditure on Construction Rs 9330-12-4

about 10 miles of this section have been completed; and an estimate of Rs 10000- has been made for constructing the remainder, which it is proposed to carry out during the current year.

Tondy via Shevaganjahn to Madurai
length 62 miles maintenance allowance

in

in last year Rupees 6220, expenditure
on D. Rupees 6219 7 5, expenditure
on Construction in last year Rs 18738 12 9.
19 miles have been reconstructed on the past
year: the remaining length of 43 miles has
been partially maintained as an unimproved
road, requiring very general renewal.
Raminad to Madurai length 68 miles.
maintenance allowance Rs 4740 -
Expenditure on D. in last year Rs 4739 12 -
only about 12 miles of this road are really
constructed and kept in good order for
the remaining 56 miles, the road in parts
approaches a proper section, at other parts
it is little more than a track worn away
by the traffic, between the avenue trees, and
for 10 miles near Raminad, it is literally
a track over black cotton soil. There are
tunnels and bridges over most of the river
channels; and nullahs, but the road way
in general requires thorough renewal.

Chirumangalam via Ammanaikanoor to
Palney the Coimbatore frontier
length 80 miles

Section from Chirumangalam to Ammanaikanoor
length 27 miles: maintenance allowance
in ..

in last year Rupees 2720 99 3
expenditure on D. Rupees 2773 8 -
expenditure on Construction in last year
Rupees 16908 7 -

This section is completed with the exception
of 1 mile, on which work is now being
carried on, the estimate for the whole of
the section being Rupees 57500

Section from Ammanaikanoor to Palkanoth
length 23 miles. This portion is for the
present left untouched, as an unmade
road.

Section from Palkanoth through Palney
to the Coimbatore District length 30
miles, maintenance allowance in
last year Rupees 1120 : expenditure on
D. Rupees 1120 : expenditure on
Construction in last year Rupees 6242
on Estimate of Rupees 107500, for the
whole length from Ammanaikanoor

This section is more or less made through-
out, but portions are still incomplete, a
length of 14 miles is in good working order
and further work is in progress on the
Budget allotment of Rs 3650.

Meyloor towards Tanjore thro Tripatore
length

length 26 miles. maintenance allowance in last year Rupees 1320 expenditure on D. Rupees 1349. 8 miles of the road are made, and kept in fair order, the rest of the road is incomplete, and in fact unmade.

Caricpully thro' Aroopocotta to the Pinnerelly boundary length 22 miles, maintenance allowance in last year Rupees 2020 expenditure on D. Rupees 2050. 14 miles of this road are made and kept in good order, 8 miles remains incomplete.

Salt branch roads. Morecolum to Ottirac length 8 miles maintenance allowance in last year Rupees 1206 expenditure on D. Rupees 1206.

to Mutturagunadapattam length 4 1/2 miles maintenance allowance in last year Rs 848 expenditure on D. Rupees 848.

to Vuttanur length 1 mile maintenance allowance in last year Rupees 110 expenditure on D. Rupees 110.

These branch salt roads are not metalled, but are maintained in sufficient order to give access to the Salt Stations.

Tinnerelly.

Section of Chunk Road NW from the Madura boundary to Arambali on the Travancore frontier length 104 miles maintenance allowance in last year Rs 1918 expenditure on D. Rupees 19328 expenditure on Construction in last year Rupees 21898. An aggregate of estimates amounting to Rupees 54,600.

The road way is now made throughout having been completed in the past year. Some portions of the road are in very good order for quick traffic: other parts though are not so good in consequence of the road having been laid out with stone pavements instead of tunnels, and from the road way being for several miles constructed of boulders over the black cotton soil. A good deal has been done in substituting covered drains for the open dais and the boulders are being gradually picked up, and broken into round angular.

Palancottah to Puthicorin length 31 miles maintenance allowance in last year Rs 3270 expenditure on D. Rupees 3270 expenditure on Construction in last year Rs.

Special Engr's Office
Pognard, Luchasie, 10th
September 1868

No. 494

The Special Engr Engineer
Pognard

The Secretary to Government
D. P. Wirth

Madras

Sir,
With reference to G. O. No. 12783, dated 28 April and 31st the
just last, respectively, I have the
honor to state that the maintenance
grants at present allotted for roads
in this District barely suffice to keep
them in passable condition; the climate,
with its numerous rain fall concen-
trated within so short a period,
and the high rates for labor, making
the cost of maintaining the roads ex-
ceptionally heavy.

2. As soon as the main lines
are completed, I would propose to
establish tolls, and apply the product
altogether to the maintenance of
the roads on which they are collected;
but this, however, will I fear for some
time scarcely suffice without some
assistance from Imperial funds.

23rd Sept. 1868
Pognard, Luchasie
No. 494

S. D. P. Wirth

Madras

No. 496

Demands in default
of road, on the side of the
infantry, Pognard, in the
Madras and Pognard

Madras, Pognard, in the
Madras and Pognard

No. 83-481-120, Pognard, 1869

2nd Sept. 1868, 11th

No. 493

3 By forwarding out the Tolls
and requiring license to keep the ~~goods~~
in thorough good order, an efficient
system of repair might be established,
and the result of two or three years
would show whether, or not, in-
spiral assistance could be dispensed
with all.

4. I would, however, propose
precisely the same system as now
prevails in the case of Tolls, & put
up the tolls annually to the ~~treasury~~, but
not to pass into the hands of revenue authorities.

I have the honor to be,

Yours most obedt servant

Robt B. Keene & Captains

Lt. Col. Lige to grand

P. W. 1868 Sept
 The Special Engineer
 Wynaad
 To The Secretary to
 Govt. D. P. W.
 Fort St. George
 Dated 11th Sept 1868.
 Received 14
 No. 1499.

States that roads
 in Wynaad are not
 yet in a payable condi-
 tion to reduce the
 rates of maintaining
 them.

No. 174
 C. 2nd Decr 1868 110
 No 83-482 125 Jan 1869

Special Exec. Engineer's Office
 Wynaad Luchadiv.
 15th September 1868
 No. 519.
 From
 The Special Executive Engineer
 Wynaad 104

To
 The Secretary to Government D. P. W.
 Fort St. George

Sir,
 With reference to your Memo. No. 123
 dated 8th Instant, I have the honor to forward
 a statement showing the cost of maintaining
 roads in Wynaad. I have left certain of the
 columns blank, as none of the roads in
 the District are yet metalled; and
 indeed the amount of maintenance per mile,
 of itself shows that no such operations as
 renewals of metalling could be contemplated.
 With my letter No. 514, dated 14th August last
 I forwarded one from the Collector of Malabar
 shewing why for the present the cost of
 maintenance could not be transferred to
 Local funds. and in my letter No. 499
 dated 10th Instant I proposed as soon as the
 various Roads were sufficiently completed
 to maintain them by a system of tolls.
 I have the honor to be

Your Most Obedient Servant
 Captain
 P. W. 1868 Sept

Ordered that
these papers be forwarded to
the Government of India,
and

Statement of cash,
maintaining roads in
Michigan Public Works
Department.

and that the estimates sub-
mitted by the Superintending
Engineer of the S. Division
be returned to that Officer
with reference to the recent
orders of Government re-
classifying the roads in
this Presidency.

[Signature]

The Supt. Engineer
Captain Hunter

24246, 34921
2886, 6147, 250
2420, 2886, 357
Oct. of 1868

PUBLIC WORKS

The Supt. Engineer

cc, cc, cc.

Dated

In and

Encs.

G O, 12th Jan, 1869 No. 83.

No. 16360 of 6

by order on papers
in state of India
and the main

No 84 109 109

The Secretary to the
Govt. of India
Sir,

From the Supg Engr. 1st Div. - 27th Oct/68. No 140.
 " " " 2nd " " " 2nd Sep. " " 68.
 " " " 3rd " " " 14th " " " 2156.
 " " " 3rd " " " 21st " " " 2245.
 " " " 4th " " " 24th " " " 3101.
 " " " 5th " " " 25th July " " 73.
 " " " 5th " " " 23rd Oct. " " 140.
 " " " 6th " " " 6th July " " 364.
 " " " 6th " " " 21st Oct. " " 747.
 " " " 7th " " " 6th June " " 63.
 " " " 7th " " " 26th " " " 75.
 " " " 8th " " " 23rd July " " 996.
 " the officer in charge of }
 " operations in Mysore } " 10th Sep. " " 499.
 " " " " " " " 15th July " " 519.

With reference to your
letter of the 14th March last.
In 188 A. I am directed to
forward for the informa-
tion of the Govt. of India,
Copies of letters as per margin.
From the Supg Engrs. of
Divisions in the Presidency,
reporting on the state of
Imperial lines of roads un-
der their respective charges,
and offering remarks re-
garding their maintenance.
The main lines
of

WDR

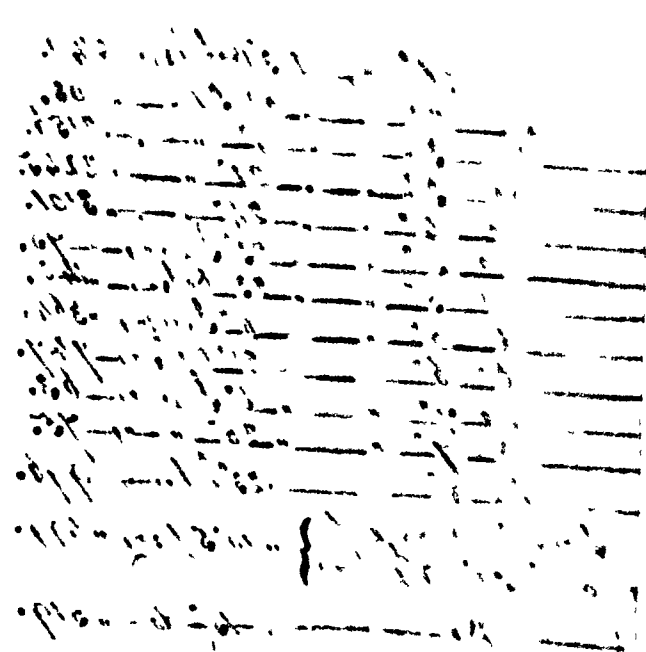
M.A.

109

of Communication now
maintained in this Presi-
dency from Imperial
funds consist of about
4,000 miles of road, as
follows. —

I. Great Northern Road
from Madras to the Bengal
Frontier, with a branch at
Arikapully to Vizagapatnam
and another at Jaggampett
to Coanada (via Saimb-
cottah).

II. Great Southern Road
from Madras to Travancore
Frontier near Cape Comorin,
with a branch at Luderanum
to Negapatnam (via Pondicherry,
Cuddalore, Shelly and
Tranquebar) and another
at



10911

at Tickravandi to Com-
biconim, via the Tellur
Anicut.

III. The great Western
Road from Madras to
Caticut, with a branch
at Arcot to Chittoor,
and another at Vairam-
bady to Coimbatore and the
Mysore Frontier.

IV. Poampore to the
northwestern frontier,
via Berhampore, Baka,
and Rupelcutah.

V. Vizagapatnam to
the Jeypore country via
Rimlipatnam; Viziana-
gram, and Kasipoor.

VI. Masulipatnam to the
Hyderabad frontier, via
Bezrada.

VI. Cottapaham, on the
Nellore Coast, to Mundial
in Kurnool, via Ongole,
Cumbum, and the Nundi-
dikaniara Pass.

VII. Krishnapatnam on
the Nellore Coast, to Rajahmundry
on the road from Kurnool
to Giddapah, via Nellore
and the Dorival Pass.

VIII. Mercanum to Samul-
putty, on the line of Railway,
via Tindivanam, Gingee,
Tirumala, and the Chenga-
mah Pass.

IX. Suddalore to Salem,
via Kurnool, Oolondroopet,
Mallacorechy, Chinnai
Salem, and the Aktoor.

X. Theally, in the Tanjore District,
to Salem, via the grand ancient,
Trichinopoly, Museri and
Namcul.

XI

XII. Vettanum, on the
Madura Coast, to Path-
anottu, via Devicottah,
Tripahoor, Nattam, and
Dindigul.

XIII. Pannikem, on the
Madura Coast to Poulhat,
via Raminad, Madura,
Pattai, and Polachy, with
interchange at Polachy
to Panchakore.

XIV. The Cotton Road from
Madura to Inticorin via
Uthapooram.

XV. From Vypaur, on the
Tinnevely Coast, to Stri-
nelliputtur.

XVI. Inticorin to Tenkasi
and Tanavore from here
via Palamcottah.

XVII

XVI. Chittoor to Kurnool,
via Cuddapah and Nand
dial.

XVII. Chittoor to the
Nerbhay frontier at Kulati
in the Bellary District,
via Palamanur, Muttam
pillay, Anantapur, Bellary
Hospital, and Herringhally.

XVIII. Bellary to Kurnool.

XIX. Calicut to Mangalore.

XX. Calicut to the Mysore
frontier, via the Samba-
cherry Ghaut and Sultan's
Battary.

XXI. Coimbatore to the
Mysore frontier via the
Periah Pass and Manan-
kudy.

Coimbatore.

XXII. Coimbatore to the Mysore the
frontier, via Muttanoor. are

XXIII. Mangalore to the
Mysore frontier by
the Sampaji Ghaut.

XXIV. Mangalore to the
Mysore frontier by the
Agumbi Ghaut.

Besides these
there are about 1200 miles
of path and salt roads, but
neither these latter nor the
main lines are all either
fully made or provided
with maintenance allow-
ances, and perhaps no
where is this so much the
case as on the line of the
great Northern Road

from

from Madras to the
Bengal frontier, which,
as the Govt. of India are
aware, has been com-
pleted and bridged
only in detached por-
tions, and is still far
from fit for pack
wheel traffic.

It is impossible to
furnish the informa-
tion required by the
Govt. of India in the
form apparently in
use in the North West
Provinces. Annual
renewals do not form a
separate item in the
Road accounts of
this

113
this Presidency; but the
maintenance grants are
supposed to suffice for
all ordinary repairs.

The principle on
which these maintenance
grants are allowed, is to
provide for a certain a-
mount of wear of the sur-
face of each road accord-
ing to the extent of the
traffic upon it, and the
nature of the material
with which it is metalled.
The grants vary in amount
from Rs. ¹²⁸⁰ 77 per mile to a
road metalled to 8 yards in
width in the neighbourhood
of Madras, to Rs. ²⁰ 20 per mile
for

from Bengal as the
 are pole only a
 tion, from wheel
 turn, hion, foot, from
 use in Provis
 renews separa
 Road

for roads metalled ho
 only 5 yards in width
 in other localities.
 When the road has
 once been made the
 system of maintenance
 is to put it under the
 charge of milemen and
 coolies, whose duty it is to
 make all trifling repairs
 and to dig and collect ma-
 tal into heaps, which are
 carted as required, and
 laid and spread by them
 assisted by such addi-
 tional labor as may be
 necessary. The grants
 now in force have
 all been framed on

the

the closest calculation of
 the bare requirements of
 the traffic on each road,
 and it will be observed that
 the Superintendents are
 unanimously of opinion
 that it will not be expe-
 dient or possible to re-
 duce any of them.

The wear and tear
 of the surface of a fresh
 metalled road is reckoned
 at from 2 to 4 inches per
 annum according to the
 extent of the traffic
 upon it and the nature
 of the material or gravel
 employed, and as for
 each mile of road me-
 talled to a width of
 only

only 5 yards, 480 $\frac{3}{8}$ c yards
would be required, to re-
place the smaller ratio
of wear, it is evident
that the maintenance of
Rs: 200 per mile, which
may be taken as the
average sum given in
this Presidency, will
scarcely prove more than
sufficient, where mate-
rial is either tolerably easy
to procure or has to be
carried only a short distance.

This fact, I am
directed to say, is
very fully alive to the
advantage of economizing
to the utmost the very

Small

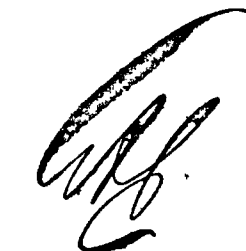
Small assignment¹¹⁷ of
Imperial funds that is
made year after year
to this Presidency, as
compared with the na-
ture and importance
of the works of general
improvement which
are urgently required
throughout every one
of its Districts, and
His Excellency the
Governor in Council
has not failed to en-
deavour to relieve those
funds as far as possible
from the burden of
maintaining all Puck
roads

roads as can, with the
 least show of justice to
 the claper who contri-
 bute to the road exp.
 be transferred to the
 charge of Local Funds.
 With this in view, the
 Govt. have carefully
 considered the whole
 subject in communica-
 tion with the members
 of the Revenue Board,
 and have transferred
 from the Imperial to
 the Local list, every
 road which in their
 opinion ^{under} any plea
 be so dealt with, but

a copy of the
 letter from
 this subject in the
 Revenue Dept.
 should be sent
 up. R. J. A.

I
 Small

116
 I am to add that if the
 circumstances of the
 Local Funds should at
 any time permit, further
 transfers in the same
 direction will be or-
 dered.



Just St George
 12th Jan 1869

Recd. 18th Jan 1869. with 1 copy
 of G.O. No. 88 of 1869. & 1 copy of
 Rev. Pro. No. 2831 of 1868.

12

ما بعد ذلك لم يبق لنا
 راديوه - ووجدنا
 في الحوض ماء - في
 الحوض ماء - في
 الحوض ماء - في
 الحوض ماء - في

في الحوض ماء - في
 الحوض ماء - في
 الحوض ماء - في

C. 2nd Dec 168 R. 11/2
 Small

Govt. of 1868 Madras.

PUBLIC WORKS.

To

de, de, &c.

Dated

Recd

Enc.

G O, 12th Jan 1869 No. 84.

Nos. 177

Roads Some of letters from
the Supt Engrs regarding the
state of Imperial lines of roads
and their maintenance,
forwarded to the Govt of India
with the observations of the
Madras Govt thereon.

C. S. S. S.