Public Works (1899) Department.

RAILWAY BRANCH.

G.O., No. 956 Ry

DATED 26th Aug, 1899

Includes
G.O. No. 1520 Ry 7-12-99.

[Despatch Abstract.]

Narpada Salt-Siding on the East Coast Railway - Communicating to the Revenue department a memorandum from the Govt of India forwarding a copy of their letter to the Manager E. C. Ry sanctioning with remarks & alternative estimate of Rs 68,784 of the cost of constructing the ——

[P. W. 26. 200-30-8-99]

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RAILWAY.

Government {1899} of Madras.

PUBLIC WORKS.

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G.O., No. 956 Ry., 26th August 1899.

AUGUST.

Naupada Salt Siding for the East Coast Railway

Communicating to the Revenue Department a memorandum from the Government of India forwarding a copy of its letter to the Manager, East Coast Railway, sanctioning, with remarks, an estimate amounting to Rs. 68,784 of the cost of constructing the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers :—

Proceedings of the Board of Revenue (Separate Revenue), No. 209, dated 27th May 1896.

Resolution—No. 209, dated 27th May 1896.

The Board begs to call the attention of Government to the desirability of placing the Naupada and Karasa salt factories in connection with the East Coast Railway. This railway approaches only four salt factories in the whole of its length—Ganjam, Naupada, Karasa and Jagganaikpur. Arrangements for a branch line into the Ganjam factory will form the subject of a separate communication when certain information which the officers of the East Coast Railway are preparing is received. The salt of this factory will all go north to meet the Orissa demand, which will increase largely as railway communication between Cuttack and the Central Provinces developes. Jagganaikpur is small and its future is not much affected by the opening of the line as its salt must be put into boats to get it across the Cocanada river to the railway station, and once in boats it will usually travel inland by canal. Karasa and Naupada are therefore the factories to the development of which the interior of the Vizagapatam and Ganjam districts and the adjoining parts of the Central Provinces must look for a cheaper and better supply of salt with the aid of railway carriage. Though the question is one of considerable importance to the Salt Department the interests of the East Coast Railway, which is a State undertaking, are still more concerned in it. At present not a grain of salt is coming on to the line, except that from the Ganjam factory, booked at Humma for Orissa, and this not only means the loss of possible earnings for the carriage of salt, but also the loss of the carriage of the produce which carts coming to the coast for salt invariably transport on the down journey. The Board is therefore confident that, if the matter be placed before the Government of India in the Railway Department, arrangements for the construction of the necessary branch lines will be made either free of cost or on very advantageous terms.

2. The East Coast Railway at present charges one-eighth of a pie per maund per mile for the carriage of salt in large quantities. It will eventually probably raise this to one-fifth or one-sixth of a pie but not higher. At a very low estimate transport by cart costs three-fifths of a pie per maund per mile in these districts. The following table shows how rail-borne salt from the Naupada and Karasa factories should compare with cart-borne salt from the factories which are at a distance from the railway, at the points nearest to the latter factories, calculated on the basis of the above rates and on the assumption that branch lines have been made into Naupada and Karasa.

The Board has added in the case of rail-borne salt a charge of 2 pies per maund to cover interest on the capital cost of the branch lines as explained below :—

Name of factory.	Distance from nearest station on the line.	Nearest station on line.	Cost of carriage by cart per maund to station in column 3.	Nearest railway factory.	Cost of carriage by rail per maund from factory in column 5 to station in column 3.
1	2	3	4	5	6
	MILES.		A. P.		A. P.
Surla	9	Ichchhapuram ..	0 5	Naupada	0 $8\frac{1}{2}$
Calingapatam ..	12	Parlakimedi road ..	0 9 *	Do.	0 $4\frac{2}{3}$
Kuppili	20	Ponduru	1 0	Do.	0 7
Konada	14	Vizianagram	0 11 †	Karasa	0 7
Bimlipatam	15	Do.	0 9	Do.	0 7
Balacheruvu	9	Duvvada	0 5	Do.	0 $3\frac{5}{8}$
Polavaram	9	Narsapatnam road ..	0 5	Do.	0 8

* Includes crossing the Vamsadara river. † Two and half pies have been added for the Vizianagram municipal tolls.

Of course the points selected are those at which cart-borne salt would have the greatest advantage. Everywhere else the rates would be more in favour of the rail-borne salt, yet the above table shows that the latter should meet the former at an advantage everywhere except near Surla and Polavaram, if the salt could be got on to the railway by means of branch lines running alongside the platforms. The difference to the consumer which the advantage in rates shown above promises may at first sight appear small, but it must be remembered that the four factories which lie between Naupada and Karasa are small and incapable of being enlarged, and their outturn is sufficient to meet the demand on them only in good seasons. This is especially the case at Kuppili and Bimlipatam, where all the readily saleable salt is usually sold out before the new salt comes in. Calingapatam is not much better off so far as excise salt is concerned, and, under the present system, Government salt would not be offered for unlimited sales unless excessive prices were demanded by the excise licensees. The result is that the price of salt at Vizianagram, Palkonda and the chief salt markets near the railways is governed by the cost of carting salt thither from Naupada and Karasa, and the licensees of the intermediate factories profit by their position at the expense of the consumer inland and get higher prices than they are fairly entitled to. It is generally supposed that the salt of these factories is lighter and more popular with the trade than that of Naupada and Karasa, but on an examination of the records of distribution kept at the factories the Board doubts the accuracy of the explanation and believes that it is entirely owing to their advantageous position and the impossibility of increasing their outturn that the licensees are able to dispose of all the salt they can make at from 4 to 8 annas per maund. A large quantity of Karasa salt passes through Vizianagram on its way to Saluru and Parvatipuram every year. This salt must compete with that from Konada and Bimlipatam at a disadvantage of about 1 anna 3 pies per maund while it depends on carts for transport. If it were transported by rail instead of cart, its cost in Vizianagram would be capable of a reduction of about 1 anna 6 pies and the excise licensees of Bimlipatam and Konada would have to make a corresponding reduction in their prices.

3. The Balacheruvu and Karasa factories have usually been supposed to compete for the salt trade of the south of the Vizagapatam district, but on a close examination of the distribution statements the Board finds that this is the case only to a very limited extent. Balacheruvu and Polavaram practically share a monopoly of the supply of the Anakapalle, Sarvasiddhi and Golgonda taluks (of which Polavaram gets about one-fourth or one-fifth), and rarely send any salt to Vizagapatam, Srungavarapukota or the north of the district. It is only in the Viravilli division that the Balacheruvu and Karasa factories meet on common ground. The reason is that carts going from Balacheruvu to the north or from Karasa to the south must make a long detour through Vizagapatam and pay municipal tolls. In consequence about 85,000 maunds of salt pass from Balacheruvu to the south of the district every year which

could be more economically carried by rail from Karasa if it had a branch line to its platforms. Taking Yellamanchili as the centre of the area supplied from Balacheruvu, the loss to the consumer per maund is the difference between $6\frac{3}{4}$ pies—the cost of carriage by rail from Karasa—and 1 anna 6 pies—the cost of carriage by cart from Balacheruvu—or, say, 1 anna per maund.

4. The figures given in paragraph 2 show clearly that with proper railway arrangements at Karasa and Naupada no salt worth mentioning should cross the line from the intermediate factories or Balacheruvu. The Board therefore estimates that all the salt now sold at Calingapatam, Kuppili, Konada, Bimlipatam and Balacheruvu, with the exception of that required for the population of the marginally-noted taluks, will be replaced by salt from Naupada and Karasa when branch lines are run into these factories. Taking consumption at $16\frac{1}{2}$ lb. per head, this population would require 150,000 maunds *per annum*, which would leave the balance of the present average sales of those five factories,—say 365,000 maunds,—to be supplied by rail or by these factories at a reduction of something considerably over one anna per maund on present prices, a loss which their licensees would not easily submit to now. The whole of the present sales of the Karasa factory, with the exception of, say, 20,000 maunds for the population of the Vizagapatam taluk, would also go inland by rail and add another 1,20,000 maunds of salt supplied at a reduction of considerably more than an anna per maund to the above quantity. 100,000 maunds of the present sales at Naupada would also be rail-borne to its destination at reduced cost making a total of 5,85,000 maunds or, say, six lakhs. A reduction of an anna per maund on the selling price of this quantity would mean a saving of Rs. 37,500 to the consumer. An anna is also a low rate at which to estimate the reduction of cost, and the Board thinks that it would not be far wrong in putting the saving at Rs. 50,000 per annum.

			Population.
Chicacole ...	Ganjam ...	...	212,608
Chipurupalle ...	Vizagapatam	...	156,831
Bimlipatam ...	Do.	...	115,309
½ Palkonda ...	Do.	...	104,410
½ Vizianagram	Do.	...	83,329
½ Viravilli ...	Do.	...	98,933
			771,420

5. In addition to this advantage to the consumer, the change would result in one or more of the intermediate factories closing from want of business and the saving of the cost of its or their establishment. These factories may have been necessary in the past, but with a railway running parallel to the coast there can be no objection now to a reduction of their number. The railway would profit still more than the Salt Department or the consumer, as once it secured the carriage of salt for the first 30 or 40 miles from the coast it would also get that of the down-loads of the salt carts at centres like Vizianagram, Chicacole road and the like, and be placed in a most advantageous position for competing with the cart-owners. Carts would of course compete at reduced rates at first but the struggle would be short in a district like Vizagapatam, where there is ample scope for the energies of the bandymen in the developing trade with the Agency and the Central Provinces, but so long as cart-borne salt can compete on fairly even terms with railway salt the cart-owners are likely to hold their own. Of course there is no reason why salt should not be carted to the railway stations at Karasa and Naupada and get the advantage of cheaper rates for transit, except the fact that the trade shows no signs whatever of resorting to this expedient. The reason probably is that there are no salt traders in the interior of Vizagapatam and Ganjam, who deal direct with the factories. The universal custom is for the bandymen from the interior to purchase the salt themselves, often with money borrowed from merchants dealing in salt upcountry, and to sell their loads on their arrival at the great salt marts of Parvatipuram and Saluru or exchange it further on in the interior for oil-seeds, grain, etc. With railway communication between the platforms and places like Vizianagram, this system would rapidly disappear and the work of removal to that town at any rate and probably to the principal salt markets in the interior would fall into the hands of credit merchants.

6. The Board believes that there are rules in existence under which the East Coast Railway could lay down the necessary branch lines, charging the Salt Department 4 per cent. *per annum* on the capital cost and receiving freight at the usual rates

for all salt passed over the line. The branch which is required at Karasa could probably be made of second-class materials for Rs. 75,000, which would involve an annual charge of Rs. 3,000. This would be covered by a charge of 2 pies per maund on the sale of 300,000 maunds per annum, which appears to be a very moderate estimate of what the Karasa removals would be under the circumstances. Considering how much the railway is interested in the matter, the Board thinks that even better terms than those suggested above may be expected.

7. The Board considers that the Railway Department should be approached with reference to Karasa in the first instance as the East Coast Railway is much more interested in getting the salt made there on to the line than that from Naupada. The latter is not a port and consequently there would not be much to be expected from the down loads of the carts which at present go there for salt.

G.O., No. 773 R., dated 5th October 1897.

Read the following paper :—

Report of an inspection tour by the Consulting Engineer for Railways, Madras, during July and August 1897.

* * * * *

6. (*a*) It appears to be advisable that the Government of India, who administer the East Coast Railway, should be specially addressed upon the subject of the great importance of a more intimate connection between the railway and the salt trade. As much does not seem to have been done as might have been done to work these two branches of public business in due co-ordination for their mutual benefit. The representation to the Government of India on this subject might be based upon a Resolution of the Board of Revenue. The present Salt Commissioner, Mr. Willock, has a special personal knowledge of all that relates to the salt-*cum*-railway question, and a note upon the subject from that officer would be most valuable.

* * * * *

Order—No. 773 R., dated 5th October 1897.

Mr. Willock will be requested in the Revenue Department to favour Government with the note referred to in paragraph 6 (*a*) of the Report.

* * * * *

G.O., No. 206 R., dated 4th February 1898.

Read the following paper :—

Inspection Report of the East Coast Railway, by the Senior Government Inspector for Railways, for the half-year ending 31st December 1897.

* * * * *

15. *The Salt Trade.*—I was told that some months ago there was a great export of salt from Naupada towards Orissa, but that this has now stopped, because it was merely the temporary result of the selling of salt either damaged or likely to be damaged. But from Humma 6 or 7 waggon loads are said to go daily towards Cuttack. This salt is booked, not to the terminus at Barang for the most part, but to Khurda or Bhubaneswar, whence it is carted to Cuttack. The object apparently is to evade the terminal placed on salt booked for Barang which preferred not to use the out-agency. But the Manager has now abolished the terminal, and it seems probable that booking to Barang will be resumed. It is a special condition of Humma factory that a lot of local carts make a livelihood by working between the pans and the railway. About 100 to 200 cart loads are said to come daily to the station from the factory, and a cart reckons to make two trips per day. There is a good road. Under such favourable carting conditions as these it is doubtful whether a short branch railway would pay or is neeessary. At Naupada either the Parlakimedi Railway or the

Oriental Salt Company will perform the function of carts. The conditions at Karasa factory are altogether different. Here there is no class of local cartmen, and it is necessary, for the lifting of the salt at all, that the cartmen from the hinterland, who themselves are small traders and not merely hirelings, should bring their carts right down to the pans. Naturally in such circumstances they do not get in touch with the railway. But if the railway were to go right down to the pans and to place the salt (in bond) at the trading centres of Tuni and Vizianagram, not only would it get freight on so much haulage, but the cartmen would presumably readily lend themselves to an arrangement which would result in the saving to them of a week on their journey. However, the very recent appearance on the scene of the Oriental Salt Company, as represented by Mr. MacNab, seems likely to so completely change all the conditions of the trade that it is quite impossible now to say whether it would be wise for the railway to take a siding down to Karasa or not.

* * * * *

G.O., No. 241 Ry., dated 12th February 1898.

Read the following paper :—

G.O., Mis. No. 485, Revenue, dated 29th January 1898.

Read the following paper :—

Note by Mr. W. A. Willock, dated 20th January 1898, on the salt supply of the Northern Circars as affected by the East Coast Railway.

In dealing with this subject it is necessary to bear in mind the position which salt will probably occupy in the traffic of the East Coast Railway some ten years or so hence, rather than existing conditions. There is no reason why this should not be foreseen with fair accuracy at present, though there is one disturbing factor—the construction of the Vizagapatam-Raipur Railway. It is to be hoped that it will be an accomplished fact long before that time ; but to avoid the risk of being thought to overestimate the importance of the future salt traffic of the line, I will only assume that a feeder railway has been made up to Párvatípuram—an assumption which is a tolerably sound one, as I believe that the railway authorities agree with me in thinking that the heavy traffic of the Vizagapatam district can never be brought on to the line until this is constructed. I also assume that the note which I have been directed to prepare is intended to refer only to the portion of the line north of the Gódávari.

The salt produced along this part of the coast feeds four large markets, the conditions in each of which are totally different, so far as railway considerations are concerned. They are as follows :—

(1) Orissa and the country inland of it.
(2) The plain tracts of the Ganjám and Vizagapatam districts.
(3) Jeypore above the ghauts and the adjoining areas.
(4) The Central Provinces and areas fed from the great route through the Rayagadda valley, including the country directly inland of Vizianagram and Palkonda.

There are other areas, such as the Ganjám Agency tracts and the Gudem hills, which also derive their supplies from the coast factories ; but these may be classed with head (2) for all practical purposes.

These areas are now supplied chiefly from the East Coast. In the case of No. (1) imported salt from Calcutta, and Bombay salt transported by the Bengal-Nagpur line to Sambulpur and the adjacent country, share the market, and in No. (4) the same Bombay salt competes in the far interior. I do not think that there is any practical competition with Bombay salt in the case of No. (3) as the areas dependent on the two sources of supply are separated by a very thinly inhabited tract.

The following are the factories from which supplies are drawn :—

(i) *Tua and Gurubai.*—Two small factories under the Bengal Government on the Chilka lake. These can only throw salt into Orissa by boat and are at present

greatly overstocked with inferior salt, which will rapidly deteriorate and reduce sales to very local limits. They sold 46,224 maunds last year against 76,635 in 1895-96 and the decrease is certain to continue. They may be disregarded.

(ii) *Ganjám.*—A very fine factory, the head-quarters of which is about 1½ miles from the Humma station. It is about three miles long however, and the more remote platforms are at a considerable distance in consequence. It can produce about 500,000 maunds per annum, but is liable to disastrously bad years owing to the frequency of hot weather showers in some seasons. Ganjám is a Government factory.

(iii) *Surla.*—A good factory about five miles from the Ichchhápuram station but separated from it by a swamp which can only be crossed by carts in the dry weather. It is capable of indefinite extension, but the distance from the railway will always confine its operations to local trade so long as stocks are available at more convenient factories. The site has also the disadvantage of being very unhealthy. It is partly Excise and partly Government.

(iv) *Naupada.*—A splendid factory less than two miles from the Naupada station. The salt is excellent and the production admits of indefinite extension. It is now far in excess of the demand. It is an Excise factory.

(v) *Calingapatam.*—A moderately large factory about twelve miles away from the Parlakimedi Road station, with the Vamsadhara river intervening. It can make about 300,000 maunds. The salt is inferior, though somewhat popular owing to its being light and consequently measuring well when retailed. It is a Government factory.

(vi) *Kuppili, Konada and Bimlipatam.*—Three small excise factories, capable of producing about 250,000 maunds per annum, lying along the coast opposite the section of the railway between Chicacole Road and Vizianagram. They are from twelve to eighteen miles from the railway and Kuppili has not even got road communication with the interior. Their salt is light and therefore popular and fetches from 1 to 3½ annas per maund more than the price charged at all Government factories (3 annas per maund).

(vii) *Karasa.*—A fine factory partly Excise and partly Government, about two miles from the Waltair station. The factory is capable of producing about 300,000 maunds of salt at present and can be largely extended.

(viii) *Balacheruvu.*—A Government factory on the south of the Dolphin's Nose range of hills. The site is a favourable one, but want of labour is much felt and the nearest railway station is ten miles off.

(ix) *Polavaram.*—A small factory on the sea coast nearly opposite the Narsapatam Road station which only meets a local demand.

Of the areas dealt with above, Nos. 1, 3 and 4 are those in the salt traffic of which the East Coast Railway is chiefly interested. No. 2 will always draw a good deal of its supplies by cart from the nearest factories on the coast ; but the railway is concerned even in its case in the concentration of the demand at the factories adjoining the line, which will probably in time result in the business of the intermediate ones falling off to such an extent as to result in their closure.

As regards No. (1) or Orissa, this tract has hitherto drawn its supply from Calcutta, Bombay and the north of the Ganjám district. The second source of supply has only become of importance during the last two or three years owing to the extension of the Bengal-Nagpur Railway system towards Sambulpur.

Last year the quantities supplied from each source were as follows :—

	Mds.
Calcutta	280,795
Bombay	132,403
Ganjám district and the Chilka factories	411,420
Total ...	824,618

I have here included 46,224 maunds supplied by Tua and Gurubai under Ganjám as I regard those factories as practically extinct so far as future considerations are concerned.

As to the future of the salt supply of this area it is impossible that Bombay salt should make much further advance towards the coast. It has only been able to stretch as far as it has done owing to the heavy cost of carriage by cart and pack bullocks from Cuttack. If rail communication is opened up from Cuttack or anywhere thereabouts with the country now served by the Bengal-Nagpur line, the result must be to drive Bombay salt some hundreds of miles back into the interior. The salt thus driven back will be replaced by salt from the Ganjám factories as that supplied from Calcutta is of a totally different description from what is now in use, being fine grained salt produced by artificial evaporation and imported from Europe. It is far more expensive than salt produced by solar evaporation and can never displace the latter in areas where its use is customary, the difference in initial cost (ex-duty) being from 300 to 400 per cent. The East Coast Railway has consequently a fine opening for salt from the Ganjam factories in this direction as communication improves. The north of Orissa has hitherto been dependent on Calcutta for its supplies owing to the difficulty of transport from Ganjam, but with such disproportionate initial cost it cannot continue to draw on it long after the East Coast Railway is opened beyond Cuttack. It is true that the people are unusually conservative in this area and have been accustomed to use "boiled" salt from remote times, the climate being unsuitable for the production of salt by natural evaporation. It may therefore take them some little time to get used to the cheaper Madras salt, but there can be no doubt but that the latter will gradually win its way and drive back the foreign article not only out of Orissa but even out of the adjoining parts of Bengal. A difference of 9 annas per maund, it must be remembered, is enough to carry salt an additional 600 miles or so by rail so that the area of possible expansion of salt trade for the Madras factories is very great. Of course, the railway might say that, as the salt has to come from either the Ganjam district or Calcutta, it would have to pay railway freight in any case and that it was as much interested in developing the Calcutta trade as that from Madras. This, however, is not correct. It is the interest of the railway to secure as much of the market as possible for one or other source of supply and so avoid being only given transport over the minimum mileage to the centre of the intervening line. Its object should be to either get Madras salt to pass the half-way point and supply tracts nearer to Calcutta or *vice versa*. Owing to the high price of Calcutta salt it can never invade the area dependent on Madras and consequently the interest of the railway is to drive the former back as far as it possibly can. This policy is further recommended by the following considerations.

Ganjam, though a large factory, is not at all likely to be able to supply the whole of the salt required by the area which will want to draw its supply from Madras in future. It unfortunately cannot be extended, and, though it has now, after a series of prosperous manufacturing seasons, got large stocks on hand, it may, owing to its liability to have manufacture stopped by thunder-storms in April and May, be depleted two or three years hence and will in any case never be a reliable source of supply. Three-quarters of its outturn already go to Orissa and with a slight increase of trade its stocks are certain to run short every year. As explained above, it cannot be extended. Surla, the next factory, is at a disadvantage owing to its being so far from the line and consequently the trade will go to Naupada, giving the railway a longer lead by 85 miles if proper encouragement is given by the railway authorities to the Naupada manufactures. A very large quantity of salt has been sent north from Naupada during the past few months, but this was due to exceptional causes. A large quantity was condemned to destruction unless cleared immediately and was disposed of at extraordinarily low prices. This was what the Cuttack merchants were purchasing so freely during the early part of the current year. They could hardly afford to cart salt selling at ordinary rates to the railway and sell it at a profit unless special concessions are made. Golantha, the nearest station to Surla, is only eight miles from that factory or six miles further than Naupada is from the line. The cost of carting salt these six miles would be considerably less than the cost of railing it from Naupada and some concession or facilities are necessary at the latter to enable it to secure the overflow demand from Ganjam and the railway freight on the additional 55 miles. The advantage which I would recommend is a branch line to the factory which would do away with carting and transhipment altogether. At the same time

everything possible should be done to encourage sales at Ganjam and so clear out stocks so as to force the trade to the more distant factory. A branch to this factory also is desirable for this reason. The main thing to be remembered is that the more salt the railway moves the greater will be the distance it will move it. It will never profit much by the salt trade so long as the supply is divided between Calcutta and the Ganjam district. Its policy should be to drive back the Calcutta salt as it is impossible to adopt this course with success as regards the Ganjam salt.

With regard to the second area referred to above, the plains of Vizagapatam and Ganjam will always be dependent on the nearest factories to some extent. Between Naupada and Karasa, however, it should be possible for the East Coast Railway to prevent any salt from Calingapatam, Kuppili, Konada or Bimlipatam from crossing its line. This should result in the eventual closure of these factories and should secure to rail-borne salt the consumption of the country on both sides of the line. I would here recommend very low rates of freight from Naupada and Karasa, especially to Vizianagram and the stations north as far as the Vamsadhara river. This, with the branch line to Naupada referred to above and another to Karasa, should in time produce the result suggested.

In the remaining two areas two other considerations arise, viz., the desirability of getting bandymen to drop their loads from the interior at the first railway station they reach and the effect which may be anticipated from the opening of a railway to Parvatipuram. At present most of the salt used in these tracts comes from Calingapatam, Konada and Bimlipatam. The Konada salt does not seriously affect the interests of the railway as regards other freight, as Konada is no longer a port; but that from Calingapatam and Bimlipatam exercises a most injurious influence, as it supplies return loads for carts proceeding to those ports with produce, and probably makes all the difference between their finding it worth while to cross the railway or to deliver their loads at the nearest station. I believe that I am right in saying that the railway has made practically no progress in securing the trade which customarily leaves the districts through Calingapatam and Bimlipatam. This is, in my opinion, entirely due to strenuous efforts not having been made to render Naupada and Karasa salt available at the points where the trade routes to the coast cross the line or at the nearest important towns, and here the importance of branch lines into those factories comes in. If a trader has to cart his salt a couple of miles to a station, he is at the mercy of the local cart-owners and is often made to pay an[anna]per bag or 6 pies per maund. He cannot be even certain of being able to get this work done at that rate and this uncertainty enhances his disinclination to resort to the factories without his own carts. He therefore still depends on the old means of transit and will have nothing to do with the railway. The result is that the factories close to which railway carriage is available have no advantage over others and the area supplied from each is much the same as it was before the line was opened. The salt trade of Vizianagram I regard as a point to which the railway should pay particular attention. The price of salt in Vizianagram is ruled by that of Karasa salt there, as the adjoining factories of Bimlipatam and Konada cannot make enough to supply the demand and can keep up prices to the point at which it pays to bring Karasa salt in. If Karasa salt could be laid down cheap at Vizianagram it would rapidly displace the Konada and Bimlipatam article, as the licensees at those factories will not at once submit to the loss of the very lucrative prices which they have been getting for some time back. When Karasa gets possession of the Vizianagram market, Bimlipatam and its export and import trade must move into Vizagapatam and all produce for shipment must go by rail to the last named port.

It may appear that the salt now removed from the two factories would not justify the construction of a branch line into them just yet. This is only partly true. In the first place, one of the chief reasons why I advocate branch lines is that it is the interest of the railway to drive the salt of the factories off the line out of the market at any cost. Then again the opening of a line of rail to Parvatipuram will do a good deal to restore the old salt trade with the Central Provinces which was so heavy twenty or thirty years ago, and will result in the rapid expansion of the operations of Naupada and Karasa. The bandymen of the tract which the new line will open up are far too enterprising to content themselves with competing at losing rates with the railway.

They will extend their operations further and further into the interior laden with salt instead and will rapidly recover lost ground. Even if the opening of the branch lines into the factories would not pay at once, they certainly will as soon as the Parvatipuram feeder is constructed.

Looking at the matter from a more general point of view, the local salt trade of the two districts has been as follows for the past two years:—

	MDS.
1895–96	1,384,735
1896–97	1,447,278

Of this at least 11 lakhs should be rail-borne. To this 11 lakhs, however, has to be added a large expansion of Ganjam trade north of Cuttack as the railway opens, and a still greater increase in the salt sent from Karasa and Naupada to the Central Provinces when the railway to Parvatipuram is constructed. The increase in the fourth area when this takes place will be enormous. The third area will also be affected, particularly if a branch line is made to Saluru; but I do not look for a very large expansion there, as the population in the interior gradually thins off and the distance from Saluru to the other side of this comparatively uninhabited tract is too great for the short railway line to Saluru to markedly reduce the carriage to the more populous places on the other side of it.

Order—Mis. No. 485, Revenue, dated 29th January 1898.

With reference to G.O., No. 773 R., dated 5th October 1897, Public Works, a note drawn up by Mr. Willock on the salt supply of the Northern Circars as affected by the East Coast Railway is forwarded.

Order—No. 241 Ry., dated 12th February 1898.

The Government of India will be addressed.

From—The Joint Secretary to the Govt. of Madras, P.W. Dept., Ry. Branch.
To—The Secretary to the Government of India, Public Works Department.
Dated—12th February 1898, No. 242 Ry.

I am directed to invite your attention to paragraph 6 (*a*) of Consulting Engineer's Inspection Report of the East Coast Railway which reached you under cover of my No. 774 R., dated the 5th October 1897. And also to paragraph 15 of the same officer's inspection report which went to you with my No. 207 R., dated the 4th February 1898, on the subject of the salt trade of the East Coast districts of this Presidency, and the mutual influence on each other's interests of this trade and of the East Coast Railway. I am also directed to forward a copy of a note prepared by Mr. W. A. Willock, Member of the Board of Revenue, whose knowledge both of the trade conditions of the Northern Circars and of the Salt Department and its operations is exceptionally wide.

2. I am directed by His Excellency the Governor in Council to endeavour to impress on the Government of India a strong sense of the importance of the conditions of the salt trade being carefully studied by the officers of the East Coast Railway with a view to the mutual improvement of the Imperial Salt business and the Imperial Railway business.

3. This Government is satisfied that as much has not been done as might have been done to make these two commercial branches of State business mutually benefit each other, to the benefit also of the consumers of the salt. I am therefore directed to express a hope that the Government of India may see their way to instructing the Manager of the East Coast Railway to give this important matter his careful attention on the general lines indicated in Mr. Willock's note. With a view to illustrating the note I am desired to enclose a copy of a map showing the factories referred to. A copy of the Board of Revenue's Proceedings, No. 209, dated the 27th May 1896, is also enclosed.

From—The Secretary to the Government of India, Public Works Department.
To—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
Dated—16th June 1898, No. 642 R.T.

I am directed to acknowledge the receipt of your letter No. 242 Ry., dated the 12th February 1898, bringing to the notice of the Government of India the importance of the conditions of the salt trade being carefully studied by the officers of the East Coast Railway with a view to the mutual improvement of the Imperial salt and railway business.

2. In reply, I am to state, for the information of His Excellency the Governor in Council, that the Government of India have obtained a report on the subject from the Manager, East Coast Railway, which shows that that officer is fully alive to the importance of developing the salt traffic of the East Coast districts, and is now in negotiation with the Oriental Salt Company for the construction of sidings to the important salt factories at Karassa and Naupada.

3. It must, however, be remembered that the State Railways cannot be expected to bear the cost of connecting particular factories with their main lines unless assured of an adequate and permanent return on the capital expended.

G.O., No. 981, Ry., dated 2nd August 1899.

Read the following paper:—

Inspection Report of the East Coast Railway by the Senior Government Inspector for Railways, for the half-year ending 30th June 1898.

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20. *The Parlakimedi Tramway.*— * * * I am of opinion that the Parlakimedi tramway must stop at the west side of an island platform at Naupada, and that a broad gauge siding should be run down to the salt factory from the existing platform which will then become a goods platform. This siding ought, emphatically, in my opinion, to be the sole property of the East Coast Railway; private parties ought to have no ownership in it.

21. *Salt.*—I understand that a draft agreement for the approval of Government has been settled between the East Coast Railway and the Oriental Salt Company for the construction of a broad gauge salt siding on the usual siding terms from Naupada station to Naupada salt factory. To make the siding broad gauge is, in my opinion, the right thing to do, because by far the greater part of the Naupada outturn will go north along the East Coast Railway towards Cuttack, and only a comparatively small part will go towards Parlakimedi; but it ought to belong exclusively to the East Coast Railway. The tramway ought not to be allowed to cross the East Coast Railway at all. The Oriental Salt Company want to be allowed to build a salt godown, or otherwise to arrange with the railway for permanent or semi-permanent accommodation, at Vizianagram and at one other station. At the other station they have, I was told, been allotted the necessary accommodation in the goods shed. At Vizianagram I found a most suitable piece of land, which they would be wise to buy, bounded by the railway goods shed, the turntable, the fencing and the road; it is in every way convenient for them, and if, as I believe is the case, it is not railway land and they can buy it, they can have no excuse for wanting to come inside railway land. If the Oriental Salt Company succeed in storing salt at certain railway stations touched by the petty trader's carts from the interior, the railway will not only get the freight of the salt, but will also get freight on the goods which the cartmen bring down with a view to exchanging them for salt for their return journey. It is therefore in the interest of the railway to encourage the establishment of salt godowns at the places where it is crossed by roads from the interior.

At Barang I was told that it costs from one anna to one anna three pies per maund to cart salt into Cuttack. A bag is 2 maunds, and a cart carries 12 to 18 maunds according to season. It is proposed that, when the Bengal-Nagpore Railway have carried their temporary lines across the rivers into Cuttack, salt shall be carried over these lines at about three pies per maund.

I was given the following statistics of salt booked to Barang for Cuttack in the last three months:—

(*a*)	From Humma, country salt	62,000	maunds.
(*b*)	,, Waltair, artificial Cheshire salt	8,730	,,
(*c*)	,, Naupada, country salt	2,368	,,
(*d*)	,, Cocanada, brown salt	2,967	,,

The aim of the Oriental Salt Company is that (*b*) shall take the place of a very large proportion of the European salt which is now consumed in Bengal and Orissa. The matter is one of very high importance to the railway.

* * * * *

G.O., No. 505, Revenue, dated 1st September 1898 (Confidential).

From—The Secretary to the Government of Madras, P.W.Dept., Ry. Branch.
To—The Secretary to the Government of India, Public Works Department.
Dated—Ootacamund, 7th September 1898, No. 1122 Ry.

I am directed to address you regarding the construction of a siding from the Naupada station on the East Coast Railway to the Salt Factory of the same name.

2. The Naupada Salt Factory in the Ganjam district is one of the most important factories in the Northern Circars producing a salt which is of excellent quality and in popular favour. Unlike many of the other factories in that quarter, it is also capable of indefinite extension. In the past season the outturn was between six and seven lakhs of maunds, and may be taken to average that quantity in a good season. With the opening of the East Coast Railway the demand for the salt manufactured there will not only be very greatly enlarged in the northern districts, but will certainly extend in Orissa and the adjoining districts of Bengal; and, when the Vizianagram-Raipur Railway is opened, also in the Central Provinces. At present about 600 acres only are under salt cultivation; but the Oriental Salt Company who are the excise holders of two-thirds of the whole factory, the other third being under independent licensees, have it in contemplation, as soon as terms have been settled with the Government, to bring a much larger area, probably four or five times the existing area under production. Moreover, the nature of the Company's operations promises vastly to increase the sphere of the supply. The main aim of the Company is to displace Liverpool salt from the Calcutta market; and by a process, for the machinery for working which they alone hold the patents, they appear to have successfully solved the problem of converting by mechanical and chemical treatment the ordinary salt of the country into a granular white salt which is indistinguishable from the Liverpool salt and for which they are already beginning to secure a sale. By the Company's process only one moiety of the salt treated is converted into this quality, while the other moiety is turned out as a cheap salt suitable for the native population accustomed to monopoly salt. This salt being, however, of a superior quality should command a somewhat better price in the market than the Government standard salt. To get rid of their manufactured stock it is therefore essential that the Company should be able to secure a market for both the products of the process; and the larger the sale of the Liverpool quality in Calcutta, the greater the necessity for cultivating the local market for the cheaper salt. All this stock, it is proposed, should be railed direct from the factory without break of bulk, the Liverpool salt to Orissa and Bengal, and the other salt to depots up and down the line.

3. The Company has been in correspondence with the Manager of the East Coast Railway and has arranged, subject to the approval of Government, the terms of an agreement for constructing and working the siding. A copy of the draft agreement is enclosed for the information of the Government of India. Under the arrangement therein set out the Company is prepared to acquire the land and pay for the construction of the embankments, the East Coast Railway providing and laying the whole of the permanent-way material, and also charging freight for the traffic actually conveyed for the Company over the siding at the tariff rates in force at the time, and receiving from the Company the difference, if any, between the sum thus realized and the interest on the Railway's share of the outlay calculated at 10 per cent. per annum. The cost of making the siding is estimated at Rs. 74,138, of which Rupees 29,168 would be borne by the Oriental Salt Company and Rs. 44,970 by the railway.

4. In competition with this proposal, an offer has been made for the laying of a narrow gauge siding by the Parlakimedi Light Railway. The construction of this railway was approved, subject to certain conditions, by the Government of India in your letter No. 2 R.P., dated 14th March 1898. This railway will eventually, it is stated, be extended to Varanasi, Battili and the Vizagapatam district, forming a link between the Naupada Factory and the proposed Vizianagram-Raipur Railway. Considering, however, the magnitude of the traffic which, as explained in paragraph 2 above, the line will have to carry, it is clear to this Government that the narrow gauge light line will be inadequate for the service, and that the salt factory must be linked with the East Coast Railway by a broad gauge connection. If the Parlakimedi Light Railway is also to have facilities, these might possibly be secured by laying a third rail or preferably by arranging by means of a dock to wheel the narrow gauge vehicles on to the floor of the broad gauge ones, and so carry them down to the salt platforms. In the view, however, which His Excellency the Governor in Council has been led to adopt, it is not desirable to entertain either the Company's proposal or the question of giving special facilities to the Parlakimedi line.

* * * * *

6. . . . . His Excellency the Governor in Council is most strongly of opinion that the formation of the junction with Naupada should be undertaken at the expense solely of the East Coast Railway. It is apparently prepared to incur an expenditure of about Rs. 45,000 and the comparatively small additional cost of some Rs. 30,000 should not, in the opinion of His Excellency the Governor in Council, stand in the way. The money will be well spent and all complication will be avoided. This Government feels assured that the line will in a very short time earn a dividend at ordinary tariff rates of one-sixth of a pie per maund per mile. Until this is secured this Government considers that a special toll of two pies per maund may be unobjectionably levied on the salt moved over the siding, the toll to be reduced as the traffic expands.

7. I am accordingly to request that the Government of India will be pleased to sanction the construction of the siding as a part of the East Coast Railway.

Enclosure.

EAST COAST RAILWAY.

Agreement.

An Agreement made the———————day of———————189 , between the East Coast Railway (hereinafter called the Railway) of the one part and the Oriental Salt Company (Limited) (hereinafter called the Company) of the other part. Whereas the Company have applied to the Railway to construct for them a siding as delineated on the plan hereto annexed which the Railway have agreed to do upon the Company entering into such agreement as is hereinafter contained.

At Barang I was told that it costs from one anna to one anna three pies per maund to cart salt into Cuttack. A bag is 2 maunds, and a cart carries 12 to 18 maunds according to season. It is proposed that, when the Bengal-Nagpore Railway have carried their temporary lines across the rivers into Cuttack, salt shall be carried over these lines at about three pies per maund.

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An Agreement made the_____day of_____189 , between the East Coast Railway (hereinafter called the Railway) of the one part and the Oriental Salt Company (Limited) (hereinafter called the Company) of the other part. Whereas the Company have applied to the Railway to construct for them a siding as delineated on the plan hereto annexed which the Railway have agreed to do upon the Company entering into such agreement as is hereinafter contained.

Now it is hereby agreed as follows :—

I. The Railway shall, at the expense of the Company and at cost price to the Railway, including therein reasonable supervision charges, prepare the land, both inside and outside the railway boundary, for laying thereon the sleepers, rails, points and switches of the siding, including provision of ballast, the construction of embankments and such other works as may be deemed necessary by the Railway. The Company shall, if required by the Railway to do so, deposit with the Railway in advance, the estimated cost of all such works, including the cost of land outside the Railway boundaries and shall agree to pay on demand such excess cost, including supervision charges, as may actually be incurred in execution by the Railway on the Company's behalf of the said works.

II. The Railway shall, at their own expense, provide and lay the whole of the permanent-way material required for the siding and shall furnish to the Company an account of the cost of the same, such cost to include reasonable supervision charges. The permanent-way shall include points, crossings, signals, buffer and scotch blocks and a weigh-bridge if required.

III. The Railway shall, at the expense of the Company, maintain in good repair and working order, the works provided under clause I of this Agreement so far as the maintenance thereof is in the opinion of the Railway necessary for the safe and efficient working of the siding and the Company shall on demand pay to the Railway the cost of such maintenance.

IV. The Railway shall at its own expense maintain in good repair and working order the works provided under clause II of this agreement.

V. In the event of its being necessary, subsequent to the original construction of the siding, to make any alterations or additions thereto or to provide such items as fencing, signals or improved safety appliances or machinery of any kind, or to provide quarters for signallers or staff for the working of the siding, such additional works shall be provided and maintained, subject to the general conditions governing the original construction. No addition or alteration shall be made to the siding by the Company without the written sanction of the Railway administration, nor, without such sanction, shall any temporary or permanent structure be erected by the Company in such proximity to the siding as to affect in any way the working of trains over the siding. All sanctioned additions or alterations to the siding made by the Company and all sanctioned structures erected by the Company shall be made or erected in all respects in compliance with the regulations of the Railway administration on that behalf for the time being in force and shall be carried out by the Railway.

VI. The siding when and so long as it shall remain open for traffic shall be subject in all respects to the rules and regulations for the time being prescribed for sidings of the East Coast Railway.

VII. The Railway shall provide the necessary wagons and trucks and motive power required for the conveyance of the Company's traffic over and along the said siding and the Company shall pay for the traffic actually conveyed for them over the siding according to the rules, conditions and rates chargeable for the time being under the East Coast Railway Tariff for the class of traffic conveyed, any fractional mileage of the siding being reckoned as an additional mile for charge. Any terminals chargeable to the public from time to time for salt will be leviable for traffic dealt with on the siding as if the latter were a station on the East Coast Railway. No charge will be made for the haulage of empty vehicles over the siding. Provided that if at the end of any year ending the 31st December, the whole sum received by the Railway from the Company during such year for the conveyance of traffic over the siding shall be less than a sum calculated for the year at a rate of 10 per cent per annum (commencing in the case of the first year from the date of opening the siding for traffic) on the cost as furnished under Clause II of this Agreement of the providing and laying the permanent-way material, etc., together with any cost that may subsequently be added under clause V, then the Company shall on demand make good to the Railway any such deficiency.

VIII. Twenty-four hours shall be allowed for the loading and unloading of wagons and trucks placed in the siding and any wagon or truck detained after that time shall be subject to the usual demurrage charges in force on the Railway for the time being.

IX. All wagons and trucks intended for the Company's use shall be placed by the Railway at a point on the loading siding adjoining the Company's storage platforms as convenient as possible to the Company's works, such point to be determined by the Railway. Similarly all loaded or empty wagons and trucks intended for despatch from the siding shall be placed by the Company at the same point.

X. The Company shall be responsible for all damage occurring to all wagons and trucks while within the limits of the Company's premises.

XI. All loaded wagons despatched to and from the siding shall be charged for on their full carrying capacity.

XII. The Railway shall allow a rebate of half a pie per maund on account of loading and unloading done by the Company in the case of all traffic which under the rules of the Railway for the time being in force has not to be loaded or unloaded by owner.

XIII. The Railway may at any time construct or permit the construction of any branch or extension of the siding and may work traffic over the siding to and from such branch or extension. The Railway may sanction the use of the siding for the traffic of persons other than the Company on payment to the Company, by way of remuneration for such use, of a special toll of 5 pies per maund in addition to the Railway rates as defined below and the terminal charges mentioned in Clause VII to be paid to the Railway. All sums so collected in respect of traffic other than that of the Company (including the said special toll of 3 pies per maund) shall be credited or paid to the Company, the Railway deducting for its services, in addition to the terminals mentioned in Clause VII, sufficient only to cover the actual cost of moving the traffic, including wear and tear expenses of the Rolling Stock employed; these charges to be determined by the Railway Administration. (Modification suggested by the East Coast Railway). The working of such branch or extension and the use of the siding by persons other than the Company will be so conducted as to interfere as little as possible with the free use of the siding by the Company whose traffic shall have precedence. The management of all traffic whether of the Company or otherwise shall be under the full and exclusive control of the Railway.

XIV. In the event of the Secretary of State for India desiring to acquire full proprietary rights in the siding, the Company will, if and when requested by him so to do, sell and assure to him its rights, proprietary or otherwise, in the land and works provided under clauses I and V at the actual cost incurred by the Company and thereupon this agreement shall cease and determine subject to the rights of either party in consequence of any previous breach or non-performance of any of its provisions.

XV. The Company may at any time give notice in writing to the Railway of its desire to determine this agreement on the 30th June or 31st December then next ensuing being not less than six calendar months after the date of such notice and on such 30th June or 31st December as the case may be, or if the agreement be determined by the Railway, as may be done under the conditions prescribed in clause XVI of this Agreement then in either of such cases this agreement shall cease and determine subject to the rights of either party in consequence of any previous breach or non-performance of any of its provisions and thereupon the Railway shall, at the Company's expense, remove and retain for its own use the Permanent-way material of the siding and all other plant provided by the railway and the land occupied by the siding and all embankments and other works provided by and at the expense of the Company shall remain the property of the Company.

XVI. The cases in which the Railway may determine the agreement are :—

(1) Failure of the Company to pay any of the charges due to the Railway under this agreement.
(2) Refusal of the Company to carry out and abide by the rules and regulations mentioned in clause VI.
(3) Abandonment by the Company of the use of the siding.

XVII. The cost of stamp of this agreement will be borne by Government.

Signed at ——— this ——— day of ——— 1898.

Witnesses. ——— Manager, E. C. Railway.

Witnesses. ——— Oriental Salt Company (Limited).

From—The Secretary to the Government of India, Public Works Department.
To—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
Dated—Simla, 25th October 1898, No. 1606 R.C.

I am directed to acknowledge the receipt of your letter No. 1122 Ry., dated 7th September 1898, on the subject of the proposed construction, as a part of the East Coast Railway, of a siding from Naupada station on that line to the salt factory of the same name.

2. In reply, I am directed to invite a reference to Government of India, Public Works Department, letter No. 642 R.T., dated 16th June 1898, paragraph 3, in which it was stated that State Railways could not be expected to bear the cost of connecting particular factories with their main lines unless assured of an adequate and permanent return on the Capital expended, and to say that if the Madras Salt Department are prepared to give the necessary guarantee there will be no objection to the proposed branch being constructed solely at the expense of the East Coast Railway.

No. 956 Ry., 26th August 1899.

From—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
To—The Secretary to the Government of India, Public Works Department.
Dated—9th December 1898, No. 1520 Ry.

I am directed to acknowledge the receipt of your letter No. 1606 R.C., dated 25th October 1898, regarding the construction of the Naupada siding on the East Coast Railway. You intimate that no objection will be raised to its construction solely at the expense of the East Coast Railway provided that the Madras Salt Department is prepared to give a guarantee for a permanent and adequate return on the capital to be expended.

2. In reply, I am to invite attention to paragraph 6 of my letter No. 1122 Ry., dated 7th September 1898, in which such assurance as is possible in the circumstances was conveyed that the few miles of line between the station and the salt factory would in a very short time earn a dividend at ordinary tariff rates sufficient to cover the interest on the outlay, and that until then, a special toll of 2 pies per maund might unobjectionably be levied on the salt moved over the siding, the toll being reduced as the traffic expanded. His Excellency the Governor in Council has no objection, so far as this Government is concerned, to the guarantee asked for being secured on the Imperial salt revenue.

3. I am to request that this Government may be favoured with very early orders as to the construction of the siding.

From—The Secretary to the Government of India, Public Works Department.
To—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
Dated—Simla, 8th August 1899, No. 1255½ R.S.

The following is forwarded to the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, for information, with reference to correspondence ending with his letter No. 1520 Ry., of 9th December 1898.

Enclosure.

From—The Secretary to the Government of India, Public Works Department.
To—The Manager, East Coast Railway.
Dated—8th August 1899, No. 1255 R.S.

With reference to your letter No. 5929, dated 1st July 1899, to the address of the Director of Railway Construction, I am directed to communicate the sanction of the Government of India to the alternative estimate therewith received, amounting to Rs. 68,784, of the cost of constructing the Naupada salt siding on the East Coast Railway with the depreciated steel rails stacked at Naupada supplemented by ballast siding rails, as an ordinary work chargeable to the Capital account of the railway.

2. It is considered that charges should be levied for the carriage of salt over this siding so as to give a reasonable return on the capital outlay to be incurred. You should therefore arrange to make such a charge as will secure this result.

3. The sanction accorded in paragraph 1, which is chargeable to Capital, has been registered as No. 4, East Coast Railway of 1899–1900.

Order—No. 956 Ry., dated 26th August 1899.

Communicated to the Revenue Department.

(True Extract.)

Francis J. E. Spring,
Secretary.

To the Revenue Department.
" Consulting Engineer for Railways.
" Manager, East Coast Railway.

Exd. C. M. Thumbuswamy.

SERIAL
No. 1

Board of Revenue (Separate Revenue), No. 209, 27th May 1896.

PROCEEDINGS OF THE BOARD OF REVENUE
(Separate Revenue).

Resolution—No. 209, dated 27th May 1896.

The Board begs to call the attention of Government to the desirability of placing the Naupada and Karasa salt factories in connection with the East Coast Railway. This railway approaches only four salt factories in the whole of its length—Ganjám Naupada, Karasa and Jagganaikpur. Arrangements for a branch line into the Ganjám factory will form the subject of a separate communication when certain information which the officers of the East Coast Railway are preparing is received. The salt of this factory will all go north to meet the Orissa demand, which will increase largely as railway communication between Cuttack and the Central Provinces develops. Jagganaikpur is small and its future is not much affected by the opening of the line as its salt must be put into boats to get it across the Cocanada river to the railway station, and once in boats it will usually travel inland by canal. Karasa and Naupada are therefore the factories to the development of which the interior of the Vizagapatam and Ganjám districts and the adjoining parts of the Central Provinces must look for a cheaper and better supply of salt with the aid of railway carriage. Though the question is one of considerable importance to the Salt Department the interests of the East Coast Railway, which is a State undertaking, are still more concerned in it. At present not a grain of salt is coming on to the line, except that from the Ganjám factory, booked at Humma for Orissa, and this not only means the loss of possible earnings for the carriage of salt but also the loss of the carriage of the produce which carts coming to the coast for salt invariably transport on the down journey. The Board is therefore confident that, if the matter be placed before the Government of India in the Railway Department, arrangements for the construction of the necessary branch lines will be made either free of cost or on very advantageous terms.

2. The East Coast Railway at present charges one-eighth of a pie per maund per mile for the carriage of salt in large quantities. It will eventually probably raise this to one-fifth or one sixth of a pie, but not higher. At a very low estimate transport by cart costs three-fifths of a pie per maund per mile in these districts. The following table shows how rail-borne salt from the Naupada and Karasa factories should compare with cart-borne salt from the factories which are at a distance from the railway, at the points nearest to the latter factories, calculated on the basis of the above rates and on the assumption that branch lines have been made into Naupada and Karasa. The Board has added in the case of rail-borne salt a charge of 2 pies per maund to cover interest on the capital cost of the branch lines as explained below :—

Name of factory.	Distance from nearest station on the line.	Nearest station on line.	Cost of carriage by cart per maund to station in column 3.	Nearest railway factory.	Cost of carriage by rail per maund from factory in column 5 to station in column 3.
1	2	3	4	5	6
	MILES.		AS. P.		AS. P.
Surlá	9	Ichchhápuram	0 5	Naupada	0 8½
Calingapatam	12	Parlakimedi road ..	0 * 9	Do.	0 4½
Kuppili	20	Pondúru	1 0	Do.	0 7
Konada	14	Vizianagram	0 † 11	Karasa	0 7
Bimlipatam	15	Do.	0 9	Do.	0 7
Balacheruvu	9	Duvvada	0 5	Do.	0 3½
Polavaram	9	Narsapatnam road ..	0 5	Do.	0 8

* Includes crossing the Vamsadara river. † Two and half pies have been added for the Vizianagram municipal tolls.

Of course the points selected are those at which cart-borne salt would have the greatest advantage. Everywhere else the rates would be more in favour of the rail-borne salt, yet the above table shows that the latter should meet the former at an

advantage everywhere except near Surlá and Polavaram, if the salt could be got on to the railway by means of branch lines running alongside the platforms. The difference to the consumer which the advantage in rates shown above promises may at first sight appear small, but it must be remembered that the four factories which lie between Naupada and Karasa are small and incapable of being enlarged, and their outturn is sufficient to meet the demand on them only in good seasons. This is especially the case at Kuppili and Bimlipatam, where all the readily saleable salt is usually sold out before the new salt comes in. Calingapatam is not much better off so far as excise salt is concerned, and, under the present system, Government salt would not be offered for unlimited sales unless excessive prices were demanded by the excise licensees. The result is that the price of salt at Vizianagram, Palkonda and the chief salt markets near the railway is governed by the cost of carting salt thither from Naupada and Karasa, and the licensees of the intermediate factories profit by their position at the expense of the consumer inland and get higher prices than they are fairly entitled to. It is generally supposed that the salt of these factories is lighter and more popular with the trade than that of Naupada and Karasa, but on an examination of the records of distribution kept at the factories the Board doubts the accuracy of the explanation and believes that it is entirely owing to their advantageous position and the impossibility of increasing their outturn that the licensees are able to dispose of all the salt they can make at from 4 to 8 annas per maund. A large quantity of Karasa salt passes through Vizianagram on its way to Sálúru and Párvatipuram every year. This salt must compete with that from Konada and Bimlipatam at a disadvantage of about 1 anna 3 pies per maund while it depends on carts for transport. If it were transported by rail instead of cart, its cost in Vizianagram would be capable of a reduction of about 1 anna 6 pies and the excise licensees of Bimlipatam and Konada would have to make a corresponding reduction in their prices.

3. The Balacheruvu and Karasa factories have usually been supposed to compete for the salt trade of the south of the Vizagapatam district, but on a close examination of the distribution statements the Board finds that this is the case only to a very limited extent. Balacheruvu and Polavaram practically share a monopoly of the supply of the Anakápalle, Sarvasiddhi and Golgonda taluks (of which Polavaram gets about one-fourth or one-fifth), and rarely send any salt to Vizagapatam, Srungavarapukóta or the north of the district. It is only in the Viravilli division that the Balacheruvu and Karasa factories meet on common ground. The reason is that carts going from Balacheruvu to the north or from Karasa to the south must make a long detour through Vizagapatam and pay municipal tolls. In consequence about 85,000 maunds of salt pass from Balacheruvu to the south of the district every year which could be more economically carried by rail from Karasa if it had a branch line to its platforms. Taking Yellamanchili as the centre of the area supplied from Balacheruvu, the loss to the consumer per maund is the difference between $6\frac{3}{4}$ pies,—the cost of carriage by rail from Karasa,—and 1 anna 6 pies,—the cost of carriage by cart from Balacheruvu,—or, say, 1 anna per maund.

4. The figures given in paragraph 2 show clearly that with proper railway arrangements at Karasa and Naupada no salt worth mentioning should cross the line from the intermediate factories or Balacheruvu. The Board therefore estimates that all the salt now sold at Calingapatam, Kuppili, Konada, Bimlipatam and Balacheruvu, with the exception of that required for the population of the marginally-noted taluks, will be replaced by salt from Naupada and Karasa when branch lines are run into these factories. Taking consumption at $16\frac{1}{2}$ lb per head, this population would require 150,000 maunds *per annum*, which would leave the balance of the present average sales of those five factories,—say 365,000 maunds,—to be supplied by rail or by these factories at a reduction of something considerably over one anna per maund on present prices, a loss which their licensees would not easily submit to now. The whole of the present sales of the Karasa factory, with the exception of, say, 20,000 maunds for the population of the Vizagapatam taluk, would also go inland by

			Population.
Chicacole ...	Ganjám	...	2,12,608
Chipurupalle ...	Vizagapatam	...	1,56,831
Bimlipatam ...	Do.	...	1,15,309
½ Palkonda ...	Do.	...	1,04,410
½ Vizianagaram	Do.	...	83,313
½ Viravilli ...	Do.	...	98,933
			7,71,420

rail and add another 1,20,000 maunds of salt supplied at a reduction of considerably more than an anna per maund to the above quantity. 100,000 maunds of the present sales at Naupada would also be rail-borne to its destination at reduced cost, making a total of 5,85,000 maunds or, say, six lakhs. A reduction of an anna per maund on the selling price of this quantity would mean a saving of Rs. 37,500 to the consumer. An anna is also a low rate at which to estimate the reduction of cost, and the Board thinks that it would not be far wrong in putting the saving at Rs. 50,000 per annum.

5. In addition to this advantage to the consumer, the change would result in one or more of the intermediate factories closing from want of business and the saving of the cost of its or their establishment. These factories may have been necessary in the past, but with a railway running parallel to the coast there can be no objection now to a reduction of their number. The railway would profit still more than the Salt Department or the consumer, as once it secured the carriage of salt for the first 30 or 40 miles from the coast it would also get that of the down-loads of the salt carts at centres like Vizianagram, Chicacole road and the like, and be placed in a most advantageous position for competing with the cart-owners. Carts would of course compete at reduced rates at first but the struggle would be short in a district like Vizagapatam, where there is ample scope for the energies of the bandymen in the developing trade with the Agency and the Central Provinces, but so long as cart-borne salt can compete on fairly even terms with railway salt the cart-owners are likely to hold their own. Of course there is no reason why salt should not be carted to the railway stations at Karasa and Naupada and get the advantage of cheaper rates for transit, except the fact that the trade shows no signs whatever of resorting to this expedient. The reason probably is that there are no salt traders in the interior of Vizagapatam and Ganjám, who deal direct with the factories. The universal custom is for the bandymen from the interior to purchase the salt themselves, often with money borrowed from merchants dealing in salt upcountry, and to sell their loads on their arrival at the great salt marts of Párvatípuram and Sálúru or exchange it further on in the interior for oil seeds, grain, &c. With railway communication between the platforms and places like Vizianagram, this system would rapidly disappear and the work of removal to that town at any rate and probably to the principal salt markets in the interior would fall into the hands of credit merchants.

6. The Board believes that there are rules in existence under which the East Coast Railway could lay down the necessary branch lines, charging the Salt Department 4 per cent. *per annum* on the capital cost and receiving freight at the usual rates for all salt passed over the line. The branch which is required at Karasa could probably be made of second-class materials for Rs. 75,000, which would involve an annual charge of Rs. 3,000. This would be covered by a charge of 2 pies per maund on the sale of 3,00,000 maunds per annum, which appears to be a very moderate estimate of what the Karasa removals would be under the circumstances. Considering how much the railway is interested in the matter, the Board thinks that even better terms than those suggested above may be expected.

7. The Board considers that the Railway Department should be approached with reference to Karasa in the first instance as the East Coast Railway is much more interested in getting the salt made there on to the line than that from Naupada. The latter is not a port and consequently there would not be much to be expected from the down loads of the carts which at present go there for salt.

(True Extract.)

(Signed) D. D. MURDOCH,
Secretary.

(True Copy.)

(Signed) EDMUND MILLETT,
Assistant Secretary.

To the Secretary to Government, Revenue Department.

Exd. J. P. Oliver.

REVENUE DEPARTMENT.

1896.

Board of Revenue

(Separate Revenue),

MADRAS.

Printed June 27th.

Proceedings, No. 209, 27*th May* 1896.

Inviting the attention of Government to the desirability of placing the Naupada and Karasa salt factories in connection with East Coast Railway.

SERIAL
No.

RAILWAY.

Government {1897} of Madras.

PUBLIC WORKS.

Recd. } 1897. *Enclosures*

Regd. *Spare copies*

G.O., No. 773 R., 5th October 1897.

OCTOBER.

Inspection tour by the Consulting Engineer for Railways

Passing orders on report of an — during July and August 1897.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper:—

Inspection tour by the Consulting Engineer for Railways, Madras, during July and August 1897.

1. *General.*—The tour was made between 30th June and 26th August inclusive. Between these dates fourteen days halt were made at Madras, two at Waltair, two at Trichinopoly, and one at Tellicherry, so that thirty-nine days were spent in actual travel. During this period a distance of 5,860 miles was covered.

2. *Inspections made.*—The object of the tour was that the Consulting Engineer might go over the whole of the railways in the Presidency that lie within his Circle of inspection, and discuss all current matters personally with the Agents, Managers and Engineers, and thus get a personal knowledge of what is going on, such as could not be gained by perusal of mere papers. With the exception of the part of the Southern Mahratta Railway, which is within the Madras Circle for accident inspection only, and of three short pieces aggregating 77 miles of the South Indian Railway, the inspection of which would have involved the loss of two or three extra days, the whole of the open lines within the Circle were inspected. A careful inspection was also made of the alignment and conditions of the proposed Calicut-Cannanore Railway, and visits were paid at two points to the Bezwada-Madras Railway. The opportunity was taken to make the regular half-yearly inspection of the North-West section of the Madras Railway, His Highness the Nizam's Guaranteed State Railway, and the East Coast State Railway. Special inspections were also made of the Locomotive works at Perambúr and Negapatam, and the Electrical and Engineering workshops at Arkonam and Trichinopoly. The regular half-yearly inspection of the South Indian Railway, and of the South-West branch of the Madras Railway had already been made by the two Deputy Consulting Engineers; so the Consulting Engineer confined his detailed inspection, on these lines, to the comparatively more important of the matters which came to notice.

3. *The Inspecting Parties.*—The inspection of the Madras Railway, North-West section, was made in company with the Acting Agent and his principal officers; that of the Nizam's Guaranteed State Railway was made in company with the Agent and General Manager and his principal officers; that of the East Coast Railway was made in company with the Officiating Traffic Manager and the Engineer-in-Chief, and general business was discussed in Waltair with the Manager, who, on account of his approaching furlough and of his making over charge to his successor, was unable to accompany the inspection party; that of the Madras Railway, South-west section, was made with the Acting Chief Engineer; and that of the Calicut-Cannanore line was made with the Acting Agent, Madras Railway, with his Acting Chief Engineer, and the Engineer who made the survey.

4. *Madras Railway, North-West Section.*—This inspection, which, as already remarked, was the regular half-yearly one, was made on the 5th, 6th and 7th of July. It will be found to be fully reported on in G.O., Nos. 691–92 R., dated the 20th September 1897; so no more need be said about it here.

5. *His Highness the Nizam's Guaranteed State Railway.*—This inspection also need not be further referred to except that it may be mentioned that its report will be found in full in G.O., No. 573 R., dated the 19th August 1897. It occupied the 8th to 11th July inclusive.

6. *East Coast State Railway.*—This inspection was made between the 12th and 15th of July inclusive, and the 16th and 17th were spent in Waltair with the Manager in the discussion of matters generally, and in the inspection of the Locomotive shops and the Vizagapatam harbour. Its report will be found in full in G.O., No. 581 R., dated the 21st August 1897; so it need not here be further referred to, except as regards the following two important matters:—

(*a*) It appears to be advisable that the Government of India, who administer the East Coast Railway, should be specially addressed upon the subject of the great importance of a more intimate connection between the railway and the salt trade. As much does not seem to have been done as might have been done to work these two branches of public business in due co-ordination for their mutual benefit. The representation to the Government of India on this subject might be based upon a Resolution of the Board of Revenue. The present Salt Commissioner, Mr. Willock, has a special personal knowledge of all that relates to the salt-*cum*-railway question, and a note upon the subject from that officer would be most valuable.

(*b*) The other large question in connection with the East Coast Railway which concerns this Government is that of canal competition, a competition confined at present to the Cocanada-Bezwada section, but which will, in the future, also arise on the section from Bezwada to Madras. It is understood that the question is being handled in the Irrigation Branch of the Public Works Department.

7. *The South Indian Railway.*—This inspection, which, as already remarked, was not one of the regular half-yearly ones, was made between the 28th July and 5th August inclusive, and during that period all current questions were fully discussed on the spot with the Agent. A few comments upon the Deputy Consulting Engineer's previous inspection will be found in G.O., No. 583 R., dated the 21st August 1897, but the following additional remarks are here recorded:—

(*a*) The increasingly heavy traffic on the suburban part of the South Indian Railway, as well as the demand for a better connection with Madras in general, make it seem probable that the doubling of the line between Egmore and Saidapet may soon be necessary, and that in addition it may be considered advisable to construct a loop from Saidapet road by Adiyar and Mylapore *viâ* the beach to the harbour terminus, with a local circular service. I agree with the Agent in thinking that in the near future this improvement is likely to recommend itself to Government as certain to pay.

(*b*) One of the principal objects of the inspection was attained on arrival at Negapatam on the morning of the 29th July, when a meeting was held at which the long pending question of revision of the locomotive running lengths was thoroughly discussed with the Agent and heads of departments, and an agreement was arrived at which is likely to result in considerable economy of working. This has now gone to home the Company's Board of Directors, and will, in due course, come up for the approval of Government.

(*c*) At Negapatam the very extensive Locomotive shops and general Stores of the South Indian Railway were inspected, as was also the first part of the alignment of the proposed extension up the coast towards Nagore. Large alterations of the Locomotive shops are proposed by the Locomotive Superintendent; but these have to be considered in connection with a proposal to separate carriage and waggon work from engine work, and to locate the former at Trichinopoly. Regular proposals in regard to these important questions may, in due course, be expected from the Company's Agent.

(*d*) Between July 29th and August 1st the line traversing the rich Tanjore plains was inspected, as also the Erode branch, and the southern section through the interesting district of Madura and down to Tuticorin and Tinnevelly. At Trichinopoly the plans of the proposed Tinnevelly-Quilon Railway were gone into with the Chief Engineer of the South Indian Railway, and the conviction forced itself upon the Consulting Engineer that the country where the Western Ghâts are traversed is a

1 in 40 rather than a 1 in 80 country, and that the estimate is a low one, and that it will probably be found that the Travancore Durbar might get a far more useful line, extending from Aramboli *viâ* Trivandrum to Quilon, for the same money that the proposed direct Shenakotta-Quilon line seems likely to cost. The Agent, South Indian Railway, would prefer the Tinnevelly-Aramboli section to the proposed section from Tinnevelly to Shenakotta.

(*e*) On the 4th and 5th July the northern, or famine, section from Villupuram to Dharmavaram, and also the Renigunta-Nellore section, were inspected. A railway through such a country can scarcely be expected to pay much more than working expenses, and even that only with careful management. It is, for this reason, in contemplation to run one train each way daily instead of two, between Pakala and Dharmavaram.

(*f*) The Madura-Pámban line was discussed with the Agent. It will apparently be a remarkably easy line to construct, and the country is one through which a railway ought to pay well. But I agree with the Agent in thinking that the alignment requires further consideration. First with regard to the proposed location of the junction some miles out of Madura on the north of the Vagai river, and second with regard to the proposed diversion to Shivaganga by a detour involving ten miles of increase of length. As regards the junction, the existing buildings of the Locomotive Department at Madura are so numerous and so expensive that it would be a pity to abandon them, especially as a very large proportion of the passenger traffic, both 3rd class and the higher classes, will require to be brought into Madura itself where the temples are. As regards the proposed detour to Shivaganga the line is essentially a line of *through* traffic rather than of local traffic, and it is all but certain in the near future to be the main through route between India and Ceylon. It therefore seems a pity to handicap all this through traffic for ever by so much extra mileage. If the traffic of Shivaganga is not worth tapping by means of a short branch, it is certainly not worth while to haul all through traffic ten miles out of the way for the sake of serving it.

8. *The Bezwada-Madras Railway.*—The inspection merely touched this line at Nellore and at Ennur. At Ennur the bridge over the creek, which is now completed, was inspected. At Nellore it was observed that the Gudur-Nellore section is rapidly approaching conversion from metre to broad gauge. The Penner bridge, 23 spans of 70 feet and 5 spans of 40 feet on wells sunk on the average to about 50 feet deep, is practically finished. About 30 miles of line have been laid north of Nellore. Here as well as at the Bezwada end and at the Ennur end the progress of plate laying is all but at a stand for want of sleepers, the arrangements for the supply of which are said to have broken down. The masonry both at Ennur and at Nellore is of very first-class quality, and all work at the latter place, where I looked into rates with the Executive Engineer, seems to be done very economically.

9. *The Madras Railway, South-West Section.*—As already remarked, the regular half-yearly inspection had previously been made by one of the Deputy Consulting Engineers, and the Consulting Engineer's comments thereon will be found appended to the end of that report. There is, in connection with this section, a question of the best principles for the use and construction of catch sidings. There are at present no definite principles for the guidance of the Company, and it seems necessary that some should be laid down. This has been taken up specially in the inspection report. An interesting point came casually to notice which seems worth recording, viz., that, since the Madras Railway have taken to covering their sand ballast with a thin layer of broken stone, they have found such a saving in ballast trains to result that they have a considerable number of waggons on their hands for traffic purposes which were previously not available. This is due to the cessation of wind erosion which made it necessary to be continually renewing the sand ballast.

A very important matter came prominently to notice, viz., the very unpleasant swaying which occurs with high speeds over the new section of rail. This swaying is quite a distinct motion from the usual rolling of vehicles on their springs, it is a more unsafe motion, and consists of attempts on the part of a vehicle to place itself horizontally out of parallelism with the centre line in one direction, followed at intervals of

perhaps half or thirds of seconds by attempts to go out of parallelism in the other direction. The path in fact of the front and tail of each vehicle is sinuous horizontally. It ceases on curves, as might be expected. It is ascribed by the Company's Engineers to the radius of the head of the new rail being flatter than that of the old, and to the fact that the grooving worn by the head of the old rail in the wheel tyre does not fit the head of the new rail. The correctness of this theory can now easily be tested, and had better at once be tested, by putting all six wheels of the inspection carriage into the lathe and turning a new and true surface on them. If then, a month or two hence, it is found that the same swaying takes place with the same carriage at the rear of a similar train, when run at 60 miles an hour over the new rails, this theory must be discarded. Meanwhile, it seems a probable theory enough.

There is at present an important trade in timber for the Kolar Gold Mines from Madras Railway stations on the West Coast, as there is similarly an important traffic in English coal from the Madras side to the same mines. With extension to Cannanore and a few miles further on to Baliapatam, this timber trade will doubtless be largely developed.

10. *The Calicut-Cannanore Railway.*—The Consulting Engineer's inspection notes on this line will be found separately reported with G.O., No. 695 R., dated the 21st September 1897. It is very important, for climatic and other reasons, that work upon this extension should be begun on soon after the cessation of the north-east monsoon as may be found possible. An interview was arranged with M. Peuvergne, the Administrator of the French Colony of Mahé, and it was settled with that gentleman, after a personal inspection of the ground, that the line on the south of the Mahé river should be kept as close as possible to French territory consistently with non-infringement of the piece of frontier which is at present in dispute. Certain doubts with regard to the possibility of carrying the alignment at the north of Mahé river, so as to avoid French territory without a long and expensive detour, were also set at rest as the result of this interview.

At certain difficult parts of the alignment it was settled that further trial lines should be run, and it is expected that a better line and a more economical line to construct and to work may result from these trial lines. In the opinion of the Consulting Engineer and of the officers of the Madras Railway Company it will undoubtedly be necessary to continue the line beyond Cannanore to the important trading village of Baliapatam, whence many miles of backwaters, rivers, and canals form valuable feeders for a railway. Full details are to be found in the separate report on the Calicut-Cannanore Railway.

11. *Mysore Railways.*—The opportunity of the visit to Bangalore was taken to discuss railway questions with the Resident in Mysore and with the Chief Engineer of the State. It appears that the Mysore Administration is most anxious to secure connection with a West Coast port; Mangalore by preference, but if that is not possible, Tellicherry or Cannanore. As the Government of India have declined at present to sanction further investigation of the Saklespur-Mangalore ghat, it is the intention of the Mysore Administration to depute an engineer—by preference a certain reliable and experienced Engineer of their own staff—to search about for an alternative ghat during the coming cold weather. The merchants in the coffee export trade at Tellicherry are naturally very anxious that their port should have the preference, and they point to a pass whereby, according to them, easy access may be gained to the Mysore plateau through the best coffee-producing parts of Coorg. Meanwhile, the Mysore Administration propose to at once construct the short branch line from Arsekeri to Hassan, but they do not care to extend this branch further westward so long as uncertainty remains as to the best route to the Coast.

12. *Ewing's Tramway.*—When at Calicut I took the opportunity of inspecting the short section of Mr. C. Ewing's patent single rail tramway which has been experimentally laid down, in anticipation of the formation of a Company to supply some miles of it to Calicut. Two stout heavy bullocks pulled two vehicles coupled together, each vehicle weighing 16 cwt. and each carrying 3½ tons nett. The load on the idle wheel was said to be 3½ cwt. per each vehicle, but it could be reduced at will to

practically nothing. Five cwt. had to be transferred from one side of a vehicle to the other to over-balance it, and even then it only tilted over a few inches and no harm was done. The load on each of the working wheels seemed to be about 2 tons nett. The bullocks pulled this load with great ease even up a grade said to be 1 in 60, and round a curve of 30 feet radius. Sleepers are 18″ × 8″ × 4″. Rails are 30 lb. per yard. Vehicles are 10′ × 10′ and are said to cost Rs. 500 each. Mr. Ewing said that the tramway can be laid and equipped for about Rs. 6,500 per mile.

OOTACAMUND,
10th September 1897.

F. J. E. SPRING,
Offg. Consulting Engr. for Rys., Madras.

ORDER—No. 773 R., dated 5th October 1897.

Mr. Willock will be requested in the Revenue Department to favour Government with the note referred to in paragraph 6 (*a*) of the Report.

2. The disposal of the question of canal competition alluded to in paragraph 6 (*b*), is awaited.

3. Paragraph 7 (*d*) is brought to the notice of the Political Department in continuation of G.O., No. 757 R., dated 1st October 1897; also paragraph 10 in continuation of G.O., No. 695 R., dated 21st September 1897.

4. The attention of the Agent, South Indian Railway, is invited to the remarks in paragraph 7 (*f*), and that of the Agent and Manager, Madras Railway, to paragraph 9.

5. A copy of these Proceedings will be forwarded to the Resident in Mysore and to the Government of India for information.

[Here enter No. 774 R., dated 5th October 1897.]

(True Extract.)

(Signed) F. J. E. SPRING,
Offg. Joint Secy. to Govt.,
Railway Branch.

To the Consulting Engineer for Railways.
" Agent and Manager, Madras Railway.
" Agent, South Indian Railway.
" Manager, East Coast Railway.
" Revenue Department.
" Political Department.
" Resident in Mysore, with covering letter.
" Chief Engineer for Irrigation.

Exd. T. K. Narayana Aiyangar.

SERIAL No. 4

RAILWAY.

Government {1898} of Madras.

PUBLIC WORKS.

Page 5

Recd. } 1898. Enclosures
Regd. } Spare copies

G.O., No. 206 R., 4th February 1898.

FEBRUARY.

Report of Inspection of the East Coast Railway including the Puri Branch

The Senior Government Inspector's — for the half-year ending the 31st December 1897, communicated to the Manager of the Railway for information and necessary action; and copy of the Proceedings forwarded to the Government of India.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper:—

EAST COAST RAILWAY.

STANDARD GAUGE 5′ 6″.

Mileage open for traffic 546 *miles* (*including Puri branch* 25 *miles*).

INSPECTION Report for the half-year ending 31st December 1897.

The inspection was made on January the 3rd to the 6th, inclusive, in company with the Manager and the heads of the Engineering, Traffic and Locomotive Departments, and over their respective lengths by the District officers and their assistants.

2. *The Road.*—Except on the Puri branch, the road has got a very good top on it nearly everywhere. On the main line, ballast is still deficient in places, and it will not be possible to get the entire road into a uniformly good condition just yet. But on the whole the road is a good one, fit for any ordinary speed. Large quantities, ten or twelve lakhs of cubic feet I think, of ballast have been spread since last inspection, and larger quantities have been collected. Now that banks have pretty well consolidated, it would be well to have a regular survey made of the ballast in the road and a schedule of how much remains, mile by mile, to bring it up to standard. For many miles there is little or no bottom ballast, and, though the road looks well enough in the dry season, it must be expensive to maintain during the rains until properly ballasted. As regards the Puri branch, I think it very doubtful whether the profits on working it during last rains, with the heavy engines, in its unballasted condition while the high banks were quite new, have not been many times over swallowed up in subsequent maintenance; even still there are 10 men per mile on it, and yet it is rough. For some miles south of Ellore the road has rather a poor top on it. For about 20 miles south of the Gódávari the road is sand-ballasted; this makes a most excellent road, but is very dusty; it might, with great advantage, be covered up with a thin layer of broken stone as is done on the Madras Railway. On this length, by the way, a curious thing was brought to my notice. The sand is the sharp quartz sand of the Gódávari, and it is found that on curves of less than 2,000 feet radius the rubbing of the foot of the rail, with the help of the sand, has cut most of the dog spikes nearly through just below the head. I have never heard of this having been found to occur elsewhere, and it might, perhaps, never occur with micaceous, wind-blown sand; but it is certainly a source of very considerable danger under such conditions as are prevalent where it was shown to me, and it will necessitate the exercise of care on the part of the platelayers. It is just five years since the spikes referred to were driven. The mischief is said not to occur in curves of larger radius.

3. *Stations.*—At Khurda road a new lamp-room has been added since last inspection, and also a new bath-room to the 2nd-class waiting-room, and a hydrant in the 3rd-class waiting-shed. Puri temporary station is just as it was six months ago, but they hope to get into the permanent station 3 miles further on by the end

of March next. At Chatrapur a waiting-room for Europeans is certainly necessary, as Chatrapur is the civil station of the district. Berhampore wants a goods-platform; it has a goods-shed and gets lots of traffic. Kottavalasa wants a dead end siding. The home signal arms at Simhachalam require stops; they now fall vertically. At Waltair, since last inspection, a corrugated iron passenger waiting-shed has been put up; half of it is, at present, being used as a goods-shed. At Durgada, where there is a stone and ballast siding, there has been put up since last inspection a signal interlocked with the siding points. At Gódávari North, the goods-shed has been built which was recommended at last inspection. The question of the relocation of Kovvur station in connection with the re-alignment necessitated by the Gódávari bridge requires looking into. Meanwhile, certain temporary proposals of the Manager for pulling the lines about at Kovvur are approved.

At Bezwada there is a question of the best position for certain new staff quarters. From an intimate personal knowledge of the locality, I am inclined to advise that they be built on the side of the hill instead of on the black cotton plain; because the few degrees of extra heat on the hill can be compensated for by thicker walls and flat thick roofs, whereas it will always be unhealthy down on the black cotton low land.

4. *Watering arrangements.*—It has properly been decided to lay a large bore water-pipe from the pump in the Kistna bridge north abutment to the Bezwada locomotive tank. For the supply of good water to the locomotive shed at Sitanagram—a very important matter—I incline to recommend as follows. As the bridge footway contractor uses only one of the overhead footways, place iron water tanks inside the battlements on both upstream abutment towers. Connect these across the bridge by a small pipe, say a two-inch pipe, laid on the upsteam overhead footway. This will act merely as a balance pipe to bring the water to a level in both tanks. Then pump into the tank at the Bezwada end, and draw off from that at the Sitanagram end. I think it will be found that the contents of the Sitanagram tank will be large enough, as compared with the demands of the Sitanagram locomotive station, to allow it to fill at its leisure from the tank at the Bezwada end of the bridge through the small pipe. That, of course, can be easily calculated. The advantages would be the full utilization of the steam pump at the excellent abutment source of water-supply, and the possibility of shutting up the separate engine pumping arrangement for the supply of the locomotive tanks at Sitanagram. At Khurda road the water-supply in the well is very short, but a new source of supply has been found and arrangements are being made. At Kalupara Ghât the water turns out to be very good, so it is being made into a watering station. At Rambha the watering arrangements somewhat urgently require looking into. At Chatrapur the water-supply is unsatisfactory, but in a cutting, about a mile to the south, there is plenty of good water which can apparently be run down to Chatrapur by gravity, and for this the small piping which is to be removed from Bezwada might be utilized. The locomotive well at Waltair has been much improved since last inspection. The artesian well at Cocanada is to be re-opened. Water is rather short at Palasa, as also at Parlákimedi road. The engines watering heretofore at the latter place will have to fill at Kota Bommali.

5. *Telegraph.*—At numerous places all along the line, and especially at mile 38–39, I noticed that where the wire crosses the line, the poles are planted within about 10 feet of the centre of track. This is contrary to orders.

6. *Steel sleepers.*—I was told that corrosion amongst the steel sleepers is but little noticeable. But in spite of the great care which was exercised during the construction days to avoid laying them in salt soil, I noticed some places near mile 161–62 where there were steel sleepers and yet salt encrustation was visible in the borrow pits. I should like the sleepers at this place to be taken out and specially examined.

7. *Dead end sidings.*—Under the orders which were current at the time of construction, orders applicable rather to lines on the North-West frontier than to the East Coast, all through sidings were made 2,000 feet long. There was not enough material for dead ends at most of the roadside stations, and consequently much inconvenience has to be put up with at those stations when goods traffic offers. Again, in

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many small stations where dead ends have been provided, there is scarcely a waggon per month of goods traffic. It would, I think, be wise to cut down many of the through sidings from 2,000 feet to 1,400 feet and to eliminate some of the unused dead ends, using the material so set free to give dead ends where they are obviously needed.

8. *Junction for the Vizagapatam Branch.*—There is a question of laying out a direct through line here, a third side to the triangle, and of working the line from there through Waltair to the Port as a branch line. The idea is a good one and might now be elaborated. It would save, I think, some two hours on the through Calcutta-Madras journey. As the engine station, Waltair, would be on the branch, the fresh engine would take out the branch train and the tired engine would return with it.

9. *Floods.*—Between Durgada and Samalkot, and chiefly between Pithápuram and Samalkot, further flood damages are threatened. The subject is being carefully gone into by Mr. J. Eaglesome, and I have no doubt that it will be properly treated. It seemed to me that it is rather a question of raising the bank and thoroughly pitching existing waterways than of giving extra spans; but naturally the question is one for more than superficial consideration. Money is very properly being now spent on flooring.

10. *Samalkot Station.*—I was told of some proposals for giving more accommodation for passengers here, by turning the present third-class waiting hall into a refreshment room and waiting room for higher class passengers, and building an outside waiting shed. But I think it would be wise to wait and see the effect of the completion of the Gódávari bridge and of the connection through with Madras, and meanwhile to erect a small temporary shed on the platform without interfering with the present hall.

11. *Cocanada Branch Culverts.*—Some of these show signs of being thrust forward by the swelling black cotton soil behind them. They might, with advantage, be inverted, and perhaps flat-arched.

12. *Proposed Parlákimedi Branch Railway.*—I met Mr. Sandford, the Engineer of Parlákimedi estate, to whom the preparation of this project has been entrusted. It will be 25 miles of a 2′ 6″ gauge line. It is proposed that it should first connect the salt factory of Naupada with a salt platform alongside the railway station, and should then cross the East Coast Railway on the level, and run to Parlákimedi. I understand that the funds are to be provided by the Zamindar and are now actually available. If this line is made, the East Coast Railway arrangements at Naupada station will require some modification. The new line ought to be a very valuable feeder to the trunk line, and very useful also to the Salt Department. I am disposed, since I went over part of the Bengal District Road Tramway Company's lines a few weeks ago with Sir Acquin Martin, to advise that this and all similar narrow gauge branch lines be made on the 2′ 0″ gauge instead of 2′ 6″. The 2′ gauge is good enough for anything up to 50 or 60 miles long in a country of ordinary density of population and of produce, if provided with rolling stock of proper design. I hear that it is possible that the Oriental Salt Company may do all the handling of the salt on the east side of the East Coast Railway, in which case the Parlakimedi Railway would start from the west side.

13. *The Manganese Trade.*—I was told that this now averages 12 to 15 waggons per day. Unfortunately the lead is short, only about 50 or 60 miles.

14. *Vizagapatam.*—It is a pity that a little money is not available to gradually tidy things up a bit at this port. Half a lakh would do a vast deal of permanent work that must be done sooner or later, chiefly the levelling up of the yard and the filling up of great holes and the making of the foreshore fit for the manganese trade. A floating pontoon landing place like the smaller floating Calcutta jetties is very badly wanted just at the goods-shed, and a road is wanted from the business part of the town to the same goods-shed. The track through Ross Hill cutting has been pulled up at last as was inevitable sooner or later, and the only proper logical sequence of this now is to hand over the cutting to the municipality to carry a road through it to

the port station and goods-shed. The line will have to be carried round eventually, balloon-wise, through the thinly-housed part of the town, into the south end of the present Vizagapatam station. It might be as well to do this as soon as money is available and so make a good job of it once for all. I know the conditions well, and can say that the carrying out of none of these suggestions need in any way prejudice, or be prejudiced by, whatever is to be done in the future about either the convergence of railways on Vizagapatam port, or the harbour scheme.

15. *The Salt Trade.*—I was told that some months ago there was a great export of salt from Naupada towards Orissa, but that this has now stopped, because it was merely the temporary result of the selling of salt either damaged or likely to be damaged. But from Humma 6 or 7 waggon loads are said to go daily towards Cuttack. This salt is booked, not to the terminus at Barang for the most part, but to Khurda or Bhubaneswar, whence it is carted to Cuttack. The object apparently is to evade the terminal placed on salt booked for Barang which preferred not to use the outagency. But the Manager has now abolished the terminal, and it seems probable that booking to Barang will be resumed. It is a special condition of Humma factory that a lot of local carts make a livelihood by working between the pans and the railway. About 100 to 200 cart loads are said to come daily to the station from the factory, and a cart reckons to make two trips per day. There is a good road. Under such favourable carting conditions as these it is doubtful whether a short branch railway would pay or is necessary. At Naupada either the Parlákimedi Railway or the Oriental Salt Company will perform the function of carts. The conditions at Karassa factory are altogether different. Here there is no class of local cartmen, and it is necessary, for the lifting of the salt at all, that the cartmen from the hinterland, who themselves are small traders and not merely hirelings, should bring their carts right down to the pans. Naturally in such circumstances they do not get in touch with the railway. But if the railway were to go right down to the pans and to place the salt (in bond) at the trading centres of Tuni and Vizianagram, not only would it get freight on so much haulage, but the cartmen would presumably readily lend themselves to an arrangement which would result in the saving to them of a week on their journey. However the very recent appearance on the scene of the Oriental Salt Company, as represented by Mr. MacNab, seems likely to so completely change all the conditions of the trade that it is quite impossible now to say whether it would be wise for the railway to take a siding down to Karassa or not.

16. *Locomotives.*—Two important classes of defects in the heavy compound locomotive engines in use on the line were brought to my notice. First the breakage of cylinder port bridges, and second the cracking of fire-box tube plates. The breakage of cylinder port bridges has occurred in 8 or 10 cases, and to both high and low pressure cylinders. I do not know whether failures of this nature are or are not common. If not caused by loose nuts getting caught in the port, they may apparently be ascribed to unequal shrinkage at the place where the large mass of hot metal in the cylinder joins the thin mass at the port bridge. This might easily result in initial flaws in the casting, and eventually, after much vibration, and perhaps an occasional knock under the valve face, the bridge would go. The damage is being patched up as it occurs, and the port faces are being covered with steel plates screwed down to them.

The second and more important class of failures that came to my notice in the same compound engines was a cracking of the copper fire-box tube plates, the crack running through the bridges between the holes, and sometimes through several bridges in succession. These cracks are found to occur for the most part in the outer two or three rows of holes at the sides, top or bottom of the plate and *not* towards the middle. I prefer to deal with this very important matter in a separate report. The Civil Engineering College, Madras, would, I am sure, be glad to undertake the testing of parts of the failed plates and to compare them with commercially pure copper, and with similar plates of Mádras Railway engines which have not failed in this particular way, in the 100 ton testing machine of the College. I recommend that this testing be done. I was shown indentations inside the plates of the main frames of these engines where the foundation ring rivet heads of the fire-box foul the frames, thus communicating undue vibration to the fire-box and enhancing the state of rigidity from which it, presumably, suffers.

17. *Rolling-stock.*—I was told that arrangements are being made for completing the rolling-stock which is debitable to the Capital Account of the line during the current financial year. It is proposed, and from what I could learn wisely, to give up the use on the East Coast Railway of intermediate carriages, and to turn them into 3rd-class female carriages.

18. *Stores.*—I was very much struck with the comparatively large quantity of stores in charge of the Locomotive Department and the small quantity in charge of the Stores Department. Such stocks as metals, timber, and in fact everything normally in use, except perhaps sufficient of each for a few weeks' consumption, ought, in my opinion, as a matter of principle, to be kept in charge of the Stores Department. As an instance of the evils resulting from the dual system, I was shown a large quantity of teak timber, mostly "country squares," perhaps a lakh or a lakh and a half's worth, which was lying unused in charge of the Locomotive Department, while enquiries for teak are going on all round from the Storekeeper. This latter officer having no official knowledge of the Locomotive Department teak, and the Locomotive Superintendent knowing nothing of the enquiries for teak, it has resulted that this large and valuable stock is lying about, and has, I hear, been lying about for two or three years, and is certainly deteriorating in value. This is quite wrong. I advise that it be transferred to the Stores Department, and that arrangements be made for its sale or utilization. I was told that the stores in charge of the Locomotive Department were about double the value of those kept by the Stores Department. Arrangements for remedying this state of things are now in train, and quite time too. Needless to point out the money might all this time have been very much better employed elsewhere, down at the harbour face for example. There did not seem to be any abnormal accumulation of stores either with the Stores Department or in the Locomotive Stores. But special efforts might, I think, be made to get rid of a few things that are almost certainly wanted elsewhere in India if only men could hear of them. Some of these things though quite good have been locked up for years in store. Amongst other things I saw about 40 twelve feet iron well curbs, priced at Rs. 7-4-0 per cwt.; 6 forty feet Bell's dredgers, surely wanted on some of the East Indian or Bengal-Nagpur extensions; 50 distant signal winches which might easily have been used on the Bezwada-Madras Railway and may perhaps still be used on the Bengal-Nagpur Railway; 20 or 30 Bell's or Bull's dredgers of small sizes; 2 Glover and Hobson's rock drills; 18 metre gauge end tip waggons; and 13 tons of lead coloured paint priced at Rs. 12 per cwt. I am sure that the Manager is open to reasonable offers for all these things.

19. *Hospital.*—One of the drivers' quarters at Waltair is being used for a hospital and dispensary. It seems to me to be very cramped, and it is located in a place where I know that four or five feet of water sometimes stand in the rains, which might be awkward for disabled patients. This is the only place where sick Europeans can be accommodated. Whatever may be the future of the East Coast Railway, I think that a proper hospital ought to be built at Waltair.

20. *Godavari Ferry.*—In my last report I found fault with the mode of attaching the rails on the shore to those on the waggon ferry pontoons. This is now being satisfactorily remedied. The approach road to the ferry on the south or Kovvur side is being slewed round to a point which will make the cold season passage of the river a business of only a few minutes, saving perhaps an hour or two on the through journey.

21. *Gódávari Bridge.*—Of the 56 well foundations on which the bridge is to stand, the curbs of 19 have been pitched and 17 of these have had their masonry started. About 300 lineal feet of very excellent masonry has been built and perhaps 150 feet of well sunk below ultimate level of well top. It seems likely that 33 spans may be on dry land in the cold weather and that the wells of 30 of these and many of their piers may be completed this season. But judging by present arrangements it seems unlikely that anything will be done this season on the 23 foundations in more or less deep water. It might have been expected that everything would have been done to start the deep water piers first, as it is here that delay will occur and difficulty may occur; but I understand that there is some question of saving money by waiting to bring round the pontoons now being used at the Indus bridge. I fail to see where the economy comes in, for new pontoons for the Gódávari can probably be built locally for

less money than the freight alone of the Kotri pontoons will cost, not to mention the cost and inconvenience of each additional year of maintaining the ferry. I gathered in conversation with Mr. Walton, and I think it right to refer to it here, that he either is, or fancies he is, hampered about the obtaining of supplies and of plant on a scale commensurate with the magnitude of his work. I understood that he could not get a few sticks of long timber, stuff that *can* only be obtained in the form of pitch pine, through English ports from Pensacola and Oregon. From one to two lakhs worth of such timber was used on each of the following bridges, Benares, Sher Shah, Sukker and Kistna, and much of it passed on at a reduced value from one to the other. The result of the entire absence of any of it at Gódávari would perhaps account for the insufficiency of the well-sinking arrangements, small light dredgers worked one at a time by 3-ton hoists from little rail gantries, instead of 40 feet Bell dredgers which the same hoists could easily work, and plenty of which are lying around only waiting to be picked up on the East Coast and I think on the Assam-Bengal Railways. The gallows for big dredgers of course require big and long sticks.

I wish to record here that I entirely disapprove of the design of the deep water wells. They are likely in my opinion to bring disaster. I also disapprove of the small spans adopted over the deep water. The spans in my own final design were 250 feet, and the piers and their caissons for the deep water part of the river were specially designed with an enlarged base, for stability in the very deep and rapid current where but scanty support is to be expected from the few feet of bottom in which the base can be embedded. My caissons too were designed with special provision for pneumatic sinking; a very necessary provision where, as is the case in the deep water wells, probably boulders and certainly rock, and perhaps not level rock either, have to be encountered. There is no real reason, æsthetic or other, why all the spans should be of one size. No such necessity is recognized in American engineering, or in modern English engineering for that matter: and the conditions of the Gódávari are such, especially in the case of a bridge designed as is the present one to cross the entire breadth of it instead of to cross between training works, that it is good engineering to have small spans, 150 feet as designed, for the southern 30 or 40 spans, and then possibly a few 200 feet ones, and the rest 250 feet. It is even a question whether it would not be wiser to make the northern two or three shore spans 300 feet, in order to minimise the risk of their foundations, and to get the wells out into better ground as early as possible. The piers of these larger and deep water spans ought to splay out at the base as in my final design, and ought to be provided with pneumatic attachments for use if found necessary.

It is not yet too late to attend to these very important matters, and I commend them to the consideration of the Director of State Railways Construction.

22. *Kistna Junction Arrangements.*—The arrangements for the junction of the broad and metre gauges at and around Tadêpalli, south of Bezwada, do not appear to me to have been sufficiently thoroughly threshed out. Arrangements seem to have been drifted into which will only have to be all undone again and which, until undone, will only give rise to trouble and friction. Nearly every one concerned, first I who made the first design, and subsequently Colonel Selby, the Consulting Engineer, Bombay, and two successive Agents of the Southern Mahratta Railway, Colonel Lindsay and Major Burn Murdoch, and the Nizam's Railway officers, all agreed that there is ample room at Bezwada for all possible future development, and this I can prove by plans now in my possession. But now it has been decided that the transhipment arrangements shall be located at Tadêpalli, instead of at Bezwada; and the Chief Engineer of the Bezwada-Madras Railway has already gone so far with his transhipment siding construction that it seems futile to re-open the question and the arrangement must be a permanent one.

The detailed arrangement of the stations, however, is surely susceptible of improvement, for within a radius of half a mile there are the following stations around the junction of the gauges. First, nearest Bezwada, is the Sitanagaram station necessitated by the Sitanagaram locomotive sheds. Next, just beyond the canal bridge, is the actual junction of the gauges, called temporary Kistna Canal Junction, or K.C.C. Just beyond this on the standard gauge line is Kistna Canal Junction, K.C.J. with its transhipment lines for both gauges; and about opposite it on the Southern Mahratta Railway is Tadêpalli station. Tadêpalli station is about as temporary a structure as could be erected for four or five years' traffic, and was purposely

designed so that it might be cheaply lifted up and stuck down again. The right thing to have done would have been to have ignored Tadêpalli altogether and to have designed the new Kistna Canal Junction so that it might perform the functions of the broad gauge, of the metre gauge, of transhipment, and of the junction of the gauges. This can easily be done even now though not anything like as well as might have been done at an earlier stage.

But even better than this will be to cross the canal with a separate bridge for the metre gauge, and only allow the gauges to actually meet at Sitanagaram, the station which it is impossible to abolish because of the Locomotive sheds. Then the broad and metre gauges would only meet at the transhipment yard between Tadêpalli and Kistna Canal Junction, and their main lines would only interfere with each other at Sitanagaram immediately before crossing the Kistna bridge. Thus the congestion zone would be reduced to half its present length. Even now the congestion is severe enough at certain hours, and it will be worse when the standard gauge is connected up towards the south.

23. *Goods Traffic south of Bezwada.*—Arrangements were come to in my presence between the officials of the East Coast Railway open line and those of its unopened extension towards Madras, whereby the former are to man the stations south of Bezwada as far for the present as Bapatla, and to arrange for the booking of goods in and out, and the latter are to attach the goods vehicles to their construction trains and work them at their own convenience. I do not know why the southern extension of the East Coast Railway, called temporarily as a matter of convenience the Bezwada-Madras Railway during construction, should be at the expense and trouble of putting letters and numbers on their rolling-stock which in a few months will only have to be painted out. The proper lettering and numbering of the vehicles might easily have been arranged with the East Coast Railway Locomotive Department.

MADRAS,
13th January 1898.

FRANCIS J. E. SPRING,
Senior Government Inspector of Railways.

ORDER—No. 206 R., dated 4th February 1898.

Communicated to the Manager, East Coast Railway, for information and necessary action.

2. A copy of these Proceedings will be forwarded for the information of the Government of India.

[Here enter No. 207 R., dated 4th February 1898.]

(True Extract.)

FRANCIS J. E. SPRING,
Joint Secretary.

To the Manager, East Coast Railway.
" Engineer-in-Chief, Gódávari Bridge.
" Consulting Engineer for Railways.
" Revenue Department.
" Marine Department.

Ext T. K. Narayana Aiyangar.

NOTE ON THE SALT SUPPLY OF THE NORTHERN CIRCARS AS AFFECTED BY THE EAST COAST RAILWAY.

In dealing with this subject it is necessary to bear in mind the position which salt will probably occupy in the traffic of the East Coast Railway some ten years or so hence rather than existing conditions. There is no reason why this should not be foreseen with fair accuracy at present, though there is one disturbing factor—the construction of the Vizagapatam-Raipur Railway. It is to be hoped that it will be an accomplished fact long before that time, but to avoid the risk of being thought to overestimate the importance of the future salt traffic of the line I will only assume that a feeder railway has been made up to Párvatípuram—an assumption which is a tolerably sound one, as I believe that the railway authorities agree with me in thinking that the heavy traffic of the Vizagapatam district can never be brought on to the line until this is constructed. I also assume that the note which I have been directed to prepare is intended to refer only to the portion of the line north of the Gódávari.

The salt produced along this part of the coast feeds four large markets, the conditions in each of which are totally different, so far as railway considerations are concerned. They are as follows:—

(1) Orissa and the country inland of it.
(2) The plain tracts of the Ganjám and Vizagapatam districts.
(3) Jeypore above the ghauts and the adjoining areas.
(4) The Central Provinces and areas fed from the great route through the Rayagadda valley, including the country directly inland of Vizianagram and Palkonda.

There are other areas, such as the Ganjám Agency tracts and the Gudem hills which also derive their supplies from the coast factories, but these may be classed with head (2) for all practical purposes.

These areas are now supplied chiefly from the East Coast. In the case of No. (1) imported salt from Calcutta and Bombay salt transported by the Bengal-Nagpur line to Sambulpur and the adjacent country share the market, and in No. (4) the same Bombay salt competes in the far interior. I do not think that there is any practical competition with Bombay salt in the case of No. (3) as the areas dependent on the two sources of supply are separated by a very thinly inhabited tract.

The following are the factories from which supplies are drawn:—

(i) *Tua and Gurubai.*—Two small factories under the Bengal Government on the Chilka lake. These can only throw salt into Orissa by boat and are at present greatly overstocked with inferior salt, which will rapidly deteriorate and reduce sales to very local limits. They sold 46,224 maunds last year against 76,635 in 1895-96 and the decrease is certain to continue. They may be disregarded.

(ii) *Ganjám.*—A very fine factory, the head-quarters of which is about 1½ miles from the Humma station. It is about three miles long however, and the more remote platforms are at a considerable distance in consequence. It can produce about 500,000 maunds per annum, but is liable to disastrously bad years owing to the frequency of hot weather showers in some seasons. Ganjám is a Government factory.

(iii) *Surla.*—A good factory about five miles from the Ichchhápuram station but separated from it by a swamp which can only be crossed by carts in the dry weather. It is capable of indefinite extension, but the distance from the railway will always confine its operations to local trade so long as stocks are available at more convenient factories. The site has also the disadvantage of being very unhealthy. It is partly Excise and partly Government.

(iv) *Naupada.*—A splendid factory less than two miles from the Naupada station. The salt is excellent and the production admits of indefinite extension. It is now far in excess of the demand. It is an Excise factory.

(v) *Calingapatam.*—A moderately large factory about twelve miles away from the Parlákimedi Road station, with the Vamsadhara river intervening. It can make about 300,000 maunds. The salt is inferior, though somewhat popular owing to its being light and consequently measuring well when retailed. It is a Government factory.

(vi) *Kuppili, Konada and Bimlipatam.*—Three small excise factories, capable of producing about 250,000 maunds per annum, lying along the coast opposite the section of the railway between Chicacole Road and Vizianagram. They are from twelve to eighteen miles from the railway and Kuppili has not even got road communication with the interior. Their salt is light and therefore popular and fetches from 1 to 3½ annas per maund more than the price charged at all Government factories (3 annas per maund).

(vii) *Karasa.*—A fine factory partly Excise and partly Government, about two miles from the Waltair station. The factory is capable of producing about 300,000 maunds of salt at present and can be largely extended.

(viii) *Balacheruvu.*—A Government factory on the south of the Dolphins Nose range of hills. The site is a favourable one, but want of labour is much felt and the nearest railway station is ten miles off.

(ix) *Polavaram.*—A small factory on the sea coast nearly opposite the Narsapatam Road station which only meets a local demand.

Of the areas dealt with above, Nos. 1, 3 and 4 are those in the salt traffic of which the East Coast Railway is chiefly interested. No. 2 will always draw a good deal of its supplies by cart from the nearest factories on the coast, but the railway is concerned even in its case in the concentration of the demand at the factories adjoining the line, which will probably in time result in the business of the intermediate ones falling off to such an extent as to result in their closure.

As regards No. (1) or Orissa, this tract has hitherto drawn its supply from Calcutta, Bombay and the north of the Ganjám district. The second source of supply has only become of importance during the last two or three years owing to the extension of the Bengal-Nagpur Railway system towards Sambulpur.

Last year the quantities supplied from each source were as follows:—

	Mds.
Calcutta	280,795
Bombay	132,403
Ganjám District and the Chilka factories	411,420
Total ...	824,618

I have here included 46,224 maunds supplied by Tua and Gurubai under Ganjám as I regard those factories as practically extinct so far as future considerations are concerned.

As to the future of the salt supply of this area it is impossible that Bombay salt should make much further advance towards the coast. It has only been able to stretch as far as it has done owing to the heavy cost of carriage by cart and pack bullocks from Cuttack. If rail communication is opened up from Cuttack or anywhere thereabouts with the country now served by the Bengal-Nagpur line, the result must be to drive Bombay salt some hundreds of miles back into the interior. The salt thus driven back will be replaced by salt from the Ganjám factories as that supplied from Calcutta is of a totally different description from what is now in use, being fine grained salt produced by artificial evaporation and imported from Europe. It is far more expensive than salt produced by solar evaporation and can never displace the latter in areas where its use is customary, the difference in initial cost (ex-duty) being from 300 to 400 per cent. The East Coast Railway has consequently a fine opening for salt from the Ganjám factories in this direction as communication improves. The north of Orissa has been dependent on Calcutta for its supplies hitherto owing to the difficulty of transport from Ganjám, but with such disproportionate initial cost it cannot continue to draw on it long after the East Coast Railway is opened beyond Cuttack. It is true that the people are unusually conservative in this area and have been accustomed to use "boiled" salt from remote times, the climate being unsuitable for the production of salt by natural evaporation. It may therefore take them some little time to get used to the cheaper Madras salt, but there can be no doubt but that the latter will gradually win its way and drive back the foreign article not only out of Orissa but even out of the adjoining parts of Bengal. A difference of 9 annas per maund, it must be remembered, is enough to carry salt an additional 600 miles

or so by rail so that the area of possible expansion of salt trade for the Madras factories is very great. Of course, the railway might say that, as the salt has to come from either the Ganjám district or Calcutta, it would have to pay railway freight in any case and that it was as much interested in developing the Calcutta trade as that from Madras. This, however, is not correct. It is the interest of the railway to secure as much of the market as possible for one or other source of supply and so avoid being only given transport over the minimum mileage to the centre of the intervening line. Its object should be to either get Madras salt to pass the half-way point and supply tracts nearer to Calcutta or *vice versâ*. Owing to the high price of Calcutta salt it can never invade the area dependent on Madras and consequently the interest of the railway is to drive the former back as far as it possibly can. This policy is further recommended by the following consideration.

Ganjám, though a large factory, is not at all likely to be able to supply the whole of the salt required by the area which will want to draw its supply from Madras in future. It unfortunately cannot be extended, and, though it has now, after a series of prosperous manufacturing seasons, got large stocks on hand, it may, owing to its liability to have manufacture stopped by thunder-storms in April and May, be depleted two or three years hence and will in any case never be a reliable source of supply. Three-quarters of its outturn already go to Orissa and with a slight increase of trade its stocks are certain to run short every year. As explained above, it cannot be extended. Surla, the next factory, is at a disadvantage owing to its being so far from the line and consequently the trade will go to Naupada, giving the railway a longer lead by 85 miles if proper encouragement is given by the railway authorities to the Naupada manufactures. A very large quantity of salt has been sent north from Naupada during the past few months, but this was due to exceptional causes. A large quantity was condemned to destruction unless cleared immediately and was disposed of at extraordinarily low prices. This was what the Cuttack merchants were purchasing so freely during the early part of the current year. They could hardly afford to cart salt selling at ordinary rates to the railway and sell it at a profit unless special concessions are made. Golantha, the nearest station to Surla, is only eight miles from that factory or six miles further than Naupada is from the line. The cost of carting salt these six miles would be considerably less than the cost of railing it from Naupada and some concession or facilities are necessary at the latter to enable it to secure the overflow demand from Ganjám and the railway freight on the additional 55 miles. The advantage which I would recommend is a branch line to the factory which would do away with carting and transhipment altogether. At the same time everything possible should be done to encourage sales at Ganjám and so clear out stocks so as to force the trade to the more distant factory. A branch to this factory also is desirable for this reason. The main thing to be remembered is that the more salt the railway moves the greater the distance it will move it will be. It will never profit much by the salt trade so long as the supply is divided between Calcutta and the Ganjám district. Its policy should be to drive back the Calcutta salt as it is impossible to adopt this course with success as regards the Ganjám salt.

With regard to the second area referred to above, the plains of Vizagapatam and Ganjám will always be dependent on the nearest factories to some extent. Between Naupada and Karasa, however, it should be possible for the East Coast Railway to prevent any salt from Calingapatam, Kuppili, Konada or Bimlipatam from crossing its line. This should result in the eventual closure of these factories and should secure to rail-borne salt the consumption of the country on both sides of the line. I would here recommend very low rates of freight from Naupada and Karasa, especially to Vizianagram and the stations north as far as the Vamsadhara river. This, with the branch line to Naupada referred to above and another to Karasa, should in time produce the result suggested.

In the remaining two areas two other considerations arise, viz., the desirability of getting bandymen to drop their loads from the interior at the first railway station they reach and the effect which may be anticipated from the opening of a railway to Párvatipuram. At present most of the salt used in these tracts comes from Calingapatam, Konada and Bimlipatam. The Konada salt does not seriously affect the interests of the railway as regards other freight as Konada is no longer a port, but that from Calingapatam and Bimlipatam exercises a most injurious influence as it

supplies return loads for carts proceeding to those ports with produce and probably makes all the difference between their finding it worth while to cross the railway or to deliver their loads at the nearest station. I believe that I am right in saying that the railway has made practically no progress in securing the trade which customarily leaves the districts through Calingapatam and Bimlipatam. This is, in my opinion, entirely due to strenuous efforts not having been made to render Naupada and Karasa salt available at the points where the trade routes to the coast cross the line or at the nearest important towns, and here the importance of branch lines into those factories comes in. If a trader has to cart his salt a couple of miles to a station, he is at the mercy of the local cart-owners and is often made to pay an anna per bag or 6 pies per maund. He cannot be even certain of being able to get this work done at that rate and this uncertainty enhances his disinclination to resort to the factories without his own carts. He therefore still depends on the old means of transit and will have nothing to do with the railway. The result is that the factories close to which railway carriage is available have no advantage over others and the area supplied from each is much the same as it was before the line was opened. The salt trade of Vizianagram I regard as a point to which the railway should pay particular attention. The price of salt in Vizianagram is ruled by that of Karasa salt there as the adjoining factories of Bimlipatam and Konada cannot make enough to supply the demand and can keep up prices to the point at which it pays to bring Karasa salt in. If Karasa salt could be laid down cheap at Vizianagram it would rapidly displace the Konada and Bimlipatam article, as the licensees at those factories will not at once submit to the loss of the very lucrative prices which they have been getting for some time back. When Karasa gets possession of the Vizianagram market, Bimlipatam and its export and import trade must move into Vizagapatam and all produce for shipment go by rail to the last-named port.

It may appear that the salt now removed from the two factories would not justify the construction of a branch line into them just yet. This is only partly true. In the first place, one of the chief reasons why I advocate branch lines is that it is the interest of the railway to drive the salt of the factories off the line out of the market at any cost. Then again the opening of a line of rail to Párvatipuram will do a good deal to restore the old salt trade with the Central Provinces which was so heavy twenty or thirty years ago, and will result in the rapid expansion of the operations of Naupada and Karasa. The bandymen of the tract which the new line will open up are far too enterprising to content themselves with competing at loosing rates with the railway. They will extend their operations further and further into the interior laden with salt instead and will rapidly recover lost ground. Even if the opening of the branch lines into the factories would not pay at once, they certainly will as soon as the Párvatipuram feeder is constructed.

Looking at the matter from a more general point of view, the local salt trade of the two districts has been as follows for the past two years :—

	MDS.
1895-96	1,384,735
1896-97	1,447,278

Of this at least 11 lakhs should be railborne. To this 11 lakhs, however, has to be added a large expansion of Ganjám trade north of Cuttack as the railway opens and a still greater increase in the salt sent from Karasa and Naupada to the Central Provinces when the railway to Párvatipuram is constructed. The increase in the fourth area when this takes place will be enormous. The third area will also be affected particularly if a branch line is made to Sálúru, but I do not look for a very large expansion there as the population in the interior gradually thins off and the distance from Sálúru to the other side of this comparatively uninhabited tract is too great for the short railway line to Sálúru to reduce the carriage to the more populous places on the other side of it markedly.

20th January 1898.

W. A. WILLOCK.

Form No. (2).

~~PUBLIC WORKS DEPARTMENT.~~

~~RAILWAY BRANCH.~~

OFFICIAL

No. 5

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read Demi-Official letter from W. A. Willock, Esq., I.C.S., Madras dated 23rd January 1898, forwarding the note on the salt supply of the Northern Circars as affected by the East Coast Railway, recently called for.

Order thereon:-No. 435, Mis. dated the 29th January 1898.

With reference to Government Order No. 773 R., dated 5th October 1897, Public Works, a note drawn up by Mr. Willock on the salt supply of the Northern Circars as affected by the East Coast Railway is forwarded.

(True Extract)

(Signed) N. E. Marjoribanks,

Ag. Under Secretary to Government.

Order thereon:-No. 241 Ry. dated 12th February 1898.

The Government of India will be addressed.

(True Extract)

(Sd) Francis J. E. Spring,

Joint Secretary.

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SERIAL No. 5

Copy of letter to the Secretary to the Government of India, Public Works Department, from the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, No. 242 Ry. dated the 12th February 1898.

I am directed to invite your attention to para 6 (a) of Consulting Engineer's Inspection Report of the East Coast Railway which reached you under cover of my No. 774 R. dated the 5th October 1897. And also to para 15 of the same officer's inspection report which went to you with my No. 207 R dated the 4th February 1898 on the subject of the Salt trade of the East Coast Districts of this Presidency, and the mutual influence on eachothers interests of this trade and of the East Coast Railway. I am also directed to forward a copy of a note prepared by Mr. W. A. Willock, Member of the Board of Revenue, whose knowledge both of the trade condi-tions of the Northern Circars and of the Salt Department and its opera-tions is exceptionally wide.

2. I am directed by His Excellency the Governor in Council to endeavour to impress on the Government of India a strong sense of the importance of the conditions of the salt trade being carefully studied by the offi-cers of the East Coast Railway with a view to the mutual improvement of the Imperial Salt business and the Imperial Railway business.

3. This Government is satisfied that as much has not been done as might have been done to make these two commercial branches of state business mutually benefit eachother, to the benefit also of the consumers of the salt. I am therefore directed to express a hope that the Govern-ment of India may see their way to instructing the Manager of the East

Coast Railway to give this important matter his careful attention on the general lines indicated in Mr. Willock's Note. With a view to illustrating the Note I am desired to enclose a copy of a map showing the factories referred to. A copy of the Board of Revenue's Proceedings No. 209, dated the 27th May 1896 is also enclosed.

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13 P

SERIAL No. 1572

Copy of letter from the Government of India, P. W. D. No 642 R.T. dated 16th June 1898

Para 3

I am directed to acknowledge the receipt of your letter No 242 Railway dated the 17th February 1898, bringing to the notice of the Government of India the importance of the conditions of the salt trade being carefully studied by the officers of the East Coast Railway with a view to the mutual improvement of the Imperial Salt and Railway business.

Cancelled Salt Traffic

2. In reply I am to state for the information of His Excellency the Governor in Council that the Government of India have obtained a report on the subject from the Manager, East Coast Railway which shows that that officer is fully alive to the importance of developing the salt traffic of the East Coast Districts, and is now in negotiation with the

the Oriental Salt Company for the construction of sidings to the important Salt factories at Kasassa and Nanpada.

3. It must however be remembered that the State Railways cannot be expected to bear the cost of connecting particular factories with their main lines unless assured of an adequate and permanent return on the capital expended.

SERIAL No. 90

RAILWAY.

Government {1898} of Madras.

PUBLIC WORKS.

Pages 8 and 9.

Recd. } 1898. Enclosures

Regd. } Spare copies

G.O., No. 981 Ry., 2nd August 1898.

AUGUST.

Inspection Report of the East Coast Railway

The Senior Government Inspector's — for the half-year ending the 30th June 1898, communicated to the Manager of the Railway and the Engineer-in-Chief, Godavari Bridge, and copy of the Proceedings forwarded to the Governments of India and Bengal.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper:—

EAST COAST RAILWAY.

STANDARD GAUGE, 5′ 6″.

Mileage open for traffic, including branches, 548 *miles.*

INSPECTION REPORT FOR THE HALF-YEAR ENDING 30TH JUNE 1898.

The inspection was made on July 5th to 10th in company with the Manager, or in his absence the Assistant Manager, heads of departments, and district officers and their assistants.

2. *Formation.*—Banks and cuttings are as a rule in good order, though they have not yet had time to settle down to the condition of stability to be found on older lines. Near Tuni in some of the cuttings very tidy dry stone ballast walls have been built costing six annas per foot run for both sides; it will be a good thing when more of these are built in the wetter cuttings. Between Yellamanchili and Anakapalle the bank requires some pitching, and the pitching should be continued, below, with an apron 10 or 12 feet wide, if it is not to be underscoured. The ballast walls in the cutting just beyond Chatrapur would be the better for raising, as the cutting is very wet; such walls ought to be up to rail level. Cuttings between Bhusandpur and Tapang are badly drained and want ballast walls.

3. *Bridges.*—The Narwa bridge has been re-sleepered and newly bed-plated, and is now in good order. Between Samalkot and Pithapuram it is proposed to spend Rs. 50,000 in raising 3½ miles of bank, which it is feared may be overtopped, at a place where the waterway originally given has more than once been largely increased. But I learn that when the floods are rushing through the present 510 feet of waterway there is an afflux of fully 4 feet. This means that in as many separate places as there are culverts there is serious risk of their being undermined by scour, as the scour due to 4 feet of afflux is very severe. It is perfectly obvious that the present 510 feet of waterway is even still quite insufficient. The proposed raising of the bank, while allowing the water to pond up without overtopping the line, and so to get through the culvert in time, will in no way mitigate the present great risk of one or all the culverts being undermined. I therefore strongly recommend that a very much smaller sum than the proposed Rs. 50,000 be spent in inserting at this place a causeway similar to those which have been built between Ellore and Bezwada. This sort of causeway has been found to cost ten rupees per foot run. Stone is to be found not far off at Durgada station. The sum proposed to be spent would pay for nearly a mile of causeway, but I judge that if even ¼ mile were constructed the dangerous 4-foot afflux would probably be got rid of and there would be no need to raise the bank. If ¼ mile is found insufficient the railway could still afford to double it and save money while securing better engineering.

4. *Godavari bridge.*—Of the 56 well foundations required for this bridge 31 now remain to be started. The state of the 25 on which work has gone on is as follows: 14 are finished and the pier superstructure is progressing; 3 are sunk and concreted, but superstructure not yet begun; and 8 have still some short distance to sink. Both abutments have made good progress, and work through the rather heavy approaches at both ends is well forward. 1,304 lineal feet of well have been built, of which 1,244 feet have been sunk below ultimate top level of wells. 221 lineal feet of pier, or the equivalent of five piers, have been built. Of the 31 wells still to be started, 8 will be on ordinary well curbs to be laid on dry land, and 23 will require caissons to be floated in water more or less deep. The large wooden pontoons for the floating of the caissons have been built locally, as advised in my last half-year's inspection report. For building the bridge on the design which he has been ordered to adopt, Mr. Walton's arrangements are good and well thought out; but construction will take a very much longer time than would have been necessary had he not been so heavily handicapped through being prevented from starting on the deep water piers during the first working season. To begin on the easy part of a work of this sort first, for want of a suitable provision of plant, is the poorest sort of economy.

It is not yet too late to use large spans for the permanent deep river channel, as advised in my last report, instead of the 150 feet spans which, though quite suitable and economical for perhaps 36 out of the 56 spans, are uneconomical and bad, engineeringly, for use in the deep permanent channel. For not only is each deep water pier a source of risk and possible failure during construction, but if, as I now learn is intended, the base of each deep water well is to be given extra diameter for the sake of stability, they become so expensive that a larger span than 150 feet will be more economical. I would substitute perhaps six spans of 200 feet and four spans of 300 feet for 20 of the 150 feet spans in the deep water, and would thus get rid of 14 deep water piers; and even if the cost of these 14 piers thus saved were only just balanced by that of the heavier girders, the bridge would be a far better structure in every way, more easily built, easier for navigation, and less exposed to risk of accidents hereafter. Mr. Walton informs me that the deep water caissons are all Indus bridge Kotri type, 34 ft. × 20 ft. Wells of this size are most uneconomical for 150 feet spans. At Kotri they support 350 ft. spans. I do not say that the number and size of spans proposed above is the most economical: what I insist on is that the substitution of larger spans for small ones over the permanent deep channel of the river on some such system as is above suggested is the right and economical thing to do. If all the girders have already been ordered, some of them can easily be used elsewhere.

5. *Culverts.*—On the Cocanada branch some of the girder culverts whose abutments were being pushed in by the black cotton soil are being converted into smaller spans and arched, while others are being strutted with drop walls below and rail bracing above.

6. *Rails.*—These are only 5 or 6 years in the road and are practically as good as new. I was glad to see that more careful attention is now generally paid to switches and all belonging to them being kept clean and tidy.

7. *Sleepers.*—The steel sleepers are still behaving very well owing to the care with which they were located only on suitable soil. But I was shown some sleepers taken out of a wet cutting which were very badly corroded, as were the keys also; they had lost 19 pounds out of perhaps 138. I cannot be certain about the 138 because I remember that there was a considerable difference between the weights of individual sleepers when they were first received. The Loco. Superintendent started a theory, to account I believe for the wear of his wheel flanges, that some of the steel sleepers had got hogged through misuse on the unballasted road in construction days. The theory, however, is quite baseless. There were two patterns of steel sleepers; in one sort the cant at rail seat was given by bending the whole sleeper downwards at the centre, and in the other the cant was given in the press at the rail seat only, the body of the sleepers being level. Seeing these latter Mr. Morton seems to have thought they had got hogged. The wear of his wheel flanges is sufficiently accounted for by the cutting qualities of the sand with which parts of the road are ballasted; I mentioned in my last report that this sand had caused the outer dogspikes

in wooden sleepers on certain curves to be nearly beheaded. A useful lesson is to be learnt from the experience of the East Coast Railway of certain sorts of wood for sleepers; viz., that Some or Sumi (*Soymeda Febrifuga*); Pymma (*Lythrarea Hypoleuca*?), and a wood purporting to be teak from Johore, are all quite unsuitable for Indian use as sleepers. They all go utterly in four or five years. Probably to "haskenize" them would greatly prolong their life. I saw some most excellent sâl sleepers from the forests of Ganjâm, and was told that their price in Berhampur was Rs. 4-8-0. Nothing better than these could possibly be wanted if there were only enough of them. The matter is one which might with advantage attract the attention of the Forest Department. I was told that pyngadu sleepers from Burma cost Rs. 5-4-0. I here warn the East Coast Railway authorities, officially, that a *pyngadu* sleeper ought *always* to sink, and that if a Burma sleeper called pyngadu by dishonest suppliers is found to float, it is probably *Kya Eng* or other worthless timber, and certainly not pyngadu. I was told that 25,000 Johore teak sleepers laid in 1895 are now rotting fast. I was told in 1892 that a considerable number of them had passed on to the southern part of the North-Western Railway, through a large Karrachi firm. It would be interesting to know what their life was in a dry climate.

8. *Ballast.*—Though a good deal of ballast has been put in the line since last inspection, it is still very deficient in places. From Bezwada to Ellore the upkeep of the road has fallen off very much; it is not nearly as good as it was at last inspection. Beyond Ellore it is somewhat better. Beyond Bhimadol the sand ought to be covered at once with a thin coat of broken stone. Between Rajahmundry and Samalkot the road is fairly good but still wants ballast in places, but it is kept in a slovenly state. It would be a good thing to show the gangmates a tidy bit of road as a specimen. The Cocanada branch is very much the same as the places just described. The road is pretty good between Samalkot and Pithapuram. Beyond Tuni it is better and tidier, and further on towards Waltair it is in excellent order. North of Waltair also the road is very good indeed and tidily kept too; but between Kota Bommali and Naupada it again gets rather slack. From Parlakimedi road northwards ballast is rather short, though, through the care that is evidently bestowed on it, the road is in very good running order. Beyond Ichapur ballast is short in places, but more is being put on. Beyond Berhampore a great deal of ballast has been collected, and it might as well be put in the road. Beyond Jagannadhapuram the road is better ballasted. Ballast is being spread beyond Rambha. Between Kasimkota and Balugan the road is well ballasted and very well maintained. From Kalupara Ghât to Tapang I would say the same, but beyond Tapang it is again not so good. From Chattipur to Khurda Road ballast is deficient and very irregularly laid. The Puri branch is in good order, all except the last couple of miles which is still quite new. The main line from Khurda Road up to the terminus at Barang is in very good order.

In my opinion the East Coast Railway is old enough now to be properly ballasted, once for all, up to full section. It ought to be carefully surveyed mile by mile for the purpose, and a regular estimate prepared, and proper systematic arrangements made for completing the ballast up to full section during one working season. It will probably prevent some trouble and disputes if this is done before it is handed over to be worked by the Companies to whom it is proposed to commit it for working. Once each station to station length has got its full complement of ballast, the Engineers ought to take a pride in making it of *one* tidy section. Now one finds a dozen different sections between any two stations on some parts of the line, even where ballast is full. Indeed I have nowhere seen such slovenliness as one finds for miles together on the East Coast Railway, though some men's charges are as a rule in very good order. There ought to be one section throughout the line for the ballast of steel sleepers, *viz.*, hollow in the middle, and another for wooden sleepers. Now it seems to be left to the freak of each gangmate what section he will adopt, and some of them change their fashion every few rail lengths through sheer slovenliness.

9. *Stations.*—A typical roadside station on the East Coast Railway is that at Anaparti which takes about Rs. 200 per mensem. It has no sidings, no extra land, and no signals. The platform, which is marked by a line of cut stones, is at rail level.

The whole station including staff quarters cost about Rs. 3,000, of which Rs. 800 were for the station building consisting of a room 12′×8′, a shed 12′×12′ and a 6′ verandah. Nothing better is wanted at many places, though ten or twelve thousand rupees were at first proposed to be spent, and in many places were spent, on stations which scarcely earn more than pays for their expenses. During my last inspection I personally pointed out the inconvenience and danger of the state of the platform at *Kovvur*. If the Manager will not extend it further to the south he should at least cut it down to rail level; at present half the train which stands on a curve has no platform at all, and at one place any one dismounting is almost certain to have a struggle to avoid falling amongst the wheels. I pointed this out again personally to the Manager. The scissors-crossing put in at the middle of the long sidings at *Samalkot* is a great convenience; it needs distance marks. I was told that the *Cocanada Town* station, which did not cost Rs. 5,000, is earning that amount per month. At *Cocanada Port* it seems quite necessary that a new cross-over should be put in at the east end of the platform so as to allow the train engine to get out and run round his train without risk of fouling the goods yard or being fouled by shunting going on therein. Since last inspection a scissors-crossing has been put in the long goods sidings with great advantage to working the yard. The Traffic goods office is about to be shifted into certain gate lodges down near the goods shed which are not required for their original purpose. At *Samalkot* an addition, 100 feet × 20 feet, has been made, for a passengers' waiting shed, and the old waiting shed has been converted into a refreshment room, a waiting room and a passage. The flags on the verandah here will soon want renewal. The Deccan Sugar and Abkâri Company of Bimlipatam are running up a very important sugar factory close to Samalkot station. At *Pithapuram* it has been arranged to enlarge the passengers' waiting shed. I was told that a traffic in stone for building purposes in Cocanada was arising at *Durgada* where a siding runs into a quarry for railway purpose. The *Kottapalle* station ought properly to be called *Annavaram*. The latter is an important place; the former a village of huts only. I was told that considerable goods business is done at *Tuni*; the goods shed is not very well situated, and the Traffic Department want a loop to help to work it; the Manager might look into this. At *Kottavalasa* and at several other stations, the advice given in my last inspection report has been taken, and the unnecessarily long through sidings have been cut down, and dead ends in some places and in others short through loops have been provided. *Chodavaramu*, mile 266, has been opened since the 1st June as a crossing station; I was told that it has no traffic. The lath and plaster walls of *Dusi* station building want repair. At *Palasa* a new waiting room is being built and is nearly finished, also a third-class waiting shed, and an extra room or two on the station; a new siding is also being put in for lifting wagons. At *Mandasa Road* and a few other places, the original mat latrines are still in use; these might now be replaced by new ones, of which ten are, I believe, ready for erection. At *Ichapur* the dead end has been converted into a loop since last inspection. At *Berhampore* a 200 ft. goods platform is being made. At *Chatrapur* a triangle has been put in, because a train which used to run to Barang now terminates here owing to want of traffic. At *Rambha* a rest-house is being built inside station limits for the Rajah of Kallikota who has deposited the price of it. *Balugan* is developing into a useful station doing some 10 wagons per week. A passenger shed has been lately built there, and the old passenger shed in the middle of the building has been turned into rooms. At *Kalupara Ghât* a couple of bays have been added to the passenger shed. Arrangements have been made for a goods shed at *Khurda Road*. At the new terminal station at *Puri* the station building is being erected, and great pens have been made for marshalling the crowds of pilgrims who are expected; but I think the pens are rather large; they ought to hold a train full at a time. The general plan of the new yard was discussed, and it was decided to considerably shorten up the sidings at the entrance end of the yard, and to put a traverser across the terminal end of all the sidings, so as to handily get out wagons from the train to the goods shed; this will involve throwing back the engine run-round cross-over a couple of rail lengths. The home signal had better go half way down the platform. The wire going to the distant signal ought to be put on special carriers; it has a long way to go. The extensive sandy yard ought to be covered over with moorum gravel.

Old *Puri* station has been abolished. They are putting in a new third-class crossing station at *Maltipadpur*. The edge stones of *Sakhigopal* platform ought to be packed up to rail level. At *Barang* some more temporary shelter seems to be wanted for the Puri pilgrims who come by road and river from the Cuttack side.

10. *Staff quarters.*—At Bezwada the new staff quarters are being built on the side of the hill as advised in last report. I was told that Rs. 25,000 has been sanctioned for gangmen's huts on the first division; by this time the Engineers must know pretty well where they ought to be built. It is a good rule to concentrate these men, as far as working condition will permit, at the railway stations, in order that in case of accident they may be called up by wire. I noticed that the untidy custom had been allowed to grow up of erecting unseemly verandahs and screens of matting and palmyra leaves around some of the gatekeepers' and gangmen's huts. At Duvvada new staff quarters have been built since last inspection. At Tapang new staff quarters have been built for the permanent-way inspector. At Khurda Road it was proposed to build a new house for the Assistant Traffic Superintendent and to utilize his present house, which by the way is said to be infested with red ants, as an institute and school; there are 40 men at Khurda Road and 60 children. But the Manager thinks, and I agree with him, that it will be better to build nothing more here until it is seen how the section will be worked when the railway is opened to Midnapur.

11. *Level crossings.*—At Rajahmundry they have erected a quadruple gate on Mr. Fred. Reilly's principle at the main road crossing between the town and ghât stations. Just outside Waltair station the level-crossing is being abolished and the road diverted beneath an under-bridge, which moreover is made fit for a double line, in order that there may be separate entrances to Waltair station for the Vizagapatam town branch and for the swamp line. There is a dangerous level-crossing where accidents have already occurred at mile 236 at the end of a cutting; this crossing must be either moved further away to the south or brought to an over-bridge further north; I was told that a comparative estimate showed the latter to be cheaper, as it certainly will be the more efficient. In one or two places gates, on Mr. E. H. Stone's principle showing signals when locked, had originally been erected across the line, but now have been changed to cross the cart road; but the signal discs have been left up showing danger facing the line, and have yet not been cancelled by a mark or paint. Anything of this sort which familiarises drivers with the idea of passing danger signals with impunity ought to be avoided, so the discs should at once be either removed or altered to suit the altered conditions.

12. *Water.*—Piping has been provided at Bezwada for properly utilizing the Kistna bridge abutment source of supply. But in erecting it an air chamber ought to be put on the pump and the most unsightly, useless, and unscientific stand-pipe got rid of. The boiler, too, which supplies steam to the pump, might be stowed away somewhere instead of being fixed out in the open as at present right in front of the bridge tower. Arrangements have been made for putting down a proper artesian well at Cocanada, now that the existence of artesian water there has been proved. The locomotive well at Palasa is said to be doing all right this year. As the water at Baruva has turned out to be very good and plentiful, that place is to be made a permanent watering station. When the railway engineers find a really good supply of water and decide to install water columns, tanks, &c., I cannot understand why they do not adopt Mr. G. Moyle's system, and so secure a more efficient service for their money; the nine or ten inch pipe running to the far water column is a most wasteful arrangement. The pipes and tanks are being got up for the Chatrapur water-supply from the wet cutting referred to in last report. At Khurda Road the deep well in the laterite is a failure, and a village tank has been acquired about 2,000 feet off, which will, it is said, afford a good supply.

13. *Godavari Ferry.*—Owing to the rising of the river it has been found necessary again to revert to the lower site for the ferry. The slips for working vehicles on to the pontoon have now been removed on account of the rising flood. The glass windows in the ladies' cabin on board the ferry steamers ought to be made opaque; at present there is no privacy. The lower venetian panels ought to be closed up: they are not needed for coolness and only let in rain and spray. The rail running

round on top of the stanchion round the lower or main deck forward is too low at the gangway; it ought to be cut and hinged; at present each head-load of baggage runs an imminent risk of being knocked overboard. I was told that 2,600 waggons had been passed over the ferry in 2 months, or about 43 per day.

14. *Refreshment Rooms.*—All along the line these seem to be well kept up. But I have heard complaints and would suggest the introduction of refreshment tickets as on the Madras Railway in order that the contractor may have no excuse for saying that he got no notice and was therefore unprepared. Native food-stalls seemed to be well furnished.

15. *Locomotive Department.*—I inspected the Waltair shops. All seemed in good order. The Locomotive Superintendent is badly in need of piping to carry the blast from his large new fan; at present when the cupola is working the smithies must stop. The Locomotive Superintendent asks for a new cupola, chiefly for the purpose of casting new cylinders to convert the heavy compound engines, which give great trouble, into ordinary double cylinder high pressure engines. I should say that the Waltair shops might as well get a sufficient cupola now as later on. They are turning 58 timber trucks into H. S. waggons, to tare 7^{t} 4^{c} and to carry 16^{t} 4^{c} total 23^{t} 8^{c} or 11^{t} 14^{c} on a pair of wheels. The Bezwada-Madras 6-wheel coupled engines are very well spoken of, as are also the new East Coast Railway passenger engines, 4-wheels coupled, with bogie. The Locomotive Superintendent complains that his running room at Palasa, which is an old construction bungalow, is out of repair. He also complains of having no outside examining pits for engines either at Waltair or at Khurda Road. At Khurda Road the engine shed roof at the south end needs attention. The Locomotive Superintendent asks for a piece of shafting here to enable him to run his few tools; I think he ought to get it; I believe there is plenty to be picked up on the line.

16. *The copper tube plates of the heavy compound engines.*—What I recommended in my report on this subject which is incorporated in G.O., No. 290 Ry., dated the 21st February 1898, was that (*a*) new tube plates should be put in as fast as the old ones begin to fail; (*b*) that the tubes should be given a slight upwards camber in order that part of the effect of their lengthening and shortening may take effect in bending themselves instead of in smashing the tube plates; and (*c*) that in order to give greater elasticity at the corner of the tube plate where the worst bending stresses occur, the front row of side stays should be omitted at both sides. I was told that 15 new plates have arrived and that they are being put in as fast as opportunity offers. I am of opinion that $\frac{7}{8}$" is a better thickness for these plates than 1". The Locomotive Superintendent has not adopted the suggestion to bend the tubes. He has arranged to remove the front vertical row of side stays; but, arguing on some lines of his own which to me are incomprehensible, he is substituting in place of each alternate stay in the rows in question a lowmoor iron stay. I really cannot write about this any more. If Mr. Morton is right about this very curious compromise, I must have argued on utterly wrong lines. If his lowmoor compromises crack, things will from my point of view be about right. He is setting the belly palm stays further forward in the boiler to allow of their doing what they were intended to do, but could not do as built. Mr. A. Chatterton is now testing the copper of one tube plate at the Civil Engineering College, Madras. I scarcely expect to see that anything is the matter with the copper. The rivet heads of the firebox which fouled the main frames are being lowered.

17. *Stores.*—I did not look over the surplus stores as I did so in great detail last half-year. I was told that the Madras Railway had made enquiries about much of the surplus and had I believe taken a lot of things. When inspecting the Bezwada-Madras Railway a few days later I found that they had been doing without a lot of useful things which they might have picked up at Waltair if only someone had taken the trouble to go there and look about him.

18. *Kistna Bridge footways.*—One of these overhead footways is in constant use, and the other out of use. The thin plates of the one in use are corroding badly, while those of the other are quite untouched. The reason is that, on one side, the feet of passengers rub off the scale as fast as it forms, while on the other side the

Plate is protected by the paint. I advise that the footways be used alternately for say six months at a time, and that when necessary the one out of use be heavily tarred and sanded. I do not think much is to be gained by trying to work these footways commercially through departmental agency. I scarcely suppose they will pay much more than working expenses under such conditions and the boat ferry will always undersell them, whereas at least three or four thousand rupees per annum will be got if they are sold to contractors, or enough to more than keep the main bridge painted and in order. One anna per foot passenger seems to me a preposterous charge for the use of these footways. It is a very heavy sum for the poor people who use them, and they can cross by boat for half or one-third of the money.

19. *Kistna Junction arrangements.*—In paragraph 20 of last report I drew serious attention to the muddle into which all these arrangements had drifted, just for want of one comprehensive scheme to co-ordinate the requirements of the several railways which meet in the neighbourhood of Bezwada. I advised that the best way out of it now is to double the Western Kistna Canal bridge, and so to prevent the two gauges from coming into contact until they arrive at the point, close to the Kistna bridge proper, where engines come out of the Sitanagaram engine yard. I was in hopes that orders would have issued in time for the work being done during the two months during which the canals are dry. But the time was allowed to slip past and now nothing can be done until April 1899. On reconsideration of my last year's recommendation, I would build a new bridge over the canal for the standard gauge, and would run the metre gauge over the present screw pile bridge. The crowd of stations all within almost a stone's throw, are a source of danger and confusion at present, and ought to be quite unnecessary. As I know more about the locality than any one else, I would suggest that a comprehensive plan of the whole, including Tadepalli and Bezwada, be prepared, and that I be asked to sketch what ought to be done. The first mistake that was made was in going to Tadepalli at all with the tranship arrangements, all the rest of the confusion has followed from that. The present arrangement, or want of arrangement, is quite unfit for the 30 trains per day that have to run the gauntlet of the set of minor stations.

20. *The Parlakimedi Tramway.*—Although no reply has as yet been received from the Rajah of Parlakimedi about his acceptance or otherwise of the conditions laid down by Government for the issue of an order that the tramway may be made, he has already begun earthwork on several miles of the proposed alignment. The Rajah has, I suppose, a perfect right to do any earthwork he likes in his own estate. But the first 7½ miles are on or near a District Board's road in Ganjam, and on this section, too, the earthwork is, I understand, practically finished. I presume, therefore, that the Rajah has squared matters with the Collector and that the latter has made it all right with the District Board and with the owners and occupiers of the land on which the Rajah has entered. His engineer had even gone so far as to enter on railway land and to start excavation thereon, but that was put a stop to. I am of opinion that the Parlakimedi tramway must stop at the west side of an island platform at Naupada, and that a broad gauge siding should be run down to the salt factory from the existing platform which will then become a goods platform. This siding ought, emphatically, in my opinion, to be the sole property of the East Coast Railway; private parties ought to have no ownership in it.

21. *Salt.*—I understand that a draft agreement for the approval of Government has been settled between the East Coast Railway and the Oriental Salt Company for the construction of a broad gauge salt siding on the usual siding terms from Naupada station to Naupada salt factory. To make the siding broad gauge is, in my opinion, the right thing to do, because by far the greater part of the Naupada outturn will go north along the East Coast Railway towards Cuttack, and only a comparatively small part will go towards Parlakimedi; but it ought to belong exclusively to the East Coast Railway. The tramway ought not to be allowed to cross the East Coast Railway at all. The Oriental Salt Company want to be allowed to build a salt godown, or otherwise to arrange with the railway for permanent or semi-permanent accommodation, at Vizianagram and at one other station. At the other station they have, I was told, been allotted the necessary accommodation in the goods shed. At Vizianagram I found a most

suitable piece of land, which they would be wise to buy, bounded by the railway goods shed, the turntable, the fencing and the road; it is in every way convenient for them, and if, as I believe is the case, it is not railway land and they can buy it, they can have no excuse for wanting to come inside railway land. If the Oriental Salt Company succeed in storing salt at certain railway stations touched by the petty trader's carts from the interior, the railway will not only get the freight of the salt, but will also get freight on the goods which the cartmen bring down with a view to exchanging for salt for their return journey. It is therefore in the interest of the railway to encourage the establishment of salt godowns at the places where it is crossed by roads from the interior.

At Barang I was told that it costs from one anna to one anna three pies per maund to cart salt into Cuttack. A bag is 2 maunds, and a cart carries 12 to 18 maunds according to season. It is proposed that when the Bengal-Nagpore Railway have carried their temporary lines across the rivers into Cuttack salt shall be carried over these lines at about three pies per maund.

I was given the following statistics of salt booked to Barang for Cuttack in the last three months:—

(*a*)	From Humma, country salt	...	...	...	62,000 maunds.
(*b*)	" Waltair, artificial Cheshire salt	...	...	...	8,730 "
(*c*)	" Naupada, country salt	...	...	...	2,368 "
(*d*)	" Cocanada, brown salt	...	...	...	2,967 "

The aim of the Oriental Salt Company is that (*b*) shall take the place of a very large proportion of the European salt which is now consumed in Bengal and Orissa. The matter is one of very high importance to the railway.

22. *The Manganese trade.*—I am told that the Vizianagram Manganese Company sold about 68,000 tons of ore last year for £54,000 making a net profit of £12,000; and that they now have got orders for 200 tons per day for the next six months. The whole of this goes over the East Coast Railway to Vizagapatam, paying one-seventh pie per maund per mile *plus* a two pie terminal. I was told that when the bar at Vizagapatam port is bad, 300 to 400 tons of ore per day can be got on board ship, but that 700 to 800 tons can be shipped when the bar is in good order. Freights to England rule at and around £1. Much of the ore is destined for the States. At Garividi two extra sidings and a ramp have been put in for the use of the ore. Sometimes 1,000 bullock carts come in from Gurbam quarries to Garividi in a morning. A waiting room has been arranged for at Garividi to meet the convenience of the mining men. A little manganese offers at Sigadam, and a short loop-siding is to be put in there.

23. *The junction of the Raipur line.*—It has been suggested that instead of joining the East Coast Railway at Vizianagram or at Chipurupalle, the Raipur line should pass through or close to Gurbam manganese quarries and join at Garividi, or even at Nellimarla. The objection is that the Gurbam deposits may sometime be exhausted. The question is well worth looking into.

24. *Carriage lighting.*—Everywhere on the line oil is used. It seems to be good enough oil, but the lamps only burn four or five hours as a rule. If the public convenience is to be served, a regular exchange of old lamps for new should be made from end to end of the trains at least once during the night if not twice. I was assured that this is done, but I am not satisfied. It is of course in the interest of the lamp menials not to do it and to steal the oil. The system brought into force on the South Indian Railway of colouring the oil ought to tend to stop the theft of it. Bad lighting is a serious public inconvenience; every passenger pays for light and he ought to get it. By the way I found a Nizam's Guaranteed State Railway postal van which was said to be leaking badly at all the roof lamps; it was running with a tarpaulin over it.

25. *Chicacole.*—This important town is 9½ miles from the railway *viâ* the district road to Palkonda. But it is only 5 miles from Dusi station, and it could be connected therewith if the District Board could persuade themselves to face the cost of about 4 miles of new road along the bank of the river. The Palkonda traffic for and from the railway will always come to Chicacole Road station, whose name might be changed

to Palkonda Road; while the name of Dusi station might be changed to Chicacole Road if the suggested road was made. I should think it ought to be worth the money to the District to get their head-quarters so much nearer the railway.

26. *Vizagapatam Port.*—The Port authorities have offered the railway Rs. 10,000 to do a little more reclamation and get a pontoon wharf. The railway was building 100 ft. of new pucca wharf, of which 50 ft. consists of steps and 50 ft. is plumb. This, I understand, is being built at the cost of the port.

I here invite the attention of Government to my scheme, filed with the Chief Engineer, Public Works Department, Madras, for improving the bar of Vizagapatam by sluicing through a gated weir at the site of Turner's bridge. My belief is that it would have the effect of rendering Mr. Thorowgood's proposed groin unnecessary. This belief is based on experience and observation of the locality. I strongly recommend that the suggestion be duly considered.

Madras,
14th July 1898.

Francis J. E. Spring,
Senior Government Inspector of Railways.

Order—No. 981 Ry., dated 2nd August 1898.

Communicated to the Manager, East Coast Railway, for information and necessary action; also to the Engineer-in-Chief, Godavari Bridge, with special reference to paragraph 4.

2. The attention of the Revenue Department is invited to paragraphs 7, 21 and 22. A special report should be obtained in regard to paragraph 20.

3. The question of a feeder road referred to in paragraph 25 will be considered in the Local and Municipal Department.

4. The attention of the Marine Department is invited to paragraph 26.

5. A copy of these Proceedings will be forwarded to the Government of India for information; and to the Government of Bengal, Public Works Department, with reference to paragraph 9 of the report.

[Here enter No. 982 Ry., dated 2nd August 1898.]

(True Extract.)

Francis J. E. Spring,
Joint Secretary.

To the Manager, East Coast Railway.
" Engineer-in-Chief, Godavari Bridge.
" Revenue Department.
" Local and Municipal Department.
" Marine Department.
" Consulting Engineer for Railways.

Rad. C. Parthasarathy.

No. 1605 R.C.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY CONSTRUCTION.

All communications should be addressed to the Secretary.

JOINT SECRETARY TO GOVT. OF MADRAS RYS. RECEIVED 1 NOV. 1898

178 S.No. 24.

To

The Joint Secretary to the Government of Madras,
Public Works Department, Railway Branch.

Simla, the 25th October 1898.

Sir,

I am directed to acknowledge the receipt of your letter No.1122 Railway, dated the 7th September 1898, on the subject of the proposed construction, as a part of the East Coast Railway, of a siding from Naupada Station on that line to the Salt Factory of the same name. S.No 23 A

2. In reply I am directed to invite a reference to Government of India, Public Works Department letter No.642 R.T., dated 16th June 1898, paragraph 3, in which it was stated that State Railways could not be expected to bear the cost of connecting particular factories with their main lines unless assured of an adequate and permanent return on the Capital expended, and to say that if the Madras Salt Department are prepared to give the necessary guarantee there will be no objection to the proposed branch being constructed solely at the expense of the East Coast Railway S.No 15-2 B

I have the honour to be,

Sir,

Your most obedient servant,

Secretary.

Documents accompanying:-

Nil.

S.A. ABST.

SERIAL
No. 29

Rly. Dept.

No. 1520 & Rly. Dated 9/12/98

To the Secretary to the
~~Draft letter to the~~
Govt of India, P.W.D
~~to be issued in the~~
~~P.W.D (Rly)~~.

1898

Rd 3.12.98

Regarding the construction of the Kampada siding on the East Coast Railway. You intimate

Sir,

I am directed to acknowledge the receipt of your letter No. 1606 Rc. dt. 25-10-1898 (53/24) ~~Letter~~ that there will be no objection to the Construction (will be paid) ~~of~~ solely at the expense of the East Coast Ry ~~of the proposed~~ ~~extension~~ provided the Madras Govt is prepared to give a guarantee for a permanent and adequate return on the capital to be expended

2. In reply, I am

2/

~~instructed~~ to invite
attention to para 6 of
~~my~~ letter No. 1122 Rly dr
7-9-98, in which
assurance was con-
veyed that the line
would in a very short
time earn a dividend
at ordinary tariff rates
~~of one sixth pie per~~
~~maund per mile and~~
that until the ~~this was~~
~~secured~~, a special toll
of two pies per maund
might be levied on
the salt moved over
the siding, the toll
being reduced as
the ~~Traffic~~ expanded.

~~As~~ the Govt. has no objection,
so far as this Govt is con-
-cerned, to the ~~principle~~
guarantee asked for being
secured on the Salt Revenue

3. I am to request
that this ~~ref~~ may be favoured
with very early orders as to
the construction of the siding

S.F. 1/11/98

S 2923

short

as is possible in the circ.

few miles of the line not the station of the salt factory

sufficient to cover the interest on the outlay and

Imperial

M.S.

Despatched on 9/12/98

JOINT SECRETARY TO GOVT. OF MADRAS RYS.
RECEIVED 16 AUG. 1899
All communications should be addressed to the Secretary.

No. 1255½ R.S.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

(Railway Stores)

SOP

Simla, the 8th August 1899.

The following is forwarded to the Joint Secretary to the Government of Madras, Public Works Department Railway Branch for information, with reference to correspondence ending with his letter No.1520 Railway of 9th December 1898.

Please see para 3.

By order,

C.S.C.h.

Under Secretary.

Copy of letter No.1255 R.S. dated the 8th August 1899, from the Secretary to the Government of India Public Works Department to the Manager, East Coast Railway.

SP

With reference to your letter No.5929 dated 1st July 1899, to the address of the Director of Railway Construction, I am directed to communicate the sanction of

of the Government of India to the alternative estimate therewith received amounting to Rs.68,784 of the cost of constructing the Naupada Salt siding on the East Coast Railway with the depreciated steel rails stacked at Naupada supplemented by Ballast siding rails, as an ordinary work chargeable to the Capital Account of the Railway.

2. It is considered that charges should be levied for the carriage of salt over this siding so as to give a reasonable return on the Capital outlay to be incurred.

You should therefore arrange to make such a charge as will secure this result.

3. The sanction accorded in paragraph 1 which is chargeable to Capital, has been registered as No.4 East Coast Railway of 1899-1900.

Public Works (1899) Department.

Railway

CURRENT No. 1050.

From The Govt of India

Order No 956 Ry dated 26/8/99

Communicated by the Revenue Dept.

No. 1255 1/2 R.S.

Dated 8th August 1899

Received 16th do

Registered do

Enclosures

Spare copies

SUBJECT.

Naufada Salt Siding on the East Coast Railway

Forwarding for information copy of Govt of India letter to the Manager, 2 cys, Sanctioning with remarks, the alternative estimate of Rs 68,784 of the cost of constructing the

BACK PAPERS.

No.	Date.

FURTHER PAPERS.

No.	Date.

RAILWAY.

Government {1899} of Madras.

PUBLIC WORKS.

Recd. } 1899. *Enclosures*

Regd. *Spare copies*

G.O., No. 956 Ry., 26th August 1899.

AUGUST.

Naupada Salt Siding for the East Coast Railway

Communicating to the Revenue Department a memorandum from the Government of India forwarding a copy of its letter to the Manager, East Coast Railway, sanctioning, with remarks, an estimate amounting to Rs. 68,784 of the cost of constructing the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers :—

Proceedings of the Board of Revenue (Separate Revenue), No. 209, dated 27th May 1896.

Resolution—No. 209, dated 27th May 1896.

The Board begs to call the attention of Government to the desirability of placing the Naupada and Karasa salt factories in connection with the East Coast Railway. This railway approaches only four salt factories in the whole of its length—Ganjam, Naupada, Karasa and Jagganaikpur. Arrangements for a branch line into the Ganjam factory will form the subject of a separate communication when certain information which the officers of the East Coast Railway are preparing is received. The salt of this factory will all go north to meet the Orissa demand, which will increase largely as railway communication between Cuttack and the Central Provinces developes. Jagganaikpur is small and its future is not much affected by the opening of the line as its salt must be put into boats to get it across the Cocanada river to the railway station, and once in boats it will usually travel inland by canal. Karasa and Naupada are therefore the factories to the development of which the interior of the Vizagapatam and Ganjam districts and the adjoining parts of the Central Provinces must look for a cheaper and better supply of salt with the aid of railway carriage. Though the question is one of considerable importance to the Salt Department the interests of the East Coast Railway, which is a State undertaking, are still more concerned in it. At present not a grain of salt is coming on to the line, except that from the Ganjam factory, booked at Humma for Orissa, and this not only means the loss of possible earnings for the carriage of salt, but also the loss of the carriage of the produce which carts coming to the coast for salt invariably transport on the down journey. The Board is therefore confident that, if the matter be placed before the Government of India in the Railway Department, arrangements for the construction of the necessary branch lines will be made either free of cost or on very advantageous terms.

2. The East Coast Railway at present charges one-eighth of a pie per maund per mile for the carriage of salt in large quantities. It will eventually probably raise this to one-fifth or one-sixth of a pie but not higher. At a very low estimate transport by cart costs three-fifths of a pie per maund per mile in these districts. The following table shows how rail-borne salt from the Naupada and Karasa factories should compare with cart-borne salt from the factories which are at a distance from the railway, at the points nearest to the latter factories, calculated on the basis of the above rates and on the assumption that branch lines have been made into Naupada and Karasa.

The Board has added in the case of rail-borne salt a charge of 2 pies per maund to cover interest on the capital cost of the branch lines as explained below :—

Name of factory.	Distance from nearest station on the line.	Nearest station on line.	Cost of carriage by cart per maund to station in column 3.	Nearest railway factory.	Cost of carriage by rail per maund from factory in column 5 to station in column 3.
1	2	3	4	5	6
	MILES.		A. P.		A. P.
Surla	9	Ichchhapuram ..	0 5	Naupada	0 8½
Calingapatam ..	12	Parlakimedi road ..	0 9 *	Do.	0 4½
Kuppili	20	Ponduru	1 0	Do.	0 7
Konada	14	Vizianagram	0 11 †	Karasa	0 7
Bimlipatam	16	Do.	0 9	Do.	0 7
Balacheruvu	9	Duvvada	0 5	Do.	0 3½
Polavaram	9	Narsapatnam road ..	0 5	Do.	0 8

* Includes crossing the Vamsadara river. † Two and half pies have been added for the Vizianagram municipal tolls.

Of course the points selected are those at which cart-borne salt would have the greatest advantage. Everywhere else the rates would be more in favour of the rail-borne salt, yet the above table shows that the latter should meet the former at an advantage everywhere except near Surla and Polavaram, if the salt could be got on to the railway by means of branch lines running alongside the platforms. The difference to the consumer which the advantage in rates shown above promises may at first sight appear small, but it must be remembered that the four factories which lie between Naupada and Karasa are small and incapable of being enlarged, and their outturn is sufficient to meet the demand on them only in good seasons. This is especially the case at Kuppili and Bimlipatam, where all the readily saleable salt is usually sold out before the new salt comes in. Calingapatam is not much better off so far as excise salt is concerned, and, under the present system, Government salt would not be offered for unlimited sales unless excessive prices were demanded by the excise licensees. The result is that the price of salt at Vizianagram, Palkonda and the chief salt markets near the railways is governed by the cost of carting salt thither from Naupada and Karasa and the licensees of the intermediate factories profit by their position at the expense of the consumer inland and get higher prices than they are fairly entitled to. It is generally supposed that the salt of these factories is lighter and more popular with the trade than that of Naupada and Karasa, but on an examination of the records of distribution kept at the factories the Board doubts the accuracy of the explanation and believes that it is entirely owing to their advantageous position and the impossibility of increasing their outturn that the licensees are able to dispose of all the salt they can make at from 4 to 8 annas per maund. A large quantity of Karasa salt passes through Vizianagram on its way to Saluru and Parvatipuram every year. This salt must compete with that from Konada and Bimlipatam at a disadvantage of about 1 anna 3 pies per maund while it depends on carts for transport. If it were transported by rail instead of cart, its cost in Vizianagram would be capable of a reduction of about 1 anna 6 pies and the excise licensees of Bimlipatam and Konada would have to make a corresponding reduction in their prices.

3. The Balacheruvu and Karasa factories have usually been supposed to compete for the salt trade of the south of the Vizagapatam district, but on a close examination of the distribution statements the Board finds that this is the case only to a very limited extent. Balacheruvu and Polavaram practically share a monopoly of the supply of the Anakapalle, Sarvasiddhi and Golgonda taluks (of which Polavaram gets about one-fourth or one-fifth), and rarely send any salt to Vizagapatam, Srungavarapukota or the north of the district. It is only in the Viravilli division that the Balacheruvu and Karasa factories meet on common ground. The reason is that carts going from Balacheruvu to the north or from Karasa to the south must make a long detour through Vizagapatam and pay municipal tolls. In consequence about 85,000 maunds of salt pass from Balacheruvu to the south of the district every year which

could be more economically carried by rail from Karasa if it had a branch line to its platforms. Taking Yellamanchili as the centre of the area supplied from Balacheruvu, the loss to the consumer per maund is the difference between $6\frac{3}{4}$ pies—the cost of carriage by rail from Karasa—and 1 anna 6 pies—the cost of carriage by cart from Balacheruvu—or, say, 1 anna per maund.

4. The figures given in paragraph 2 show clearly that with proper railway arrangements at Karasa and Naupada no salt worth mentioning should cross the line from the intermediate factories or Balacheruvu. The Board therefore estimates that all the salt now sold at Calingapatam, Kuppili, Konada, Bimlipatam and Balacheruvu, with the exception of that required for the marginally-noted taluks, will be replaced by salt from Naupada and Karasa when branch lines are run into these factories. Taking consumption at 16½ lb. per head, this population would require 150,000 maunds *per annum*, which would leave the balance of the present average sales of those five factories,—say 365,000 maunds,—to be supplied by rail or by these factories at a reduction of something considerably over one anna per maund on present prices, a loss which their licensees would not easily submit to now. The whole of the present sales of the Karasa factory, with the exception of, say, 20,000 maunds for the population of the Vizagapatam taluk, would also go inland by rail and add another 1,20,000 maunds of salt supplied at a reduction of considerably more than an anna per maund to the above quantity. 100,000 maunds of the present sales at Naupada would also be rail-borne to its destination at reduced cost making a total of 5,85,000 maunds or, say, six lakhs. A reduction of an anna per maund on the selling price of this quantity would mean a saving of Rs. 37,500 to the consumer. An anna is also a low rate at which to estimate the reduction of cost, and the Board thinks that it would not be far wrong in putting the saving at Rs. 50,000 per annum.

			Population.
Chicacole	Ganjam	...	212,008
Chipurupalle	Vizagapatam	...	156,831
Bimlipatam	Do.	...	115,309
½ Palkonda	Do.	...	104,410
½ Vizianagram	Do.	...	83,329
½ Viravilli	Do.	...	98,933
			771,420

5. In addition to this advantage to the consumer, the change would result in one or more of the intermediate factories closing from want of business and the saving of the cost of its or their establishment. These factories may have been necessary in the past, but with a railway running parallel to the coast there can be no objection now to a reduction of their number. The railway would profit still more than the Salt Department or the consumer, as once it secured the carriage of salt for the first 30 or 40 miles from the coast it would also get that of the down-loads of the salt carts at centres like Vizianagram, Chicacole road and the like, and be placed in a most advantageous position for competing with the cart-owners. Carts would of course compete at reduced rates at first but the struggle would be short in a district like Vizagapatam, where there is ample scope for the energies of the bandymen in the developing trade with the Agency and the Central Provinces, but so long as cart-borne salt can compete on fairly even terms with railway salt the cart-owners are likely to hold their own. Of course there is no reason why salt should not be carted to the railway stations at Karasa and Naupada and get the advantage of cheaper rates for transit, except the fact that the trade shows no signs whatever of resorting to this expedient. The reason probably is that there are no salt traders in the interior of Vizagapatam and Ganjam, who deal direct with the factories. The universal custom is for the bandymen from the interior to purchase the salt themselves, often with money borrowed from merchants dealing in salt upcountry, and to sell their loads on their arrival at the great salt marts of Parvatipuram and Saluru or exchange it further on in the interior for oil-seeds, grain, etc. With railway communication between the platforms and places like Vizianagram, this system would rapidly disappear and the work of removal to that town at any rate and probably to the principal salt markets in the interior would fall into the hands of credit merchants.

6. The Board believes that there are rules in existence under which the East Coast Railway could lay down the necessary branch lines, charging the Salt Department 4 per cent. *per annum* on the capital cost and receiving freight at the usual rates

for all salt passed over the line. The branch which is required at Karasa could probably be made of second-class materials for Rs. 75,000, which would involve an annual charge of Rs. 3,000. This would be covered by a charge of 2 pies per maund on the sale of 300,000 maunds per annum, which appears to be a very moderate estimate of what the Karasa removals would be under the circumstances. Considering how much the railway is interested in the matter, the Board thinks that even better terms than those suggested above may be expected.

7. The Board considers that the Railway Department should be approached with reference to Karasa in the first instance as the East Coast Railway is much more interested in getting the salt made there on to the line than that from Naupada. The latter is not a port and consequently there would not be much to be expected from the down loads of the carts which at present go there for salt.

G.O., No. 773 R., dated 5th October 1897.

Read the following paper :—

Report of an inspection tour by the Consulting Engineer for Railways, Madras, during July and August 1897.

* * * * * *

6. (*a*) It appears to be advisable that the Government of India, who administer the East Coast Railway, should be specially addressed upon the subject of the great importance of a more intimate connection between the railway and the salt trade. As much does not seem to have been done as might have been done to work these two branches of public business in due co-ordination for their mutual benefit. The representation to the Government of India on this subject might be based upon a Resolution of the Board of Revenue. The present Salt Commissioner, Mr. Willock, has a special personal knowledge of all that relates to the salt-*cum*-railway question, and a note upon the subject from that officer would be most valuable.

* * * * *

Order—No. 773 R., dated 5th October 1897.

Mr. Willock will be requested in the Revenue Department to favour Government with the note referred to in paragraph 6 (*a*) of the Report.

* * * * *

G.O., No. 206 R., dated 4th February 1898.

Read the following paper :—

Inspection Report of the East Coast Railway, by the Senior Government Inspector for Railways, for the half-year ending 31st December 1897.

* * * * *

15. *The Salt Trade.*—I was told that some months ago there was a great export of salt from Naupada towards Orissa, but that this has now stopped, because it was merely the temporary result of the selling of salt either damaged or likely to be damaged. But from Humma 6 or 7 waggon loads are said to go daily towards Cuttack. This salt is booked, not to the terminus at Barang for the most part, but to Khurda or Bhubaneswar, whence it is carted to Cuttack. The object apparently is to evade the terminal placed on salt booked for Barang which preferred not to use the out-agency. But the Manager has now abolished the terminal, and it seems probable that booking to Barang will be resumed. It is a special condition of Humma factory that a lot of local carts make a livelihood by working between the pans and the railway. About 100 to 200 cart loads are said to come daily to the station from the factory, and a cart reckons to make two trips per day. There is a good road. Under such favourable carting conditions as these it is doubtful whether a short branch railway would pay or is necessary. At Naupada either the Parlakimedi Railway or the

Oriental Salt Company will perform the function of carts. The conditions at Karasa factory are altogether different. Here there is no class of local cartmen, and it is necessary, for the lifting of the salt at all, that the cartmen from the hinterland, who themselves are small traders and not merely hirelings, should bring their carts right down to the pans. Naturally in such circumstances they do not get in touch with the railway. But if the railway were to go right down to the pans and to place the salt (in bond) at the trading centres of Tuni and Vizianagram, not only would it get freight on so much haulage, but the cartmen would presumably readily lend themselves to an arrangement which would result in the saving to them of a week on their journey. However, the very recent appearance on the scene of the Oriental Salt Company, as represented by Mr. MacNab, seems likely to so completely change all the conditions of the trade that it is quite impossible now to say whether it would be wise for the railway to take a siding down to Karasa or not.

* * * * *

G.O., No. 241 Ry., dated 12th February 1898.

Read the following paper :—

G.O., Mis. No. 485, Revenue, dated 29th January 1898.

Read the following paper :—

Note by Mr. W. A. Willock, dated 20th January 1898, on the salt supply of the Northern Circars as affected by the East Coast Railway.

In dealing with this subject it is necessary to bear in mind the position which salt will probably occupy in the traffic of the East Coast Railway some ten years or so hence, rather than existing conditions. There is no reason why this should not be foreseen with fair accuracy at present, though there is one disturbing factor—the construction of the Vizagapatam-Raipur Railway. It is to be hoped that it will be an accomplished fact long before that time; but to avoid the risk of being thought to overestimate the importance of the future salt traffic of the line, I will only assume that a feeder railway has been made up to Párvatípuram—an assumption which is a tolerably sound one, as I believe that the railway authorities agree with me in thinking that the heavy traffic of the Vizagapatam district can never be brought on to the line until this is constructed. I also assume that the note which I have been directed to prepare is intended to refer only to the portion of the line north of the Gódávari.

The salt produced along this part of the coast feeds four large markets, the conditions in each of which are totally different, so far as railway considerations are concerned. They are as follows :—

(1) Orissa and the country inland of it.
(2) The plain tracts of the Ganjám and Vizagapatam districts.
(3) Jeypore above the ghauts and the adjoining areas.
(4) The Central Provinces and areas fed from the great route through the Rayagadda valley, including the country directly inland of Vizianagram and Palkonda.

There are other areas, such as the Ganjám Agency tracts and the Gudem hills, which also derive their supplies from the coast factories; but these may be classed with head (2) for all practical purposes.

These areas are now supplied chiefly from the East Coast. In the case of No. (1) imported salt from Calcutta, and Bombay salt transported by the Bengal-Nagpur line to Sambulpur and the adjacent country, share the market, and in No. (4) the same Bombay salt competes in the far interior. I do not think that there is any practical competition with Bombay salt in the case of No. (3) as the areas dependent on the two sources of supply are separated by a very thinly inhabited tract.

The following are the factories from which supplies are drawn :—

(i) *Tua and Gurubai.*—Two small factories under the Bengal Government on the Chilka lake. These can only throw salt into Orissa by boat and are at present

greatly overstocked with inferior salt, which will rapidly deteriorate and reduce sales to very local limits. They sold 46,224 maunds last year against 76,635 in 1895–96 and the decrease is certain to continue. They may be disregarded.

(ii) *Ganjám.*—A very fine factory, the head-quarters of which is about 1½ miles from the Humma station. It is about three miles long however, and the more remote platforms are at a considerable distance in consequence. It can produce about 500,000 maunds per annum, but is liable to disastrously bad years owing to the frequency of hot weather showers in some seasons. Ganjám is a Government factory.

(iii) *Surla.*—A good factory about five miles from the Ichchhápuram station but separated from it by a swamp which can only be crossed by carts in the dry weather. It is capable of indefinite extension, but the distance from the railway will always confine its operations to local trade so long as stocks are available at more convenient factories. The site has also the disadvantage of being very unhealthy. It is partly Excise and partly Government.

(iv) *Naupada.*—A splendid factory less than two miles from the Naupada station. The salt is excellent and the production admits of indefinite extension. It is now far in excess of the demand. It is an Excise factory.

(v) *Calingapatam.*—A moderately large factory about twelve miles away from the Parlakimedi Road station, with the Vamsadhara river intervening. It can make about 300,000 maunds. The salt is inferior, though somewhat popular owing to its being light and consequently measuring well when retailed. It is a Government factory.

(vi) *Kuppili, Konada and Bimlipatam.*—Three small excise factories, capable of producing about 250,000 maunds per annum, lying along the coast opposite the section of the railway between Chicacole Road and Vizianagram. They are from twelve to eighteen miles from the railway and Kuppili has not even got road communication with the interior. Their salt is light and therefore popular and fetches from 1 to 3½ annas per maund more than the price charged at all Government factories (3 annas per maund).

(vii) *Karasa.*—A fine factory partly Excise and partly Government, about two miles from the Waltair station. The factory is capable of producing about 300,000 maunds of salt at present and can be largely extended.

(viii) *Bulacheruvu.*—A Government factory on the south of the Dolphin's Nose range of hills. The site is a favourable one, but want of labour is much felt and the nearest railway station is ten miles off.

(ix) *Polavaram.*—A small factory on the sea coast nearly opposite the Narsapatam Road station which only meets a local demand.

Of the areas dealt with above, Nos. 1, 3 and 4 are those in the salt traffic of which the East Coast Railway is chiefly interested. No. 2 will always draw a good deal of its supplies by cart from the nearest factories on the coast; but the railway is concerned even in its case in the concentration of the demand at the factories adjoining the line, which will probably in time result in the business of the intermediate ones falling off to such an extent as to result in their closure.

As regards No. (1) or Orissa, this tract has hitherto drawn its supply from Calcutta, Bombay and the north of the Ganjám district. The second source of supply has only become of importance during the last two or three years owing to the extension of the Bengal-Nagpur Railway system towards Sambulpur.

Last year the quantities supplied from each source were as follows :—

	Mds.
Calcutta	280,795
Bombay	132,403
Ganjám district and the Chilka factories	411,420
Total ...	824,618

I have here included 46,224 maunds supplied by Tua and Gurubai under Ganjám as I regard those factories as practically extinct so far as future considerations are concerned.

As to the future of the salt supply of this area it is impossible that Bombay salt should make much further advance towards the coast. It has only been able to stretch as far as it has done owing to the heavy cost of carriage by cart and pack bullocks from Cuttack. If rail communication is opened up from Cuttack or anywhere thereabouts with the country now served by the Bengal-Nagpur line, the result must be to drive Bombay salt some hundreds of miles back into the interior. The salt thus driven back will be replaced by salt from the Ganjám factories as that supplied from Calcutta is of a totally different description from what is now in use, being fine grained salt produced by artificial evaporation and imported from Europe. It is far more expensive than salt produced by solar evaporation and can never displace the latter in areas where its use is customary, the difference in initial cost (ex-duty) being from 300 to 400 per cent. The East Coast Railway has consequently a fine opening for salt from the Ganjam factories in this direction as communication improves. The north of Orissa has hitherto been dependent on Calcutta for its supplies owing to the difficulty of transport from Ganjam, but with such disproportionate initial cost it cannot continue to draw on it long after the East Coast Railway is opened beyond Cuttack. It is true that the people are unusually conservative in this area and have been accustomed to use "boiled" salt from remote times, the climate being unsuitable for the production of salt by natural evaporation. It may therefore take them some little time to get used to the cheaper Madras salt, but there can be no doubt but that the latter will gradually win its way and drive back the foreign article not only out of Orissa but even out of the adjoining parts of Bengal. A difference of 9 annas per maund, it must be remembered, is enough to carry salt an additional 600 miles or so by rail so that the area of possible expansion of salt trade for the Madras factories is very great. Of course, the railway might say that, as the salt has to come from either the Ganjam district or Calcutta, it would have to pay railway freight in any case and that it was as much interested in developing the Calcutta trade as that from Madras. This, however, is not correct. It is the interest of the railway to secure as much of the market as possible for one or other source of supply and so avoid being only given transport over the minimum mileage to the centre of the intervening line. Its object should be to either get Madras salt to pass the half-way point and supply tracts nearer to Calcutta or *vice versa*. Owing to the high price of Calcutta salt it can never invade the area dependent on Madras and consequently the interest of the railway is to drive the former back as far as it possibly can. This policy is further recommended by the following considerations.

Ganjam, though a large factory, is not at all likely to be able to supply the whole of the salt required by the area which will want to draw its supply from Madras in future. It unfortunately cannot be extended, and, though it has now, after a series of prosperous manufacturing seasons, got large stocks on hand, it may, owing to its liability to have manufacture stopped by thunder-storms in April and May, be depleted two or three years hence and will in any case never be a reliable source of supply. Three-quarters of its outturn already go to Orissa and with a slight increase of trade its stocks are certain to run short every year. As explained above, it cannot be extended. Surla, the next factory, is at a disadvantage owing to its being so far from the line and consequently the trade will go to Naupada, giving the railway a longer lead by 85 miles if proper encouragement is given by the railway authorities to the Naupada manufactures. A very large quantity of salt has been sent north from Naupada during the past few months, but this was due to exceptional causes. A large quantity was condemned to destruction unless cleared immediately and was disposed of at extraordinarily low prices. This was what the Cuttack merchants were purchasing so freely during the early part of the current year. They could hardly afford to cart salt selling at ordinary rates to the railway and sell it at a profit unless special concessions are made. Golantha, the nearest station to Surla, is only eight miles from that factory or six miles further than Naupada is from the line. The cost of carting salt these six miles would be considerably less than the cost of railing it from Naupada and some concession or facilities are necessary at the latter to enable it to secure the overflow demand from Ganjam and the railway freight on the additional 55 miles. The advantage which I would recommend is a branch line to the factory which would do away with carting and transhipment altogether. At the same time

everything possible should be done to encourage sales at Ganjam and so clear out stocks so as to force the trade to the more distant factory. A branch to this factory also is desirable for this reason. The main thing to be remembered is that the more salt the railway moves the greater will be the distance it will move it. It will never profit much by the salt trade so long as the supply is divided between Calcutta and the Ganjam district. Its policy should be to drive back the Calcutta salt as it is impossible to adopt this course with success as regards the Ganjam salt.

With regard to the second area referred to above, the plains of Vizagapatam and Ganjam will always be dependent on the nearest factories to some extent. Between Naupada and Karasa, however, it should be possible for the East Coast Railway to prevent any salt from Calingapatam, Kuppili, Konada or Bimlipatam from crossing its line. This should result in the eventual closure of these factories and should secure to rail-borne salt the consumption of the country on both sides of the line. I would here recommend very low rates of freight from Naupada and Karasa, especially to Vizianagram and the stations north as far as the Vamsadhara river. This, with the branch line to Naupada referred to above and another to Karasa, should in time produce the result suggested.

In the remaining two areas two other considerations arise, viz., the desirability of getting bandymen to drop their loads from the interior at the first railway station they reach and the effect which may be anticipated from the opening of a railway to Parvatipuram. At present most of the salt used in these tracts comes from Calingapatam, Konada and Bimlipatam. The Konada salt does not seriously affect the interests of the railway as regards other freight, as Konada is no longer a port; but that from Calingapatam and Bimlipatam exercises a most injurious influence, as it supplies return loads for carts proceeding to those ports with produce, and probably makes all the difference between their finding it worth while to cross the railway or to deliver their loads at the nearest station. I believe that I am right in saying that the railway has made practically no progress in securing the trade which customarily leaves the districts through Calingapatam and Bimlipatam. This is, in my opinion, entirely due to strenuous efforts not having been made to render Naupada and Karasa salt available at the points where the trade routes to the coast cross the line or at the nearest important towns, and here the importance of branch lines into those factories comes in. If a trader has to cart his salt a couple of miles to a station, he is at the mercy of the local cart-owners and is often made to pay an[anna]per bag or 6 pies per maund. He cannot be even certain of being able to get this work done at that rate and this uncertainty enhances his disinclination to resort to the factories without his own carts. He therefore still depends on the old means of transit and will have nothing to do with the railway. The result is that the factories close to which railway carriage is available have no advantage over others and the area supplied from each is much the same as it was before the line was opened. The salt trade of Vizianagram I regard as a point to which the railway should pay particular attention. The price of salt in Vizianagram is ruled by that of Karasa salt there, as the adjoining factories of Bimlipatam and Konada cannot make enough to supply the demand and can keep up prices to the point at which it pays to bring Karasa salt in. If Karasa salt could be laid down cheap at Vizianagram it would rapidly displace the Konada and Bimlipatam article, as the licensees at those factories will not at once submit to the loss of the very lucrative prices which they have been getting for some time back. When Karasa gets possession of the Vizianagram market, Bimlipatam and its export and import trade must move into Vizagapatam and all produce for shipment must go by rail to the last named port.

It may appear that the salt now removed from the two factories would not justify the construction of a branch line into them just yet. This is only partly true. In the first place, one of the chief reasons why I advocate branch lines is that it is the interest of the railway to drive the salt of the factories off the line out of the market at any cost. Then again the opening of a line of rail to Parvatipuram will do a good deal to restore the old salt trade with the Central Provinces which was so heavy twenty or thirty years ago, and will result in the rapid expansion of the operations of Naupada and Karasa. The bandymen of the tract which the new line will open up are far too enterprising to content themselves with competing at losing rates with the railway.

They will extend their operations further and further into the interior laden with salt instead and will rapidly recover lost ground. Even if the opening of the branch lines into the factories would not pay at once, they certainly will as soon as the Parvatipuram feeder is constructed.

Looking at the matter from a more general point of view, the local salt trade of the two districts has been as follows for the past two years:—

	Mds.
1895–96	1,384,735
1896–97	1,447,278

Of this at least 11 lakhs should be rail-borne. To this 11 lakhs, however, has to be added a large expansion of Ganjam trade north of Cuttack as the railway opens, and a still greater increase in the salt sent from Karasa and Naupada to the Central Provinces when the railway to Parvatipuram is constructed. The increase in the fourth area when this takes place will be enormous. The third area will also be affected, particularly if a branch line is made to Saluru; but I do not look for a very large expansion there, as the population in the interior gradually thins off and the distance from Saluru to the other side of this comparatively uninhabited tract is too great for the short railway line to Saluru to markedly reduce the carriage to the more populous places on the other side of it.

Order—Mis. No. 485, Revenue, dated 29th January 1898.

With reference to G.O., No. 773 R., dated 5th October 1897, Public Works, a note drawn up by Mr. Willock on the salt supply of the Northern Circars as affected by the East Coast Railway is forwarded.

Order—No. 241 Ry., dated 12th February 1898.

The Government of India will be addressed.

From—The Joint Secretary to the Govt. of Madras, P.W. Dept., Ry. Branch.
To—The Secretary to the Government of India, Public Works Department.
Dated—12th February 1898, No. 242 Ry.

I am directed to invite your attention to paragraph 6 (*a*) of Consulting Engineer's Inspection Report of the East Coast Railway which reached you under cover of my No. 774 R., dated the 5th October 1897. And also to paragraph 15 of the same officer's inspection report which went to you with my No. 207 R., dated the 4th February 1898, on the subject of the salt trade of the East Coast districts of this Presidency, and the mutual influence on each other's interests of this trade and of the East Coast Railway. I am also directed to forward a copy of a note prepared by Mr. W. A. Willock, Member of the Board of Revenue, whose knowledge both of the trade conditions of the Northern Circars and of the Salt Department and its operations is exceptionally wide.

2. I am directed by His Excellency the Governor in Council to endeavour to impress on the Government of India a strong sense of the importance of the conditions of the salt trade being carefully studied by the officers of the East Coast Railway with a view to the mutual improvement of the Imperial Salt business and the Imperial Railway business.

3. This Government is satisfied that as much has not been done as might have been done to make these two commercial branches of State business mutually benefit each other, to the benefit also of the consumers of the salt. I am therefore directed to express a hope that the Government of India may see their way to instructing the Manager of the East Coast Railway to give this important matter his careful attention on the general lines indicated in Mr. Willock's note. With a view to illustrating the note I am desired to enclose a copy of a map showing the factories referred to. A copy of the Board of Revenue's Proceedings, No. 209, dated the 27th May 1896, is also enclosed.

From—The Secretary to the Government of India, Public Works Department.
To—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
Dated—16th June 1898, No. 642 R.T.

I am directed to acknowledge the receipt of your letter No. 242 Ry., dated the 12th February 1898, bringing to the notice of the Government of India the importance of the conditions of the salt trade being carefully studied by the officers of the East Coast Railway with a view to the mutual improvement of the Imperial salt and railway business.

2. In reply, I am to state, for the information of His Excellency the Governor in Council, that the Government of India have obtained a report on the subject from the Manager, East Coast Railway, which shows that that officer is fully alive to the importance of developing the salt traffic of the East Coast districts, and is now in negotiation with the Oriental Salt Company for the construction of sidings to the important salt factories at Karassa and Naupada.

3. It must, however, be remembered that the State Railways cannot be expected to bear the cost of connecting particular factories with their main lines unless assured of an adequate and permanent return on the capital expended.

G.O., No. 981, Ry., dated 2nd August 1899.

Read the following paper:—

Inspection Report of the East Coast Railway by the Senior Government Inspector for Railways, for the half-year ending 30th June 1898.

* * * * *

20. *The Parlakimedi Tramway.*— * * * I am of opinion that the Parlakimedi tramway must stop at the west side of an island platform at Naupada, and that a broad gauge siding should be run down to the salt factory from the existing platform which will then become a goods platform. This siding ought, emphatically, in my opinion, to be the sole property of the East Coast Railway; private parties ought to have no ownership in it.

21. *Salt.*—I understand that a draft agreement for the approval of Government has been settled between the East Coast Railway and the Oriental Salt Company for the construction of a broad gauge salt siding on the usual siding terms from Naupada station to Naupada salt factory. To make the siding broad gauge is, in my opinion, the right thing to do, because by far the greater part of the Naupada outturn will go north along the East Coast Railway towards Cuttack, and only a comparatively small part will go towards Parlakimedi; but it ought to belong exclusively to the East Coast Railway. The tramway ought not to be allowed to cross the East Coast Railway at all. The Oriental Salt Company want to be allowed to build a salt godown, or otherwise to arrange with the railway for permanent or semi-permanent accommodation, at Vizianagram and at one other station. At the other station they have, I was told, been allotted the necessary accommodation in the goods shed. At Vizianagram I found a most suitable piece of land, which they would be wise to buy, bounded by the railway goods shed, the turntable, the fencing and the road; it is in every way convenient for them, and if, as I believe is the case, it is not railway land and they can buy it, they can have no excuse for wanting to come inside railway land. If the Oriental Salt Company succeed in storing salt at certain railway stations touched by the petty trader's carts from the interior, the railway will not only get the freight of the salt, but will also get freight on the goods which the cartmen bring down with a view to exchanging them for salt for their return journey. It is therefore in the interest of the railway to encourage the establishment of salt godowns at the places where it is crossed by roads from the interior.

At Barang I was told that it costs from one anna to one anna three pies per maund to cart salt into Cuttack. A bag is 2 maunds, and a cart carries 12 to 18 maunds according to season. It is proposed that, when the Bengal-Nagpore Railway have carried their temporary lines across the rivers into Cuttack, salt shall be carried over these lines at about three pies per maund.

I was given the following statistics of salt booked to Barang for Cuttack in the last three months:—

(*a*)	From Humma, country salt	62,000	maunds.
(*b*)	,, Waltair, artificial Cheshire salt	8,730	,,
(*c*)	,, Naupada, country salt	2,368	,,
(*d*)	,, Cocanada, brown salt	2,967	,,

The aim of the Oriental Salt Company is that (*b*) shall take the place of a very large proportion of the European salt which is now consumed in Bengal and Orissa. The matter is one of very high importance to the railway.

* * * * *

G.O., No. 505, Revenue, dated 1st September 1898 (Confidential).

From—The Secretary to the Government of Madras, P.W.Dept., Ry. Branch.
To—The Secretary to the Government of India, Public Works Department.
Dated—Ootacamund, 7th September 1898, No. 1122 Ry.

I am directed to address you regarding the construction of a siding from the Naupada station on the East Coast Railway to the Salt Factory of the same name.

2. The Naupada Salt Factory in the Ganjam district is one of the most important factories in the Northern Circars producing a salt which is of excellent quality and in popular favour. Unlike many of the other factories in that quarter, it is also capable of indefinite extension. In the past season the outturn was between six and seven lakhs of maunds, and may be taken to average that quantity in a good season. With the opening of the East Coast Railway the demand for the salt manufactured there will not only be very greatly enlarged in the northern districts, but will certainly extend in Orissa and the adjoining districts of Bengal; and, when the Vizianagram-Raipur Railway is opened, also in the Central Provinces. At present about 600 acres only are under salt cultivation; but the Oriental Salt Company who are the excise holders of two-thirds of the whole factory, the other third being under independent licensees, have it in contemplation, as soon as terms have been settled with the Government, to bring a much larger area, probably four or five times the existing area under production. Moreover, the nature of the Company's operations promises vastly to increase the sphere of the supply. The main aim of the Company is to displace Liverpool salt from the Calcutta market; and by a process, for the machinery for working which they alone hold the patents, they appear to have successfully solved the problem of converting by mechanical and chemical treatment the ordinary salt of the country into a granular white salt which is indistinguishable from the Liverpool salt and for which they are already beginning to secure a sale. By the Company's process only one moiety of the salt treated is converted into this quality, while the other moiety is turned out as a cheap salt suitable for the native population accustomed to monopoly salt. This salt being, however, of a superior quality should command a somewhat better price in the market than the Government standard salt. To get rid of their manufactured stock it is therefore essential that the Company should be able to secure a market for both the products of the process; and the larger the sale of the Liverpool quality in Calcutta, the greater the necessity for cultivating the local market for the cheaper salt. All this stock, it is proposed, should be railed direct from the factory without break of bulk, the Liverpool salt to Orissa and Bengal, and the other salt to depôts up and down the line.

3. The Company has been in correspondence with the Manager of the East Coast Railway and has arranged, subject to the approval of Government, the terms of an agreement for constructing and working the siding. A copy of the draft agreement is enclosed for the information of the Government of India. Under the arrangement therein set out the Company is prepared to acquire the land and pay for the construction of the embankments, the East Coast Railway providing and laying the whole of the permanent-way material, and also charging freight for the traffic actually conveyed for the Company over the siding at the tariff rates in force at the time, and receiving from the Company the difference, if any, between the sum thus realized and the interest on the Railway's share of the outlay calculated at 10 per cent. per annum. The cost of making the siding is estimated at Rs. 74,138, of which Rupees 29,168 would be borne by the Oriental Salt Company and Rs. 44,970 by the railway.

4. In competition with this proposal, an offer has been made for the laying of a narrow gauge siding by the Parlakimedi Light Railway. The construction of this railway was approved, subject to certain conditions, by the Government of India in your letter No. 2 R.P., dated 14th March 1898. This railway will eventually, it is stated, be extended to Varanasi, Battili and the Vizagapatam district, forming a link between the Naupada Factory and the proposed Vizianagram-Raipur Railway. Considering, however, the magnitude of the traffic which, as explained in paragraph 2 above, the line will have to carry, it is clear to this Government that the narrow gauge light line will be inadequate for the service, and that the salt factory must be linked with the East Coast Railway by a broad gauge connection. If the Parlakimedi Light Railway is also to have facilities, these might possibly be secured by laying a third rail or preferably by arranging by means of a dock to wheel the narrow gauge vehicles on to the floor of the broad gauge ones, and so carry them down to the salt platforms. In the view, however, which His Excellency the Governor in Council has been led to adopt, it is not desirable to entertain either the Company's proposal or the question of giving special facilities to the Parlakimedi line.

* * * * *

6. . . . . His Excellency the Governor in Council is most strongly of opinion that the formation of the junction with Naupada should be undertaken at the expense solely of the East Coast Railway. It is apparently prepared to incur an expenditure of about Rs. 45,000 and the comparatively small additional cost of some Rs. 30,000 should not, in the opinion of His Excellency the Governor in Council, stand in the way. The money will be well spent and all complication will be avoided. This Government feels assured that the line will in a very short time earn a dividend at ordinary tariff rates of one-sixth of a pie per maund per mile. Until this is secured this Government considers that a special toll of two pies per maund may be unobjectionably levied on the salt moved over the siding, the toll to be reduced as the traffic expands.

7. I am accordingly to request that the Government of India will be pleased to sanction the construction of the siding as a part of the East Coast Railway.

Enclosure.

EAST COAST RAILWAY.

Agreement.

An Agreement made the——————day of——————189 , between the East Coast Railway (hereinafter called the Railway) of the one part and the Oriental Salt Company (Limited) (hereinafter called the Company) of the other part Whereas the Company have applied to the Railway to construct for them a siding as delineated on the plan hereto annexed which the Railway have agreed to do upon the Company entering into such agreement as is hereinafter contained.

Now it is hereby agreed as follows :—

I. The Railway shall, at the expense of the Company and at cost price to the Railway, including therein reasonable supervision charges, prepare the land, both inside and outside the railway boundary, for laying thereon the sleepers, rails, points and switches of the siding, including provision of ballast, the construction of embankments and such other works as may be deemed necessary by the Railway The Company shall, if required by the Railway to do so, deposit with the Railway in advance, the estimated cost of all such works, including the cost of land outside the Railway boundaries and shall agree to pay on demand such excess cost, including supervision charges, as may actually be incurred in execution by the Railway on the Company's behalf of the said works.

II. The railway shall, at their own expense, provide and lay the whole of the permanent-way material required for the siding and shall furnish to the Company an account of the cost of the same, such cost to include reasonable supervision charges. The permanent-way shall include points, crossings, signals, buffer and scotch blocks and a weigh-bridge if required.

III. The Railway shall, at the expense of the Company, maintain in good repair and working order, the works provided under clause I of this agreement so far as the maintenance thereof is in the opinion of the Railway necessary for the safe and efficient working of the siding and the Company shall on demand pay to the Railway the cost of such maintenance.

IV. The Railway shall at its own expense maintain in good repair and working order the works provided under clause II of this agreement.

V. In the event of its being necessary, subsequent to the original construction of the siding, to make any alterations or additions thereto or to provide such items as fencing, signals or improved safety appliances or machinery of any kind, or to provide quarters for signallers or staff for the working of the siding such additional works shall be provided and maintained, subject to the general conditions governing the original construction. No addition or alteration shall be made to the siding by the Company without the written sanction of the Railway administration, nor, without such sanction, shall any temporary or permanent structure be erected by the Company in such proximity to the siding as to affect in any way the working of trains over the siding. All sanctioned additions or alterations to the siding made by the Company and all sanctioned structures erected by the Company shall be made or erected in all respects in compliance with the regulations of the Railway administration on that behalf for the time being in force and shall be carried out by the Railway.

VI. The siding when and so long as it shall remain open for traffic shall be subject in all respects to the rules and regulations for the time being prescribed for sidings of the East Coast Railway.

VII. The Railway shall provide the necessary wagons and trucks and motive power required for the conveyance of the Company's traffic over and along the said siding and the Company shall pay for the traffic actually conveyed for them over the siding according to the rules, conditions and rates chargeable for the time being under the East Coast Railway Tariff for the class of traffic conveyed, any fractional mileage of the siding being reckoned as an additional mile for charge. Any terminals chargeable to the public from time to time for salt will be leviable for traffic dealt with on the siding as if the latter were a station on the East Coast Railway. No charge will be made for the haulage of empty vehicles over the siding. Provided that if at the end of any year ending the 31st December, the whole sum received by the Railway from the Company during such year for the conveyance of traffic over the siding shall be less than a sum calculated for the year at a rate of 10 per cent per annum (commencing in the case of the first year from the date of opening the siding for traffic) on the cost as furnished under Clause II of this Agreement of the providing and laying the permanent-way material, etc., together with any cost that may subsequently be added under clause V, then the Company shall on demand make good to the Railway any such deficiency.

VIII. Twenty-four hours shall be allowed for the loading and unloading of wagons and trucks placed in the siding and any wagon or truck detained after that time shall be subject to the usual demurrage charges in force on the Railway for the time being.

IX. All wagons and trucks intended for the Company's use shall be placed by the Railway at a point on the loading siding adjoining the Company's storage platforms as convenient as possible to the Company's works, such point to be determined by the Railway. Similarly all loaded or empty wagons and trucks intended for despatch from the siding shall be placed by the Company at the same point.

X. The Company shall be responsible for all damage occurring to all wagons and trucks while within the limits of the Company's premises.

XI. All loaded wagons despatched to and from the siding shall be charged for on their full carrying capacity.

XII. The Railway shall allow a rebate of half a pie per maund on account of loading and unloading done by the Company in the case of all traffic which under the rules of the Railway for the time being in force has not to be loaded or unloaded by owner.

XIII. The Railway may at any time construct or permit the construction of any branch or extension of the siding and may work traffic over the siding to and from such branch or extension. The Railway may sanction the use of the siding for the traffic of persons other than the Company on payment to the Company, by way of remuneration for such use, of a special toll of 5 pies per maund in addition to the Railway rates as defined below and the terminal charges mentioned in Clause V to be paid to the Railway. All sums so collected in respect of traffic other than that of the Company (including the said special toll of 3 pies per maund) shall be credited or paid to the Company, the Railway deducting for its services, in addition to the terminals mentioned in Clause V, sufficient only to cover the actual cost of moving the traffic, including wear and tear expenses of the Rolling Stock employed; these charges to be determined by the Railway Administration. (Modification suggested by the East Coast Railway). The working of such branch or extension and the use of the siding by persons other than the Company will be so conducted as to interfere as little as possible with the free use of the siding by the Company whose traffic shall have precedence. The management of all traffic whether of the Company or otherwise shall be under the full and exclusive control of the Railway.

XIV. In the event of the Secretary of State for India desiring to acquire full proprietary rights in the siding, the Company will, if and when requested by him so to do, sell and assure to him its rights, proprietary or otherwise, in the land and works provided under clauses I and V at the actual cost incurred by the Company and thereupon this agreement shall cease and determine subject to the rights of either party in consequence of any previous breach or non-performance of any of its provisions.

XV. The Company may at any time give notice in writing to the Railway of its desire to determine this agreement on the 30th June or 31st December then next ensuing being not less than six calendar months after the date of such notice and on such 30th June or 31st December as the case may be, or if the agreement be determined by the Railway, as may be done under the conditions prescribed in clause XVI of this Agreement then in either of such cases this agreement shall cease and determine subject to the rights of either party in consequence of any previous breach or non-performance of any of its provisions and thereupon the Railway shall, at the Company's expense, remove and retain for its own use the Permanent-way material of the siding and all other plant provided by the railway and the land occupied by the siding and all embankments and other works provided by and at the expense of the Company shall remain the property of the Company.

XVI. The cases in which the Railway may determine the agreement are :—

(1) Failure of the Company to pay any of the charges due to the Railway under this agreement.

(2) Refusal of the Company to carry out and abide by the rules and regulations mentioned in clause VI.

(3) Abandonment by the Company of the use of the siding.

XVII. The cost of stamp of this agreement will be borne by Government.

Signed at _____ this _____ day of _____ 1898.

Witnesses. _____ _____ Manager, E. C. Railway.

Witnesses. _____ _____ Oriental Salt Company (Limited).

From—The Secretary to the Government of India, Public Works Department.
To—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
Dated—Simla, 25th October 1898, No. 1606 R.C.

I am directed to acknowledge the receipt of your letter No. 1122 Ry., dated 7th September 1898, on the subject of the proposed construction, as a part of the East Coast Railway, of a siding from Naupada station on that line to the salt factory of the same name.

2. In reply, I am directed to invite a reference to Government of India, Public Works Department, letter No. 642 R.T., dated 16th June 1898, paragraph 3, in which it was stated that State Railways could not be expected to bear the cost of connecting particular factories with their main lines unless assured of an adequate and permanent return on the Capital expended, and to say that if the Madras Salt Department are prepared to give the necessary guarantee there will be no objection to the proposed branch being constructed solely at the expense of the East Coast Railway.

From—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
To—The Secretary to the Government of India, Public Works Department.
Dated—9th December 1898, No. 1520 Ry.

I am directed to acknowledge the receipt of your letter No. 1606 R.C., dated 25th October 1898, regarding the construction of the Naupada siding on the East Coast Railway. You intimate that no objection will be raised to its construction solely at the expense of the East Coast Railway provided that the Madras Salt Department is prepared to give a guarantee for a permanent and adequate return on the capital to be expended.

2. In reply, I am to invite attention to paragraph 6 of my letter No. 1122 Ry., dated 7th September 1898, in which such assurance as is possible in the circumstances was conveyed that the few miles of line between the station and the salt factory would in a very short time earn a dividend at ordinary tariff rates sufficient to cover the interest on the outlay, and that until then, a special toll of 2 pies per maund might unobjectionably be levied on the salt moved over the siding, the toll being reduced as the traffic expanded. His Excellency the Governor in Council has no objection, so far as this Government is concerned, to the guarantee asked for being secured on the Imperial salt revenue.

3. I am to request that this Government may be favoured with very early orders as to the construction of the siding.

From—The Secretary to the Government of India, Public Works Department
To—The Joint Secretary to the Government of Madras, P.W. Dept., Ry. Branch.
Dated—Simla, 8th August 1899, No. 1255½ R.S.

The following is forwarded to the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, for information, with reference to correspondence ending with his letter No. 1520 Ry., of 9th December 1898.

ENCLOSURE.

From—The Secretary to the Government of India, Public Works Department.
To—The Manager, East Coast Railway.
Dated—8th August 1899, No. 1255 R.S.

With reference to your letter No. 5929, dated 1st July 1899, to the address of the Director of Railway Construction, I am directed to communicate the sanction of the Government of India to the alternative estimate therewith received, amounting to Rs. 68,784, of the cost of constructing the Naupada salt siding on the East Coast Railway with the depreciated steel rails stacked at Naupada supplemented by ballast siding rails, as an ordinary work chargeable to the Capital account of the railway.

2. It is considered that charges should be levied for the carriage of salt over this siding so as to give a reasonable return on the capital outlay to be incurred. You should therefore arrange to make such a charge as will secure this result.

3. The sanction accorded in paragraph 1, which is chargeable to Capital, has been registered as No. 4, East Coast Railway of 1899–1900.

ORDER—No. 956 Ry., dated 26th August 1899.

Communicated to the Revenue Department.

(True Extract.)

JWS (for initials)

Secretary.

To the Revenue Department.
" Consulting Engineer for Railways.
" Manager, East Coast Railway.

Exd. C. M. Thumbuswamy.

Depd. on 31/10/99

18/10/99

31 10 99

to Revenue Deptt for e.i.