

Public Works (1893) Department.

RAILWAY BRANCH.

G.O., No. 23-4 R

DATED 11th January.

[Despatch Abstract.]

Engine Changing Stations & Running Sheds.

The — proposed by the Engineer-in-Chief E. C. Ry. approved generally, and a copy of these Nos. ordered to be forwarded to the Govt. of India.

Forwarding copy of Nos. approving generally of the — proposed by the Engineer-in-Chief E. C. Ry. —

BACK PAPERS.

[illegible]

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

11TH JANUARY 1893, No. 23 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers:—

From the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Waltair, 5th October 1892, No. 7057/553.

For standard gauge engine running the most economical run consistent with practical conditions of men and machinery is somewhere between 125 and 135 miles. Runs of 100 miles are uneconomically short, and runs of 80 and 83 miles, like those arranged for on the East Coast Railway, are extremely and wastefully short. A short engine run implies an unnecessarily heavy staff of drivers and other locomotive servants, and too little work is got out of the engines. There are, moreover, extra expenses for fuel, in drawing fire, for lighting up and for other matters petty enough when taken singly, but running in the gross to a very important share of the locomotive expenditure of a railway and, moreover, annually recurring for all time.

2. When the East Coast Railway was designed, the idea doubtless was that the Godávari bridge would never be built. Another idea apparently also was that the northern terminus of the line would be at Naraj on the Mahanadi. These conditions are now changed, and there will be a through run north from Bezwáda across the Godávari without a break. The northern main station for engine homing purposes will, as I hope to show, be not at Naraj but at the junction, Khurda road or Chatipur, of the East Coast Railway with the Puri branch and with the Bengal-Nagpur Railway. Another and most important consideration which cannot be lost sight of is that sooner or later the present 500 miles section of the East Coast Railway is bound to be extended southward and northward. Things must, therefore, be so arranged now that when these extensions are made there shall be as little dislocation as possible of existing and expensive arrangements.

3. The great future engine stations of the Calcutta-Madras direct railway will be somewhat as follows :—

- (1) Madras or its neighbourhood.
- (2) Bezváda or Guntur, the former by preference.
- (3) Waltair.
- (4) Chatipur, the junction with the Bengal-Nagpur Railway.
- (5) Diamond Harbour or Midnapur, according to the alignment adopted.

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4. Midway, or nearly midway, between these main engine homing stations there ought to be the cheapest possible running sheds for engines and running rooms for drivers. It is in no way essential that these running shed stations should be located at important centres.

5. As this is, I presume, a large enough question to come before one or more individual members of Government who are not railway experts, and as I desire, if possible, to ensure that my view of this matter shall be accepted, I think it necessary to explain that the engines of a railway have their permanent stables at certain great engine stations, at each of which a responsible man is in charge, and at each of which there are all the necessary facilities for repairs of a minor sort. The army of drivers,

firemen and other running staff have their own and their families' permanent quarters at these main engine centres, and each such place becomes in course of time a very important colony.

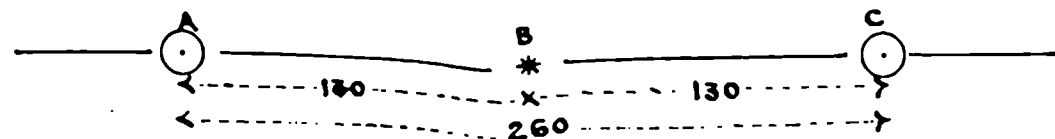
6. From these, their permanent stables, the engines run out with their trains to some point about midway between their own and the next stables on this side and on that. This run is supposed to be a fair day's work for a man, and at the place where he hands his train over to another man from the next stable the driver and his engine sleep for the night, returning next day with another train to their own regular head-quarters and so on.

7. This sleeping place, which ought obviously to be about midway between two main engine stations, grades and speeds being allowed for, is the proper place for a running shed or sort of out-stable for the engines and for a running room or sort of rest-house for the drivers and guards where they find facilities for resting and for feeding. I repeat that I go into these details not with a view of teaching you any thing, but because arguing, as I am, against arrangements which have been already designed, I foresee that I shall probably have to convince the non-professional members of Government if I am to carry my point.

8. Now when it is considered that the length of the day's engine run, that is, the distance from main engine station to running shed station is the measure of the day's work of each engine, it is obvious that the longer this run can be made consistently with practical conditions the greater is the economy which is secured in quite a large number of the items which compose the locomotive expenses of a railway. One practical condition which, so long as each engine has its own driver, strictly limits the length of these runs is the day's work that a man can do. On some of the American lines they get round this by passing their engines on from driver to driver, but as this is not yet the practice in England or in India, the length of an eight or ten hours' run is the practical limit. If all the engine runs on a railway are too short, the result is not only numerous minor sources of waste in working, but that one or more additional main engine stations will be needed at a cost of many lakhs; but worse even than this is the capitalized cost of the steady annual loss due to the extra army of drivers and other servants that must be kept up.

9. Amongst other locomotive authorities whom I have consulted before venturing to propose an alteration of the designed arrangements, I referred the matter, as a general question, to Mr. A. W. Rendel, who is, as you know, the Locomotive Superintendent of the East Indian Railway and admittedly the highest authority on such a matter in India. Mr. Rendel writes as follows:—

I think for broad gauge engines changing stations should average 130 miles apart; a little more or less makes very little difference. I think it is a great mistake, however, to spend a lot of money on changing stations unless you are perfectly certain that the centre is an important one and one at which engines must be stationed. For instance, I may have two important centres of trade at A and C, 260 miles apart from which traffic is expected: I should, of course, station the engines at



these centres and make B quite a minor consideration dependent entirely on local circumstances. I should make it a rule never to make any permanent arrangements at any points the importance of which was not fully established; and all points like B to which the engines only ran, and at which no engines were stationed, I should equip in the most scanty manner possible and await the development of traffic. Provided the stations at which the engines are actually housed or homed are fairly well equipped, the stations to which they run are of little importance and can wait the development of the line. I should make my minor running sheds entirely of corrugated iron, and arrange so that they could be easily transferred without much loss of labour or material.

10. Now Mr. Rendel's stations A and C are typical of the five main homing or housing stations enumerated in para. 3. Mr. Rendel's station B is typical of the four running shed stations which I wish to locate somewhere midway between the main five.

11. I shall omit for the present all reference to the Madras and Calcutta extensions and shall deal only with the existing 500 miles. I attach a list of the stations as originally designed, and shall now explain, referring to this list, how I desire to alter them.

12. Bezvada is necessarily, at least so I personally am convinced, a main engine homing station. It is the junction of the Calcutta-Madras direct railway, with the Nizam's State Railway, with the Great Southern Mahratta system of railway and with the Masulipatam branch. Should the metre-gauge system be terminated at Guntur, then Guntur might, perhaps, be selected as a homing station, but this would involve two junctions with foreign railways instead of one. The next great engine station towards the north is necessarily, for trade and other reasons, Waltair. Here will be situated the principal workshops of the system, and it will apparently be the best place for the administrative centre of all the working departments. To deal first, therefore, with this Bezvada-Waltair section: It is 217 miles long and the intermediate running-shed station, Mr. Rendel's type B, ought to be about midway were all conditions favorable. Owing, however, to the heavier gradients on the northern half of the section, I would recommend that it be built at Samalkot, 124 miles from Bezvada. This place is also the junction of the Cocanada branch and an important centre of trade. The run from Bezvada to Samalkot will be 124 miles and from Waltair to Samalkot 93 miles. Both these are short runs and the latter much too short, but that is an incident of the shortness, only 217 miles, instead of the desired 260 of the Bezvada-Waltair section. We cannot secure the best and must only arrange so as to get the nearest practical approximation to it.

13. If this view of the case be accepted, it follows that Rajahmundry, as a main engine station, must be abolished. As I said before, when Rajahmundry was first designed as an engine station, there was no question of the bridging of the Godavari, nor can I learn that since the bridge project was agreed to has any alteration of the original conditions of engine station been proposed. The 124 mile run over the level country between Bezvada and Samalkot will be an easy run; the shortness of the Samalkot-Waltair run will be qualified by the stiffness of its gradients. There will, moreover, be secured the very important advantage of only one intermediate centre of locomotive working between the two main homing stations instead of two. This completes what I want to say about the Bezvada-Waltair section.

14. Now to pass on to the section north of Waltair: I have explained why I think that the northern main engine homing station should be at Chatipur, mile 467.20, the proposed junction with the Bengal-Nagpur railway, and with the Puri branch. The length of this section, 250 miles, though still short of Mr. Rendel's 260, is yet a more economical length than that between Bezvada and Waltair. Should the junction be at Khurda road, the length of the section will be 255 miles, but as explained by Major White in the enclosure of my letter No. 7023/493, dated the 4th October, the selection of Khurda instead of Chatipur necessitates the building of about four extra miles of railway, partly Bengal-Nagpur and partly Puri branch.

15. Two hundred and fifty miles is a fairly good double run, and the midway running shed ought theoretically to be at Mandasa road, which is exactly half way. As, however, Kassibugga has already been designed as a watering station, and as it is a place of some importance, it may be argued that the running shed should be built there. To this, however, I object for this reason, that one of the two runs—Kassibugga to Chatipur—is rather long, 133 miles; moreover, I do not think that the position of the type B station need be in any way affected by considerations of traffic and of trade. I desire to put the running-shed and running room at Mandasa road station, and I want permission to abolish the two proposed engine stations of Thebra and Berhampore.

16. For the present, pending the completion of the Mahanadi bridge and the extension of the railway northwards to either Midnapur or Diamond Harbour, the section north from the Chatipur junction to the Mahanadi at Naraj must be worked out and in by engines from the Chatipur homing station. There will be little goods traffic on this section until the extension has been carried out. Perhaps the best temporary arrangement for this section and for the Puri branch would be a separate service from Naraj to Puri, 59 miles, in contact at Chatipur with the main services. This would be a good enough arrangement pending the completion of the Mahanadi bridge and of the Calcutta extension.

17. I may now proceed to summarise all that I have been arguing for. The following are my proposals: (1) abolish the following engine stations:—Rajahmundry, Thebra, Berhampore and Naraj; (2) let the main engine homing stations and railway servants' colonies be at Bezvada, Waltair and Chatipur, or wherever is the junction of the Bengal-Nagpur Railway; (3) locate running sheds, Mr. Rendel's class B, at the following stations: Salmakot and Mandasa road.

18. Naraj is nothing; it is a mere geographical expression. Once the Mahanadi is bridged, Naraj will become as Kothala, or as Sher Shah, or as Balawala, a once thriving bridge colony, but thereafter scarcely worth the cost of a fourth-class station. The section between Chatipur (or Khurda) and Midnapur will not be found to be too long; neither, if the northern extension should terminate on a Diamond Harbour ferry with access to the Calcutta and south-eastern branch of the Eastern Bengal Railway, will the section between the ferry and Chatipur (or Khurda) be found to be too long for economical working in a very easy country. The Madras-Bezvada section also is of about the right economical length with a B type station about midway. Taking all things that suggest themselves to me into careful consideration, I believe that the arrangements now put forward for the approval of Government are good arrangements—good for the working of the 500 mile section now under construction and good for the working hereafter of the 1,000 mile line between Madras and Calcutta.

19. I may add that the designed arrangement of the watering stations does not commend itself to my judgment any more than that of the engine station. They are, as a rule, much too far apart is the opinion of locomotive experts whom I have consulted. This question, however, will form the subject of a separate communication.

ENCLOSURE.

SCHEDULE of stations as at present designed, East Coast Railway.

Stations.	Mileage.	Distance between stations.	Distance between watering stations.	Length of engine run.	Distance between engine stations.	Remarks.
Bezvada ..	W. & E.S.	..	..	..	..	
Gunnavaram ..	..	12.36	12.36	..	..	
Nagavidi ..	..	26.39	13.03	..	..	
Ellore ..	..	37.01	11.62	37.01	..	
Bhimdal ..	..	48.70	11.69	..	..	
Chebrat ..	..	57.46	8.76	..	..	
Thadipalli ..	..	66.39	8.94	29.38	..	
Nidadavol ..	..	78.80	12.41	..	..	
Rajahmundry ..	W. & E.S.	92.62	13.74	26.13	92.62	
Kaddum ..	..	98.73	6.21	..	..	
Dwarapudi ..	..	104.93	6.20	..	..	
Iticavole ..	..	112.07	8.14	..	..	
Salmakot ..	..	123.80	10.73	30.38	..	
Coranada ..	..	..	10.8	..	..	
Salmakot ..	..	123.80	..	..	..	Branch line.
Pithapuram ..	..	131.11	7.31	..	..	
Kottapilli ..	..	146.45	16.34	..	..	
Tuni ..	..	166.86	10.40	33.05	..	
Naraspatam ..	..	170.64	13.69	..	..	
Yellamanchilli ..	..	181.81	10.97	24.66	..	
Anakapalle ..	..	194.86	13.35	..	..	
Simachalam ..	..	212.79	17.93	..	..	

Schedule of stations as at present designed, &c.—cont.

Stations.	Mileage.	Distance between stations.	Distance between watering stations.	Length of engine run.	Distance between engine stations.	Remarks.
Waltair ..	W. & E.S.	217.41	4.62	35.90	124.89	Branch line to Vizagapatam.
Vizagapatam ..	..	219.54	2.13	..	..	
Simachalam ..	..	212.79	11.21	..	..	
Kottavalam ..	..	224.0	10.53	..	..	
Allamunda ..	..	234.63	11.03	37.39	..	
Vizianagaram ..	..	245.68	12.10	..	..	
Sodaram ..	..	257.66	8.91	..	..	
Chipurupalle ..	..	264.67	14.53	33.64	..	
Pendoor ..	..	279.10	9.48	..	..	
Aidulvalam ..	..	288.68	12.60	21.64	83.33	Water reported suitable for watering station.
Thebra ..	W. & E.S.	300.74	13.63	..	..	
Nampada road ..	..	314.37	11.87	..	..	
Pala Tekkali ..	..	328.24	7.63	33.13	..	
Kasibugga ..	..	333.87	8.16	..	..	
Mandasa road ..	..	342.04	11.53	19.68	..	
Canchily ..	..	353.55	11.09	..	..	
Itchapur ..	..	364.64	11.31	27.40	80.21	Berhampore was selected as a better site for engine station by Madras Government although Chatrapur would divide the run better.
Berhampore, Ganjam ..	W. & E.S.	380.95	12.28	..	..	
Chatrapur ..	..	393.23	8.54	..	..	
Hooma ..	..	398.77	8.93	27.75	..	
Kambha ..	..	408.70	17.75	..	..	
Belugoon ..	..	428.45	17.30	27.25	..	
Tangi road ..	..	445.85	16.75	..	..	
Tappang ..	..	461.70	..	..	..	
Chatipur ..	..	467.20	11.00	28.75	..	Junction with B.N. and Puri branch.
Khurda road ..	..	472.70	12.0	..	..	
Bhubaneswar ..	..	484.70	10.75	..	..	
Cuttack road ..	..	495.45	6.25	27.95	119.70	
Naraj ..	W. & E.S.	500.65	..	..	..	

NOTE.—The distances shown on this status are correct mileages as far as Thebra; from that point they are given as accurately as at present known and are within a very small fraction of the correct mileage.

Telegram from the Officiating Joint Secretary to Government, Public Works Department, Railway Branch, to the Engineer-in-Chief, East Coast Railway, Waltair, dated 15th October 1892, No. A/80.

Your letter No. 7057, 5th instant. Want sketch plan showing the position of proposed shops, engine changing stations, running sheds, &c., with mileage.

From the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Waltair, 1st November 1892, No. 7722/553.

In reply to your telegram No. A/80, and with reference to my No. 7057 of the 5th October 1892, I have the honour to forward, herewith, a sketch plan showing the position of the proposed engine changing stations and running sheds.

The position of the engine changing stations at which permanent arrangements should be made for housing the engines and the running staff is marked by a double red circle, while that of the intermediate running shed stations is denoted by a single red circle.

The mileage of each run is marked on the plan in red figures.

The chief workshops of the complete system would be at Waltair as designed for the 500 mile section which is now under construction.

ORDER—dated 11th January 1893, No. 23 R., Public Works.

The Government approves generally of the engine changing stations and running sheds proposed by the Engineer-in-Chief, East Coast Railway.

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

[Here enter No. 24 R., Public Works, dated 11th January 1893.]

(True Extract.)

Major, R.E.,
Offg. Under-Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.
" Engineer-in-Chief, East Coast Railway.
" Examiner, East Coast Railway Accounts.

RAILWAY.

Govt. of {1893} Madras.
PUBLIC WORKS.

Dated January, 11th.

Recd.

Encl.

G.O., 11th Jan. 1893, No. 23 R.

JANUARY.

Engine Changing Stations and
Running Sheds

The—proposed by the Engineer-in-Chief, East Coast Railway, approved generally, and a copy of these Proceedings ordered to be forwarded to the Government of India.

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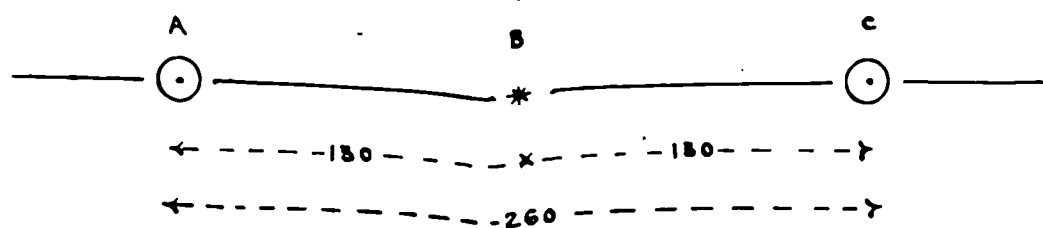
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15. Two hundred and fifty miles is a fairly good double run, and the midway running shed ought theoretically to be at Mandasa road, which is exactly half way. As, however, Kassibugga has already been designed as a watering station, and as it is a place of some importance, it may be argued that the running shed should be built there. To this, however, I object for this reason, that one of the two runs—Kassibugga to Chatipur—is rather long, 133 miles; moreover, I do not think that the position of the type B station need be in any way affected by considerations of traffic and of trade. I desire to put the running-shed and running room at Mandasa road station, and I want permission to abolish the two proposed engine stations of Thebra and Berhampore.

16. For the present, pending the completion of the Mahanadi bridge and the extension of the railway northwards to either Midnapur or Diamond Harbour, the section north from the Chatipur junction to the Mahanadi at Naraj must be worked out and in by engines from the Chatipur homing station. There will be little goods traffic on this section until the extension has been carried out. Perhaps the best temporary arrangement for this section and for the Puri branch would be a separate service from Naraj to Puri, 59 miles, in contact at Chatipur with the main services. This would be a good enough arrangement pending the completion of the Mahanadi bridge and of the Calcutta extension.

17. I may now proceed to summarise all that I have been arguing for. The following are my proposals: (1) abolish the following engine stations:—Rajahmundry, Thebra, Berhampore and Naraj; (2) let the main engine homing stations and railway servants' colonies be at Bezvada, Waltair and Chatipur, or wherever is the junction of the Bengal-Nagpur Railway; (3) locate running sheds, Mr. Rendel's class B, at the following stations: Samalkot and Mandasa road.

18. Naraj is nothing; it is a mere geographical expression. Once the Mahanadi is bridged, Naraj will become as Kothala, or as Sher Shah, or as Bulawala, a once thriving bridge colony, but thereafter scarcely worth the cost of a fourth-class station. The section between Chatipur (or Khurda) and Midnapur will not be found to be too long; neither, if the northern extension should terminate on a Diamond Harbour ferry with access to the Calcutta and south-eastern branch of the Eastern Bengal Railway, will the section between the ferry and Chatipur (or Khurda) be found to be too long for economical working in a very easy country. The Madras-Bezvada section also is of about the right economical length with a B type station about midway. Taking all things that suggest themselves to me into careful consideration, I believe that the arrangements now put forward for the approval of Government are good arrangements—good for the working of the 500 mile section now under construction and good for the working hereafter of the 1,000 mile line between Madras and Calcutta.

19. I may add that the designed arrangement of the watering stations does not commend itself to my judgment any more than that of the engine station. They are, as a rule, much too far apart is the opinion of locomotive experts whom I have consulted. This question, however, will form the subject of a separate communication.

ENCLOSURE.

SCHEDULE of stations as at present designed, East Coast Railway.

Stations.	Mileage.	Distance between stations.	Distance between watering stations.	Length of engine run.	Distance between engine stations.	Remarks.
Bezvada	W. & E.S.	..	..	..	..	
Gunnavaram	..	12-36	12-36	..	..	
Naraj	..	25-39	13-03	..	..	
Ellore	W.	37-01	11-62	37-01	..	
Bhimdal	..	48-70	11-69	..	..	
Chebrai	..	67-46	8-76	..	..	
Thadipalli	W.	66-39	8-94	39-38	..	
Nidadavol	..	78-90	12-41	..	..	
Rajahmundry	W. & E.S.	92-53	13-72	26-13	92-52	
Kaddium	..	98-73	6-21	..	..	
Dwarapudi	..	104-93	6-20	..	..	
Biconavole	..	113-07	8-16	..	..	
Samalkot	W.	123-80	10-73	30-28	..	
Cocanada	..	..	10-6	..	..	Branch line.
Samalkot	..	123-80	..	..	..	
Pitthapuram	..	131-11	7-31	..	..	
Kottapilli	..	146-43	16-34	..	..	
Tuni	W.	166-86	10-40	32-06	..	
Naraspatam	..	170-64	13-69	..	..	
Yellamanchilli	W.	181-81	10-97	24-66	..	
Anakapalle	..	194-88	13-36	..	..	
Simachalam	..	212-79	17-93	..	..	

Schedule of stations as at present designed, &c.—cont.

Stations.	Mileage.	Distance between stations.	Distance between watering stations.	Length of engine run.	Distance between engine stations.	Remarks.
Waltair	W. & E.S.	217-41	4-42	35-90	124-89	Branch line to Vizagapatam.
Vizagapatam	..	219-84	2-13	..	..	
Simachalam	..	212-79	..	..	..	
Kottavala	..	224-0	11-21	..	..	
Allamunda	..	234-53	10-53	..	..	
Vizianagaram	W.	245-68	11-03	37-39	..	
Sodaram	..	267-66	12-10	..	..	
Chitrapur	..	264-67	6-91	..	..	
Pendur	W.	279-10	14-53	33-64	..	
Aidulvala	..	288-68	9-48	..	..	
Thebra	W. & E.S.	300-74	12-60	21-64	83-33	Water reported suitable for watering station.
Narapada road	..	314-37	13-63	..	..	
Pata Tekkali	..	326-24	11-87	..	..	
Kambugga	W.	333-87	7-63	33-13	..	
Mandasa road	..	342-02	8-15	..	..	
Canchily	W.	353-55	11-53	19-68	..	
Ichapur	..	364-64	11-09	..	..	
Berhampore, Ganjam ..	W. & E.S.	380-95	11-21	27-40	80-21	Berhampore was selected as a better site for engine station by Madras Government although Chatrapur would divide the run better.
Chatrapur	..	393-23	12-28	..	..	Junction with B.N. and Puri branch.
Hooma	..	398-77	6-54	..	..	
Kambha	W.	408-70	8-93	27-75	..	
Balugaon	..	428-45	17-75	..	..	
Tangi road	W.	446-86	17-50	37-26	..	
Tappang	..	461-70	16-76	..	..	
Chatipur	..	467-20	11-00	28-76	..	
Khurda road	W.	472-70	12-0	..	..	
Bhubaneswar	..	484-70	10-75	..	..	
Cuttack road	..	495-45	5-25	27-95	119-70	
Naraj	W. & E.S.	500-65	..	..	..	

NOTE.—The distances shown on this status are correct mileages as far as Thebra; from that point they are given as accurately as at present known and are within a very small fraction of the correct mileage.

Telegram from the Officiating Joint Secretary to Government, Public Works Department, Railway Branch, to the Engineer-in-Chief, East Coast Railway, Waltair, dated 15th October 1892, No. A/80.

Your letter No. 7057, 5th instant. Want sketch plan showing the position of proposed shops, engine changing stations, running sheds, &c., with mileage.

From the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Waltair, 1st November 1892, No. 7722/553.

In reply to your telegram No. A/80, and with reference to my No. 7057 of the 5th October 1892, I have the honour to forward, herewith, a sketch plan showing the position of the proposed engine changing stations and running sheds.

The position of the engine changing stations at which permanent arrangements should be made for housing the engines and the running staff is marked by a double red circle, while that of the intermediate running shed stations is denoted by a single red circle.

The mileage of each run is marked on the plan in red figures.

The chief workshops of the complete system would be at Waltair as designed for the 500 mile section which is now under construction.

ORDER—dated 11th January 1893, No. 23 R., Public Works.

The Government approves generally of the engine changing stations and running sheds proposed by the Engineer-in-Chief, East Coast Railway.

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

[Here enter No. 24 R., Public Works, dated 11th January 1893.]

(True Extract.)

(Signed) F. B. WALKER,
Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.
" Engineer-in-Chief, East Coast Railway.
" Examiner, East Coast Railway Accounts.

ENDORSEMENT—dated 11th January 1893, No. 24 R., Public Works.

Forwarded.

(By Order.)

Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

RAILWAY.
Govt. of {1893} Madras.
PUBLIC WORKS.

Dated January, 11th.

Recd.

Encl.

G.O., 11th Jan. 1893, Nos. 23,
24 R.

JANUARY.

Engine Changing Stations and
Running Sheds

Forwarding copy of Proceedings approv-
ing generally of the — proposed by the
Engineer-in Chief, East Coast Railway.

East Coast Railway
Schedule of Stations
as at present designed.

Stations	Mileage	Distance between Stations	Distance between working stations	Length of Engine run	Distance between Engine stations	Remarks.
Begumada	0					
Gunnawaram	12.36	12.36				
Koosgid	25.39	13.03				
Elloor	37.01	11.62	37.01			
Ohindal	48.70	11.69				
Chelchel	57.45	8.75				
Thadipilli	66.39	8.94	29.38			
Kidadaul	78.80	12.41				
Rajamahendri	92.52	13.72	26.13	92.52		
Kaddium	98.73	6.21				
Devanampudi	104.93	6.20				
Piscavale	113.07	8.14				
Samulkotta	123.80	10.73	30.28			
Cocanada		10.5				Branch Line
Samulkotta	123.80					
Pithapuram	131.11	7.31				
Kottapilli	146.45	15.34				
Yuni	156.85	10.40	33.05			
Narsipatnam	170.54	13.69				
Yellamanchetty	181.51	10.97	24.66			
Anakapilli	194.86	13.35				
Simachalam	212.79	17.93				
Kaltair	217.41	4.62	35.90	124.89		Branch Line to Vizagapatnam
Vizagapatnam	219.54	2.13				
Simachalam	212.79					
Kottavulsa	224.0	11.21				
Allamunda	234.53	10.53				
Vizianagram	245.56	11.03	37.39			
Sodaram	257.66	12.10				

Schedule of Stations

Stations	Mileage	Distance between Stations	Distance between Working Stations	Length of Engine run	Distance between Engine stations	Remarks
Chhipaurpalli	264.57	6.91				
Pendoor	W. 279.10	14.58	83.54			
Didulwala	288.68	9.48				
Phera	W & ES. 300.74	12.60	21.64	83.33		Water reported suitable for working stations
Kowpada Road	312.37	13.63				
Pala Yakkali	326.24	11.87				
Kasibugga	W. 333.87	7.63	33.13			
Maudasa Road	342.02	8.15				
Leauchihy	W. 353.55	11.53	19.68			
Itchapur	364.64	11.09				
Berhampur Gaujam.	W & ES. 380.95	11.31	27.40	80.21		Berhampur was selected as a better mile for engine station by address of the although Itchapur would divide the run better.
Itchapur	393.28	12.28				
Homa	398.77	5.54				
Raulha	W. 408.70	8.93	27.75			
Palugaw	428.45	17.75				
Tangi Road	W. 445.95	17.50	37.25			
Tappang	461.70	15.75				
Itchapur	467.20					
Khorda Road	W. 472.70	11.00	26.75			Time in with B. N. Puri Branch.
Bhubaneswar	484.70	12.0				
Butack Road	495.45	10.75				
Staraj	W & ES. 500.65	5.25	27.95	119.70		

Note: The distances shown on this schedule are correct mileages as far as the line, from that point they are given as accurately as at present known, and are within a very small fraction of the correct mileages.

SL
7/11/02

In your reply please quote the number and date of this letter.

Lund to R. M. 12/10

No. 7057
552

From THE ENGINEER-IN-CHIEF
EAST COAST RAILWAY,
To THE Joint Secretary to the Government of
Madras, Public Works Department,
Railway Branch.

11.6 Dated Waltair, the 5 October 1892.

P-1

Sir,

The 1. Midland & the
Raghuvaran do runs
of 140 m. - L. M.

For standard gauge engine running, the most economical run consistent with practical conditions of men and machinery, is somewhere between 125 and 135 miles. Runs of 100 miles are uneconomically short, and runs of 80 and 83 miles, like those arranged for on the East Coast Railway are extremely and wastefully short. A short engine run implies an unnecessarily heavy staff of drivers and other loco. servants, and too little work is got out of the engines. There are enormous extra expenses for fuel in drawing fire, for lighting up, and for other matters; petty enough when taken singly, but running in the gross to a very important share of the locomotive expenditure of a railway, and, moreover, annually recurring for all time.

1 Enclosures.
(in 2 sheets)

2. When the East Coast Railway was designed, the idea doubtless was that the Godavari bridge would never be built. Another idea apparently

81
PW 1020/52

Also was that the northern Terminus of the line would be at Naraj on the Mahanadi. These conditions are now changed, and there will be a through run north from Buzwada across the Godavari without a break. The northern main station for engine housing purposes will, as I hope to show, be not at Naraj, but at the junction, Khurda road or Bhatipur, of the East Coast Railway with the Puri Branch, and with the Bengal-Nagpur Railway. Another and most important consideration which cannot be lost sight of, is that sooner or later the present 500 mile section of the East Coast Railway is bound to be extended southward and northward. Things must therefore be so arranged, now, that when these extensions are made, there shall be as little dislocation as possible of existing and expensive arrangements.

3. The great future engine stations of the Calcutta - Madras direct railway will be somewhat as follows:-

- 1st. Madras or its neighbourhood.
- 2nd. Buzwada, or Ganjam, the former by preference.
- 3rd. Waltair.
- 4th. Bhatipur, the junction with the Bengal-Nagpur Railway.
- 5th. Diamond Harbour, or Midnapur, according to the alignment adopted.

There will be roughly average about 250 miles apart, dividing the thousand miles of railway into four sections as approximately equal as is practicable; the points of division, moreover, are

all

all critical points either of traffic such as Waltair, or of junction with other railways, such as Buzwada and Bhatipur. I may note here that I shall, later on, go into accurate mileage, but for the moment I merely want to convey to Government a broad general view of the matter.

4. Midway, or nearly midway, between these main engine housing stations there ought to be the cheapest possible running sheds for engines, and running rooms for drivers. It is in no way essential that these running shed stations should be located at important centres.

5. As this is, I presume, a large enough question to come before one or more individual members of Government who are not railway experts, and as I desire, if possible, to ensure that my view of this matter shall be accepted, I think it necessary to explain that the engines of a railway have their permanent stables at certain great engine stations, at each of which a responsible man is in charge, and at each of which there are all the necessary facilities for repairs of a minor sort. The army of drivers, firemen and other running staff have their own and their families' permanent quarters at these main engine centres, and each such place becomes, in course of time, a very important colony.

6. From these their permanent stables the engines run out with their trains, to

some

some point about midway between their own and the next stables on this side and on that. This run is supposed to be a fair day's work for a man, and at the place where he hands his train over to another man from the next stables, the driver and his engine sleep for the night, returning next day with another train, to their own regular head quarters, and so on.

7. This sleeping place, which ought obviously to be about midway between two main engine stations, grades and speeds being allowed for, is the proper place for a running shed, or sort of out stable, for the engines, and for a running room, or sort of rest house, for the drivers and guards, where they find facilities for resting and for feeding. I repeat that I go into these details, not with a view of teaching you anything, but because arguing, as I am, against arrangements which have been already designed, I foresee that I shall probably have to convince the non-professional members of Government if I am to carry my point.

8. Now when it is considered that the length of the day's engine run, that is the distance from main engine station to running shed station, is the measure of the day's work of each engine, it is obvious that the longer this run can be made, consistently with practical conditions, the greater is the economy which is secured in quite a large number of the items which compose the locomotive expenses of a railway. One practical condition, which, so long as each engine has

its

its own one driver, strictly limits the length of these runs, is the day's work that a man can do. On some of the American lines, they get round this by passing their engines on from driver to driver, but as this is not yet the practice in England or in India, the length of an eight or ten hours run is the practical limit. If all the engine runs on a railway are too short, the result is, not only numerous minor sources of waste in working, but that one or more additional main engine stations will be needed, at a cost of many lakhs. But worse even than this is the capitalized cost of the steady annual loss due to the extra army of drivers and other servants that must be kept up.

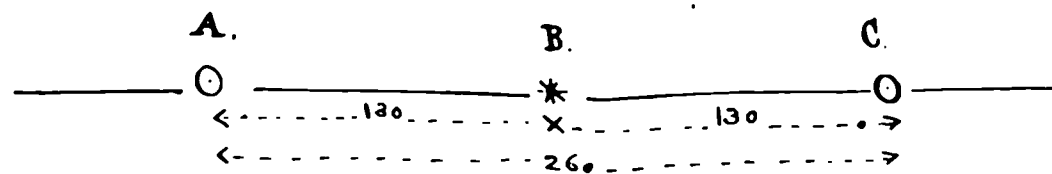
9. Amongst other Locomotive authorities whom I have consulted before venturing to propose an alteration of the designed arrangements, I referred the matter, as a general question, to Mr. A. W. Rendel, who is, as you know, the Locomotive Superintendent of the East Indian Railway and admittedly the highest authority on such a matter in India. Mr. Rendel writes as follows:-

I think for Broad gauge engines, changing stations should average 130 miles apart, a little more or less makes very little difference. I think it is a great mistake however to spend a lot of money on changing stations, unless you are perfectly certain that the

centre

(6)

centres is an important one, and one at which engines must be stationed. For instance, I may have two important centres of trade at A. and C. 260 miles apart, from which traffic is expected, I should of course station the engines at



these centres, and make B quite a minor consideration dependent entirely on local circumstances. I should make it a rule never to make any permanent arrangements at any points the importance of which was not fully established; and all points like B. to which the engines only ran, and at which no engines were stationed, I should equip in the most scanty manner possible, and await the development of traffic. Provided the stations at which the engines are actually housed or based are fairly well equipped, the stations to which they run are of little importance and can wait the development of the line. I should make my minor running sheds entirely of corrugated iron, and arrange so that they could be easily transferred without much loss of labour or material.

10. Now Mr. Rendel's stations A. and C. are typical of the five main housing or base. ing stations enumerated in para. 3. Mr. Rendel's station B. is typical of the four running shed stations which I wish to locate somewhere midway between the main five.

(7)

11. I shall omit, for the present, all reference to the Madras and Calcutta extensions, and shall deal only with the existing 500 miles. I attach a list of the stations as originally designed, and shall now explain, referring to this list, how I desire to alter them.

12. Bezwa is necessarily, at least so I personally am convinced, a main engine housing station. It is the junction of the Calcutta-Madras direct railway with the Vizian's State Railway, with the great Southern Madras system of railway, and with the Masulipatam branch. Should the metre gauge system be terminated at Ganter, then Ganter might perhaps be selected as a housing station; but this would involve two junctions with foreign railways, instead of one. The next great engine station towards the north is necessarily, for trade and other reasons, Waltair. Here will be situated the principal Workshops of the system, and it will apparently be the best place for the administrative centre of all the working departments. To deal first therefore with this Bezwa-Waltair section. It is 217 miles long, and the intermediate running shed station, Mr. Rendel's type B, ought to be about midway, were all conditions favourable. Owing, however, to the heavier gradients on the northern half of the section, I would recommend that it be built at Samalkotta, 124 miles from Bezwa. This place is also.

also the junction of the Lencruda branch and an important centre of trade. The run from Begwada to Samalkhatta will be 124 miles, and from Waltair to Samalkhatta 93 miles. Both these are short runs, and the latter much too short, but that is an incident of the shortness, only 217 miles, instead of the desired 260, of the Begwada-Waltair section. We cannot secure the best, and must only arrange so as to get the nearest practical approximation to it.

13. To this view of the case be accepted, it follows that Rajahmundry as a main engine station must be abolished. As I said before, when Rajahmundry was first designed as an engine station, there was no question of the bridging of the Godavari; nor can I learn that, since the bridge project was agreed to, has any alteration of the original conditions of engine station been proposed. The 124 mile run over the level country between Begwada and Samalkhatta will be an easy run; the shortness of the Samalkhatta-Waltair run will be qualified by the steepness of its gradients. There will, moreover, be secured the very important advantage of only one intermediate centre of locomotive working between the two main hawking stations, instead of two. This completes what I want to say about the Begwada-Waltair section.

14. Now to pass on to the section north of Waltair. I have explained why I think that the northern main engine hawking station

station should be at Bhatipur, mile 467.20, the proposed junction with the Bengal-Nagpur Railway and with the Puri Branch. The length of this section, 250 miles, though still short of Mr. Rudels' 260, is yet a more economical length than that between Begwada and Waltair. Should the junction be at Khurda Road, the length of the section will be 255 miles, but as explained by Major White in the enclosure of my letter no. 7023/493 dated the 4th October, the selection of Khurda instead of Bhatipur necessitates the building of about 4 extra miles of railway, partly Bengal-Nagpur, and partly Puri branch.

15. 250 miles is a fairly good double run, and the midway running shed ought theoretically to be at Chandasa Road, which is exactly half way. As, however, Kasilunga has already been designed as a watering station, and as it is a place of some importance, it may be argued that the running shed should be built there. To this, however, I object, for this reason, that one of the two runs, Kasilunga to Bhatipur, is rather long, 133 miles; moreover, I do not think that the position of the type B. station need be, in any way, affected by considerations of traffic and of trade. I desire to put the running shed and running room at Chandasa Road station, and I want permission to abolish the two proposed engine stations of Thelana and Berhampur.

There is nothing
Many runs mentioned
for this reason, that one of the two runs,
Kasilunga to Bhatipur, is rather long, 133 miles;
moreover, I do not think that the position
of the type B. station need be, in any way,
affected by considerations of traffic and of
trade. I desire to put the running shed
and running room at Chandasa Road
station, and I want permission to abolish
the two proposed engine stations of Thelana
and Berhampur.

16. For the present, pending the completion of the Mahanadi bridge, and the extension of the railway northwards to either Midnapur or Diamond Harbour, the section north from the Bhatipuri junction to the Mahanadi at Naraj must be worked, out and in, by engines from the Bhatipuri hawking station. There will be little goods traffic on this section until the extension has been carried out. Perhaps the best temporary arrangement for this section and for the Puri branch would be a separate service from Naraj to Puri, 59 miles, in contact at Bhatipuri with the main services. This would be a good enough arrangement pending the completion of the Mahanadi bridge, and of the Balasutta extension.

17. I may now proceed to summarise all that I have been arguing for. The following are my proposals. 1st. Abolish the following engine stations, Rajahmundry, Thelera, Berhampur, and Naraj. 2nd. Let the main engine hawking stations and railway servants' colonies be at Buzwada, Waltan, and Bhatipuri (or wherever is the junction of the Bengal-Nagpur Railway). 3rd. Locate running sheds, Mr. Rendell's class B, at the following stations, Samalkotta and Mandasa Road.

18. Naraj is nothing, it is a mere geographical expression. Once the Mahanadi is bridged, Naraj will become as Kathala, or as Sher Shah, or as Balawalla, a once thriving bridge colony, but thereafter scarcely worth the cost of a fourth class station. The section between Bhatipuri (or Khunda) and Midnapur

will

will not be found to be too long. Neither, if the northern extension should terminate on a Diamond Harbour ferry with access to the Balasutta and South Eastern branch of the Eastern Bengal Railway, will the section between the ferry and Bhatipuri (or Khunda) be found to be too long, for economical working in a very easy country. The Madras-Buzwada section also is of about the right economical length, with a B. type station about midway. Taking all things that suggest themselves to me into careful consideration, I believe that the arrangements now put forward for the approval of Government are good arrangements, good for the working of the 500 mile section now under construction, and good for the working hereafter of the 1000 mile line between Madras and Balasutta.

19. I may add that the designed arrangement of the watering stations does not commend itself to my judgment any more than that of the engine stations. They are as a rule much too far apart, is the opinion of locomotive experts whom I have consulted. This question, however, will form the subject of a separate communication.

I have the honor to be,
Sir,

Your most obedient servant,

Wm. H. Spring

Engineer-in-Chief.

P. W. CUFF No. 10210

Fr. A. 64

TELEGRAM ^{URGENT}
~~ORDINARY~~
DEFERRED

P. 9

FROM

TO

R.

Engineer in Chief
East Coast Ry
Wallis

R 12-10-92
E. 2

A. 80x Your letter 7057
fifth instant. Want
sketch plan showing
the position of ^{prepared} shops,
Engine charging stations
running sheds etcetera.
with notes -

X

W. R.

Telegram despatched 15-10-92

R 12/

12/10

In your reply please quote
the number and date of
this letter.

No. 7722
553

From

THE ENGINEER-IN-CHIEF,
EAST COAST RAILWAY,

To

THE Joint-Secretary to the Government
of Madras Public Works Dept.
Railway Branch

Dated Waltair, the 1 - 11 - 1892.

Sir,

In reply to your telegram No. A80
and with reference to my No. 7057 of the 5th
instant, I have the honor to forward here-
with a sketch plan showing the position of
the proposed Engine Changing Stations and
Running sheds.

The position of the Engine Changing
Stations at which permanent arrangements
should be made for housing the Engines and
the Running Staff is marked by a double
Red Circle, while that of the intermediate
Running Shed Stations is denoted by a
^{single} Red Circle.

The mileage of each run is marked
on the plan in red figures.

The chief Workshops of the Complete
System would be at Waltair, as designed

Enclosures.
1

RIGHT No. 11151
for the 500 mile section which is now under
Construction

I have the honor to be

Sir
Your most obedient servant

By
Messrs. J. B. Spring
Engineers in Chief
East Coast Railway

Encl. 1/11/10
Recd. 11/11/10

No 2653-4R 4/10-11-92 ✓
- 591R 4-3-92 ✓
- 895R - 14-4-91 ✓
- 3028-9R - 16-12-92 ✓

URGENT
TELEGRAM ORDINARY
DEFERRED

FROM

TO

R.

Works
Calcutta

B342 x Early decision re-
quested on question of site
for junction station with
Escutens (East Coast R.) from
Sambalpur Bonaparte (Bapt.
Tagore Railway) forwarded
with Appld. (my letter ann-
bnd v date as follow) 2654 R.
Animal (10th ultimo) as arrange-
ments for fixing sites for engine
changing stations on Escutens
depend on above decision.

J. B. Spring
Jps. R.

b
c

A

No. 23 R of 11 Jan 193.

PUBLIC WORKS DEPARTMENT,
RAILWAY BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following

Letter from the Engineer-in-Chief, S.E. Ry. No. 7057 of 5 Oct 1892
Chief Secy. Ry. No. 553

Telegram to ———— No. 80 of 15 do —

Letter from ———— No. 7722 of 1 Nov 92
553

The Government of
generally
propos. of the proposed Engrs.
changing stations and running
prepared by the Engrs.
~~for the Engrs.~~

cc Ry
2. A copy of these Propos.
be forwarded for the information
of the Engrs. & Secy. —

Jan 193.
No. 24 R of 11 Jan 1892

Forwarded

6

W. S. R

To The Comptroller for Ry. / 11/193
- Engrs. in Ch. S. E. Ry.
- Engrs. in Ch. Ry. Secy.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following

Endorsement from the Government of India, P. W. D.
No 1347 R. G., dated 5th December 1892.

The following is forwarded to the Joint-Secretary to the
Government of Madras, Public Works Department Railway Branch
for information with reference to its letter No 2654 R, dated 10th
November 1892.

2. Copy of report on the Sambalpur Khurda Railway Survey by
Mr. J. M. Anderson, Assistant Engineer and Chief Engineer Bengal Nagpur
Railway is returned herewith as requested in Madras Government's
letter No 4715 C, dated 14th November 1892.

Copy of a letter No 1346 R. G. dated 5th December 1892 from the
Secretary to the Government of India, Public Works Department to the
Consulting Engineer to the Government of India for Railways Central
Division.

With reference to the correspondence ending with your letter No
1094 C, dated 23rd June 1892 regarding the junction of the Sambalpur branch
of the Bengal Nagpur Railway with the East Coast State Railway I am
directed to forward for information and communication to the Bengal
Nagpur Railway copy of the undernoted letter on the subject from the Government
of Madras, and enclosures.

2. I am to observe that the Government of India, is at
present advised, is inclined to the opinion that Chhatrapur would be
the most suitable point for the junction, but a decision in the
matter does not seem called for until sanction has been accorded to
the construction of the Sambalpur branch extension.

Order

A

No. 23. 24 R G 11th Jan 1893.

Order thereon N^o 3028 R dated 16th December 1892.

Communicated to the Engineer-in-Chief,
East Coast Railway with reference to Proceedings N^o 2653 R,
dated 10th November 1892.

/H. V. Constable,
Majr. R.E.
Off. Secy. to the Secy. to the Govt.
Ry. Branch.

The Engr. in-Chief, E. C. Ry.
for R. B. Ry.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

- Read the following
Letter from the Engineer-in-Chief, East Coast Railway,
N^o 493, dated 1st December 1892.
- As promised in the concluding part of my letter N^o 7380,
dated the 13th October 1892, I now have the honor to report upon the
relative merits of Chatapur and Khurda Road, as the point of junction
of the East Coast Railway with the Bengal & Mysore Railway, and with
the Puri Branch. I have just made a careful inspection of both
localities.
1. Chatapur is easier of access for the Bengal & Mysore Railway
than is Khurda Road. That Company's Khurda station will be on
the southern side of the town instead of the northern.
 2. For access to the best crossing of the Dyak river on the Puri Branch
Chatapur is very much better situated than is Khurda Road. At the crossing
in question the Dyak is confined in a narrow permanent channel
between laterite banks, and it is advisable if possible to cross at that
particular place. The place in question is just about opposite to
Chatapur, but a considerable way round from Khurda Road.
 3. As regards the important question of the suitability of either place
for permanent occupation by the large European Colony that must be
located at a main junction and engine station, both places, Khurda
Road and Chatapur are admirably suitable. Of the two however I think
Chatapur has the advantage. It is a sort of island of uncultivated laterite
soil in the midst of surrounding cultivation. Its area is perhaps a
square mile, and it would all or nearly all, have to be acquired, for
sanitary if for no other reasons, but its acquisition would cost very
little as it is valueless for cultivation purposes, and the village is a very
poorly clustered of huts. The site is practically level all over, but slightly
higher in the middle, and in every way suitable for a large Colony.
 4. The Chatapur location has distinct advantages, in regard to
length of line to be constructed and worked, over the Bhubaneswar
and

and Khurda Road alternatives. For the Bengal Nagpur Railway it effects a saving of 10 miles as compared to the Bhubaneswar route and of 3 1/2 miles as compared with the Khurda Road route. For the Puri Branch the saving of distance is 7 1/4 miles as compared with the Bhubaneswar route and 1/2 mile as compared with the Khurda Road route.

b. Whatever and no other place, is decidedly, in my judgment, the right place for the junction station.

Order thereon N^o 3029 R dated 16th December 1892.

Ordered that the above letter be forwarded to the Government of India for information in continuation of Proceedings N^o 2653 R, dated 16th November 1892 and with reference to G.O. N^o 3028 R, dated 16th December 1892.

/ Your Extract - /

1/10 J. V. Constantine,
Major, R.E.
Offg. Under Secy: to Govt. P.W.D.
By: Branch.

The Engrs: Engrs: for Rps:
" Engrs: in-Chief, E.C.R.

23 3 1

10TH NOVEMBER 1892, No. 2653 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read again the following papers:—

G.O., dated 4th August 1892, No. 1887 R., Public Works.

Read again the following paper:—

G.O., dated 11th May 1892, Nos. 1217-18 R., Public Works.

Read the following papers:—

Endorsement from the Government of India, Public Works Department (Railway Construction), dated Simla, the 1st April 1892, No. 006 R.C.

The undermentioned papers are forwarded in original (return requested) to the Joint Secretary to the Government of Madras (Railway Branch), Public Works Department, for favour of consideration and an expression of opinion.

(By Order.)

(Signed) F. B. HEBBERT,
Offg. Under-Secretary.

ENCLOSURE.

Letter from the Government of Bengal, dated 21st March 1892, No. 512 R., with petition [in original] return requested].

Removal of the Jatni station, East Coast State Railway, to a place closer to Bhubaneswar.

No. 1984 C.

Referred to the Engineer-in-Chief, East Coast Railway, for favour of report. The return of these papers is requested.

(Signed) W. H. COAKER, Lieut.-Colonel, R.E.,
Joint Secretary to Govt., P.W.D.,
Railway Branch.

13th April 1892.

From the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Waltair, 30th April 1892, No. 3537/439.

[Stations—Northern Section.]

With reference to your endorsement No. 1984 C., dated 13th April 1892 (herewith returned, in original, with its enclosures), forwarding, for report, a petition, dated 24th February 1892, from the inhabitants of Bhubaneswar, praying that the proposed Jatni station of the East Coast Railway may be removed to a place closer to Bhubaneswar, I have the honour to forward the accompanying copy of letter No. 1593 of the 26th April from the Superintendent of Works, Northern Section, which will show

that the petitioners dread the traffic being taken away from Bhubaneswar by a more direct line to Puri being constructed, and to say that, under the circumstances, there is no need for any further steps to secure better passenger accommodation or for the institution of a flag station at Bhubaneswar on this line of railway.

ENCLOSURE

From the Superintendent of Works, Northern Section, East Coast Railway, to the Engineer-in-Chief, East Coast Railway, dated Berhampore, 26th April 1892, No. 1593.

I have the honour to acknowledge the receipt of your letter No. 2291/439 of the 22nd instant, forwarding a petition addressed by certain inhabitants of Bhubaneswar to His Honour the Lieutenant-Governor of Bengal, and calling for a report upon the subject matter thereof.

During an interview with the petitioners some six weeks ago, I gathered that they feared that the junction of the railway now under survey from Sambalpur to Puri with the East Coast Railway would be at our Khurda road station (to which they refer under the name of Jatni), and that travellers to Puri from all directions would find it convenient to proceed to that place direct without making a detour to visit Bhubaneswar which is some 10 miles from Khurda road, there being no road excepting that of our rail between the two places.

It is most probable that this contention would prove correct.

The introduction of a flag station at or near Bhubaneswar would, therefore, be of no assistance to the desires of the petitioners.

Our proposed station of Bhubaneswar is within a distance of two miles from the town and temples, is connected with them by a good road, and would undoubtedly serve every purpose, so far as Bhubaneswar is concerned, should the Sambalpur-Puri line not be constructed.

The only method of meeting the wishes of the petitioners would be to locate the junction of the two railways at our Bhubaneswar station.

I have the honour to forward, herewith, an index plan of that portion of the East Coast Railway, which lies in Bengal, which, though not quite complete, will be of assistance in the consideration of the question.

The enclosures to your letter are herewith returned.

Order—dated 11th May 1892, No. 1217 R., Public Works.

Ordered that the Government of India be addressed.

(True Extract.)

(Signed) W. H. COAKER, Lieut.-Colonel, R.E.,
Joint Secretary to Govt., P.W.D.,
Railway Branch.

Letter—from the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, to the Secretary to the Government of India, Public Works Department, dated 11th May 1892, No. 1218 R.

In returning the papers received with your endorsement No. 008 R.C., dated 1st April 1892, I am directed to say that the site selected for the Khurda road station (referred to by the petitioners as Jatni) cannot be altered as it is required to serve Khurda and is located on the road to that town.

2. The petitioners apparently desire that the proposed line from Sambalpur to Puri should cross the East Coast Railway at or near Bhubaneswar. This Government does not possess any information in regard to the proposed line and is unable, therefore, to express an opinion on the question. If the branch from the Bengal-Nagpur line were to come down the north bank of the Mahanadi and join the East Coast Railway near Naraj, it might be desirable that the branch to Puri should start from Bhubaneswar. On this point I am to invite reference to para. 43 of inspection note by the Consulting Engineer for Railways, Madras, dated 18th January 1892.

3. I am to add that the proposed station for Bhubaneswar is within a distance of two miles from the town and temple, with which it will be connected by a good road. If, however, on the opening of the line, His Honour the Lieutenant-Governor of Bengal shall consider a flag station desirable, it can easily be provided.

Read also the following paper:—

From the Under-Secretary to the Government of India, Public Works Department (Railway Construction), to the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, dated Simla, 11th July 1892, No. 772 R.C.

With reference to your letter No. 1218 R., dated 11th May 1892, regarding the proposed removal of the Jatni or Khurda road station, East Coast State Railway, to a place closer to Bhubaneswar, I am directed to forward a copy of the undernoted correspondence from the Consulting Engineer to the Government of India for Railways, Central Division, on the subject, with the request that the opinions of Major W. H. White, R.E., Superintendent of Works, Northern Section, East Coast State Railway, as to the best site for a junction station with the line from Sambalpur-Bengal-Nagpur Railway, also as to the point from whence the Puri branch should take off, may be obtained and forwarded for the information of the Government of India.

ENCLOSURES.

From the Consulting Engineer to the Government of India for Railways, Central Division, to the Secretary to the Government of India, Public Works Department, dated 23rd June 1892, No. 1094 C.

With reference to Government of India Public Works Department letters Nos. 946 and 561 R.C. of 21st October 1891 and 26th May 1892, respectively, regarding the junction of the Sambalpur branch of the Bengal-Nagpur Railway with the East Coast Railway, the latter of which encloses a proposal for a flag station at Bhubaneswar from the Government of Bengal, I have the honour to submit a copy of Mr. Wynne's letter No. 6364/1028 A., of 18th June 1892, and a report on the section from Kāsinkōd to junction with East Coast Railway of the Sambalpur-Khurda survey by Mr. G. A. Anderson.

2. Mr. Wynne favours the junction with the East Coast Railway at Bhubaneswar in preference to that at Khurda road station and in support of these views he refers to the reasons given in para. 7 (c) of Mr. Anderson's report.

3. Paragraph 5 (b) on page 13 of the report speaks of the line into Khurda being a good one, and, although para. 6 (f) speaks of some hilly country near Khurda necessitating "a little twisting," I understand that there is no engineering difficulty to prevent the junction being easily made at Khurda.

4. I beg to submit that the advantages contended for by Mr. Wynne for the Bhubaneswar junction are not of sufficient weight to place against the eight miles of additional line which would be required to effect that junction.

5. With reference to the petition for a station at Bhubaneswar, enclosure to Public Works Department No. 561 R.C., dated 26th May 1892, I think the case might be well met by the introduction of a flag station at that place, as suggested by the Bengal Government; but the point will have to be referred to the Engineer-in-Chief of the East Coast Railway, who, I conclude, has placed the Munchessur station where shown on the map with a view to utilizing the watershed taken by the road direct to Puri for his branch line to the same place.

From the Agent and Chief Engineer, Bengal-Nagpur Railway, to the Consulting Engineer for Railways, Central Division, dated 18th June 1892, No. 6364/1028 A.

With reference to your No. 978 C., dated 6th June 1892, I have the honour to refer you to the report on the Sambalpur-Khurda Railway survey by Mr. G. A. Anderson, Assistant Agent and Chief Engineer, pages 14 and 15, in which the suggested junction at Bhubaneswar, is fully dealt with.

2. The question seems to me to be one for the Government of India to decide the point being whether the additional length of mileage is worth the benefits that would accrue to Bhubaneswar.

3. Whether an increase of traffic would be obtained by making the junction at Bhubaneswar is a very open question. In the event of this railway constructing the Sambalpur-Khurda line, no objection, however, would be raised to the junction being fixed at Bhubaneswar instead of Jatni.

Order—dated 4th August 1892, No. 1887 R., Public Works.

Communicated to the Engineer-in-Chief, East Coast Railway, with request that he will be so good as to obtain and forward the opinions of Major W. H. White, R.E., Superintendent of Works, Northern Section, as to the best site for a junction station with the line from Sambalpur-Bengal-Nagpur Railway and also as to the point from whence the Puri branch should take off.

(True Extract.)

(Signed) W. H. COAKER, Lieut.-Colonel, R.E.,
Joint Secretary to Govt., P.W.D.,
Railway Branch.

G.O., dated 14th September 1892, No. 2220 R., Public Works.

Read the following paper:—

Endorsement from the Government of India, Public Works Department (Railway Construction), dated Simla, the 24th August 1892, No. 935 R.C.

The undermentioned paper is forwarded to the Joint Secretary to the Government of Madras, Railway Branch, Public Works Department, for consideration, in continuation of Public Works Department No. 772 R.C., dated 11th July 1892.

(By Order.)

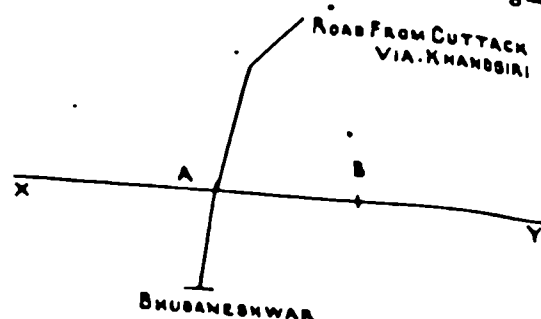
(Signed) F. B. HEBBERT,
Under-Secretary.

ENCLOSURE.

From the Secretary to the Government of Bengal, Public Works Department, to the Secretary to the Government of India, Public Works Department, dated 5th August 1892, No. 929 R.

I am directed to acknowledge the receipt of your memo. No. 773 R.C., dated 11th ultimo, forwarding copy of a letter No. 1218 R., dated 11th May 1892, from the Government of Madras, Public Works Department, in which it is stated that the site selected for the Khurda road station (referred to in the petition as Jatni) cannot be altered as it is required to serve Khurda and is located on the road to that town, that the Puri branch may start from Bhubaneswar and that a flag station can be provided to serve that town.

2. In reply I am to say that the original petition was forwarded to your office with my letter of 21st March and no copy was kept, but the Lieutenant-Governor conceives there is some misunderstanding about it. The petitioners, who presented the memorial to His Honour when he visited Bhubaneswar, expressed to him no views about the Khurda station on the Sambalpur-Puri Railway. All they asked was that the station for pilgrims visiting Bhubaneswar might be placed at A in the sketch marginally entered where the road from Cuttack via Khandgiri cuts the line of the railway and not at B two miles off. If a flag station is provided at A their wishes will be met.



Order—dated 14th September 1892, No. 2220 R., Public Works.

Communicated to the Engineer-in-Chief, East Coast Railway, for favour of report, in continuation of G.O., No. 1887 R., dated 4th August 1892.

(Signed) F. B. WALKER,
Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

Read also the following papers:—

Reminder from the Government of India, P.W.D., dated 30th Sept. 1892, No. 293/1 R.C.

From the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Waltair, 4th October 1892, No. 7023/493.

In compliance with the orders contained in your No. 1887 R., dated the 4th August 1892, I beg to forward a copy of a letter, No. 3031 of the 16th September 1892, from the Superintendent of Works, Northern Section, reporting upon the question of the best junction for the Bengal-Nagpur and the East Coast Railways and of the Puri branch in the country south of Cuttack.

2. I fully concur in the opinion at which Major White has arrived. It is the opinion which I pressed upon him for consideration when I was on the northern section in August. The facts of his having disagreed with me at the time, and of his having, after a month's study of the subject, come round to my opinion that the Bhubaneswar scheme ought to be rejected, confirms me in the belief that either the Khurda road, or some point like Chatipur, to the south of it, and certainly not Bhubaneswar, is the proper place for the junction.

3. There is always a great danger in a question like this of railway system designing, lest some petty but self-important and noisy local community like that of Bhubaneswar should succeed in forcing its will upon Government to the detriment for all time of railway and general interests.

4. When next I inspect the northern section, that is in a month hence perhaps, when the country is less impassable, I will personally look into the not unimportant question of the place, Khurda road or Chatipur, which is best suited for the permanent needs of the considerable European colony which must be located at the future engine centre and railway junction.

5. That the engine station must be at the junction and not, as designed, at Naraj, admits, I think, of no question. We must not repeat the Parbatipur-Saidpur fiasco of the N.B.S. Railway. The whole subject of the position of engine stations and running sheds needs, in my opinion, to be carefully gone into, and I will address you again in a separate letter on this important question of railway economy.

ENCLOSURE.

From the Superintendent of Works, Northern Section, East Coast Railway, to the Engineer-in-Chief, East Coast Railway, dated Borphampore, 16th September 1892, No. 3031.

With reference to the question as to whether the junction of the Bengal-Nagpur Railway with the East Coast Railway should be at Bhubaneswar or at Khurda road, I have the honour to make the following report, based on the assumption that a branch line to Puri will be constructed.

The Agent of the Bengal-Nagpur Railway has decided in favour of Bhubaneswar on the following grounds, viz.:—

- (1) That the revival in importance and wealth of the ancient city of Bhubaneswar, which he assumes would follow the location of the railway junction there, would lead to increased traffic.
- (2) That the additional length of line (7 or 8 miles) would increase the takings of the railway.
- (3) That the interest attached to the sacred city and its architectural remains and to the caves at Khandgiri would attract sight-seers and enthusiasts.
- (4) That Bhubaneswar is the best point of departure from the East Coast Railway for the branch to Puri.
- (5) That the line to Bhubaneswar would be easy to construct, whereas the length between Khurda and Khurda road presents difficulties.

With reference to argument No. 1 it is very probable that the location of the junction at Bhubaneswar would tend to increasing the wealth and importance of the city; pilgrims from the Sambalpur direction might stop there *en route* to or from Puri; pilgrims from the Cuttack direction however would not benefit to any great extent, as they will be able to avail themselves of the Bhubaneswar station of the East Coast Railway which is 1½ miles distant from Bhubaneswar. I am informed that the pilgrims who visit Bhubaneswar are quite distinct from those who visit Puri. The former perform their pilgrimage in the cold weather, while the latter do so during hot weather and rains. The facilities afforded by railways for making journeys may however alter this.

With reference to argument No. 2 I have the honour to point out that the takings of the combined railways would not necessarily be increased; the Bengal-Nagpur Railway would receive fares for the additional seven or eight miles, but the East Coast Railway and Puri branch would have to content themselves with fares on about five miles less. If, as I understand is at present the case, the bulk of the pilgrims travel *via* Cuttack, the losses by the East Coast Railway and Puri branch would more than counterbalance the gains of the Bengal-Nagpur Railway. In any case the additional earnings would not nearly compensate for the additional expenditure that would have to be incurred in the construction of 13½ additional miles of line, viz., 7 on the Bengal-Nagpur Railway and 6½ on the Puri branch.

With reference to argument No. 3 it is probable that sight-seers and enthusiasts would avail themselves of the facilities already afforded by the East Coast Railway station of Bhubaneswar.

With reference to argument No. 4, which I consider to be a very important one, it is open to question whether a better point of departure for the Puri branch cannot be obtained. The Puri branch throughout its length crosses a low country, subject to floods from the Mahanadi, these floods reaching the Puri district through the channels of the Dyah and Barguvas rivers. The surveys made between 1863 and 1866 appear to me to condemn the alignment close to and parallel to the Cuttack-Puri road, which alignment would have to be adopted were the junction at Bhubaneswar. They appear to point to a line crossing the Dyah river near the village of Benapanjari. This line affords a good crossing of the Dyah, and, being at a greater distance from the spills from the Barguvas, could probably be made with somewhat lower banks and less expensive bridges. If this alignment of the Puri branch were adopted, the junction at Khurda road would be more suitable than at Bhubaneswar. The length of the Puri branch would be 6½ miles less with the junction at Khurda road than if it were at Bhubaneswar.

With reference to argument No. 5 it does not appear to me to be probable that the difficult 5 or 6 miles between Khurda and Khurda road will be so costly to construct as to compensate for the additional 13½ miles of line.

If the question must lie between Bhubaneswar and Khurda road, I give my opinion in favour of the latter without hesitation. It is economical, as it saves the construction of 13½ miles of line; it is handier for the district, being nearer the town of Khurda; it presents the better point of departure for the Puri branch; and its mileage on the East Coast Railway being 259 miles from Waltair would work in better for an engine-changing station than that of Bhubaneswar which is 271 miles from Waltair.

I would, however, represent that the location of the junction near the village of Chatipur, which is half-way between the Tapang and Khurda road stations, or about 253 miles from Waltair appears to me to be worthy of consideration. The Bengal-Nagpur line to Chatipur would, I believe, run through easy country and would be some 3½ miles shorter than their line to Khurda road and 10 miles shorter than their line to Bhubaneswar. The Puri branch would be half a mile and 7½ miles shorter than it would with a junction at Khurda road and Bhubaneswar, respectively. The village of Chatipur is near the pilgrim road between Khurda and Puri and is about the nearest point of the East Coast Railway to the best crossing of the Dyah river at Benapanjari.

I have the honour to attach a tracing showing the various routes under consideration.

From the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Waltair, 8th October 1892, No. 7159/493.

The subject of your order No. 2220 R., dated the 14th September 1892, shall receive my careful attention when I visit the northern section next month. So far as I can judge from the papers, I can see no objection to our conceding what the Bengal Government ask for. Meanwhile, I shall ask the Superintendent of Works, Northern Section, to carefully look into the matter.

Telegram to the Engineer-in-Chief, East Coast Railway, dated 17th Oct. 1892, No. 82 A.

From the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Waltair, 17th October 1892, No. 7380/493.

In continuation of the correspondence ending with my letter No. 7023, dated the 4th October 1892, on the subject of the best point for the junction of the Bengal-Nagpur Railway and of the Puri branch with the East Coast Railway, I now have the honour to return your office copy of Mr. G. A. Anderson's report. On the map which is appended to the report I have taken the liberty of marking in red the Naraj-Puri alignment which was finally staked out under Mr. Parker's orders after careful examination and full discussion of the relative merits of the direct route through Bhubaneswar along the pilgrim road and of the more eastern though indirect route *via* Khurda. I don't think that the locators of the East Coast Railway were in possession of the facts about the latter route; but, having been on the staff of the Benares-Cuttack-Puri Railway Survey, I have my own copies of all the papers and have also obtained from the Bengal Government a copy of the plan of the staked outline.

There are two printed collections of papers containing all the reports and estimates of the Benares-Puri project and in pages 54—75 of volume I of this collection will be found the reports and correspondence on the best route between Cuttack (or Naraj) and Puri. The whole question of the difficulties of the waterways is in these pages thoroughly gone into by the Irrigation Department Engineers. The result will be found at pages 44, 51 and 103 of the second volume of the collection, in which full details are given of the Khurda route which was finally selected.

This Khurda route, as located by Mr. Parker, after full discussion amongst all concerned, local Civil officers, Survey engineer, and Irrigation authorities, cuts the East Coast Railway some two miles south of the Khurda road station; but there is nothing in the lie of the ground which would prevent the Puri branch from starting either from Chatipur or from the Khurda road station to which the Bengal-Nagpur Railway Engineers have brought their Mahanadi valley line. Mr. Parker's section shows that the Puri branch on this general alignment will be an extremely easy bit of line and there is apparently no reason to anticipate the difficulties with the floods of the Dyah river which Mr. Anderson appeared to foresee.

I recommend therefore that either Khurda road or Chatipur be made the junction and not Bhubaneswar. The balance of evidence seems up to this to be in favour of Chatipur, but when I go north I will look into the question more carefully on the ground and address you again.

Note by the Consulting Engineer for Railways, dated 31st October 1892.

The chief points to be considered are, first, the best junction between the East Coast and Bengal and Nagpur Railways, and, secondly, the most advantageous place on the East Coast line from which the Puri branch should start. All the circumstances of the case from an engineering point of view point to Khurda road or Chatipur for the junction as well as the starting point for the Puri line. Mr. Spring's opinion is altogether in favour of Khurda road or Chatipur and Mr. Anderson's ideas evidently lay in the same direction until he was influenced by the antiquity and sacredness of Bhubaneswar or the wish to add to the length of the Nagpur-Bengal Railway.

In my opinion Mr. Spring's arguments are convincing, but, as we have no power over the Bengal-Nagpur line, I suggest that the matter be sent to the Government of India for decision.

ORDER—dated 10th November 1892, No. 2653 R., Public Works.

Ordered that the letters from the Engineer-in-Chief, East Coast Railway, read above, Nos. 7023/493 and 7380/493, dated 4th and 17th October 1892, be forwarded to the Government of India with reference to its letter No. 772 R.C., dated 11th July 1892, and memorandum No. 935 R.C., dated 24th August 1892.

(Here enter No. 2654 R., Public Works, dated 10th November 1892.)

(True Extract.)

(Signed) F. B. WALKER,
Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.
" Engineer-in-Chief, East Coast Railway.

RAILWAY.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated November, 10th.

Recd.

Encl.

G.O., 10th Nov. 1892, No. 2653 R.

NOVEMBER.

Junction Station

Certain correspondence on the subject of a site for a — with the East Coast Railway from Sambalpur-Bengal-Nagpur Railway, ordered to be forwarded to the Government of India.

From the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Waltair, 4th October 1892, No. 7023/493.

In compliance with the orders contained in your No. 1887 R., dated the 4th August 1892, I beg to forward a copy of a letter, No. 3031 of the 16th September 1892, from the Superintendent of Works, Northern Section, reporting upon the question of the best junction for the Bengal-Nagpur and the East Coast Railways and of the Puri branch in the country south of Cuttack.

2. I fully concur in the opinion at which Major White has arrived. It is the opinion which I pressed upon him for consideration when I was on the northern section in August. The facts of his having disagreed with me at the time, and of his having, after a month's study of the subject, come round to my opinion that the Bhubaneswar scheme ought to be rejected, confirms me in the belief that either the Khurda road, or some point like Chatipur, to the south of it, and certainly not Bhubaneswar, is the proper place for the junction.

3. There is always a great danger in a question like this of railway system designing, lest some petty but self-important and noisy local community like that of Bhubaneswar should succeed in forcing its will upon Government to the detriment for all time of railway and general interests.

4. When next I inspect the northern section, that is in a month hence perhaps, when the country is less impassable, I will personally look into the not unimportant question of the place, Khurda road or Chatipur, which is best suited for the permanent needs of the considerable European colony which must be located at the future engine centre and railway junction.

5. That the engine station must be at the junction and not, as designed, at Naraj, admits, I think, of no question. We must not repeat the Parbatipur-Saidpur fiasco of the N.B.S. Railway. The whole subject of the position of engine stations and running sheds needs, in my opinion, to be carefully gone into, and I will address you again in a separate letter on this important question of railway economy.

ENCLOSURE.

From the Superintendent of Works, Northern Section, East Coast Railway, to the Engineer-in-Chief, East Coast Railway, dated Berhampore, 16th September 1892, No. 3031.

With reference to the question as to whether the junction of the Bengal-Nagpur Railway with the East Coast Railway should be at Bhubaneswar or at Khurda road, I have the honour to make the following report, based on the assumption that a branch line to Puri will be constructed.

The Agent of the Bengal-Nagpur Railway has decided in favour of Bhubaneswar on the following grounds, viz.:—

(1) That the revival in importance and wealth of the ancient city of Bhubaneswar, which he assumes would follow the location of the railway junction there, would lead to increased traffic.

(2) That the additional length of line (7 or 8 miles) would increase the takings of the railway.

(3) That the interest attached to the sacred city and its architectural remains and to the caves at Khandgiri would attract sight-seers and enthusiasts.

(4) That Bhubaneswar is the best point of departure from the East Coast Railway for the branch to Puri.

(5) That the line to Bhubaneswar would be easy to construct, whereas the length between Khurda and Khurda road presents difficulties.

With reference to argument No. 1 it is very probable that the location of the junction at Bhubaneswar would tend to increasing the wealth and importance of the city; pilgrims from the Sambalpur direction might stop there en route to or from Puri; pilgrims from the Cuttack direction however would not benefit to any great extent, as they will be able to avail themselves

of the Bhubaneswar station of the East Coast Railway which is 1½ miles distant from Bhubaneswar. I am informed that the pilgrims who visit Bhubaneswar are quite distinct from those who visit Puri. The former perform their pilgrimage in the cold weather, while the latter do so during hot weather and rains. The facilities afforded by railways for making journeys may however alter this.

With reference to argument No. 2 I have the honour to point out that the takings of the combined railways would not necessarily be increased; the Bengal-Nagpur Railway would receive fares for the additional seven or eight miles, but the East Coast Railway and Puri branch would have to content themselves with fares on about five miles less. If, as I understand it, at present the case, the bulk of the pilgrims travel *via* Cuttack, the losses by the East Coast Railway and Puri branch would more than counterbalance the gains of the Bengal-Nagpur Railway. In any case the additional earnings would not nearly compensate for the additional expenditure that would have to be incurred in the construction of 13½ additional miles of line, viz., 7 on the Bengal-Nagpur Railway and 6½ on the Puri branch.

With reference to argument No. 3 it is probable that sight-seers and enthusiasts would avail themselves of the facilities already afforded by the East Coast Railway station of Bhubaneswar.

With reference to argument No. 4, which I consider to be a very important one, it is open to question whether a better point of departure for the Puri branch cannot be obtained. The Puri branch throughout its length crosses a low country, subject to floods from the Mahanadi, those floods reaching the Puri district through the channels of the Dyah and Bargovee rivers. The surveys made between 1883 and 1886 appear to me to condemn the alignment close to and parallel to the Cuttack-Puri road, which alignment would have to be adopted were the junction at Bhubaneswar. They appear to point to a line crossing the Dyah river near the village of Bonapanjari. This line affords a good crossing of the Dyah, and, being at a greater distance from the spills from the Bargovee, could probably be made with somewhat lower banks and less expensive bridges. If this alignment of the Puri branch were adopted, the junction at Khurda road would be more suitable than at Bhubaneswar. The length of the Puri branch would be 6½ miles less with the junction at Khurda road than if it were at Bhubaneswar.

With reference to argument No. 5 it does not appear to me to be probable that the difficult 5 or 6 miles between Khurda and Khurda road will be so costly to construct as to compensate for the additional 13½ miles of line.

If the question must lie between Bhubaneswar and Khurda road, I give my opinion in favour of the latter without hesitation. It is economical, as it saves the construction of 13½ miles of line; it is handier for the district, being nearer the town of Khurda; it presents the better point of departure for the Puri branch; and its mileage on the East Coast Railway being 259 miles from Waltair would work in better for an engine-changing station than that of Bhubaneswar which is 271 miles from Waltair.

I would, however, represent that the location of the junction near the village of Chatipur, which is half-way between the Tapang and Khurda road stations, or about 25½ miles from Waltair appears to me to be worthy of consideration. The Bengal-Nagpur line to Chatipur would, I believe, run through easy country and would be some 3½ miles shorter than their line to Khurda road and 10 miles shorter than their line to Bhubaneswar. The Puri branch would be half a mile and 7½ miles shorter than it would with a junction at Khurda road and Bhubaneswar, respectively. The village of Chatipur is near the pilgrim road between Khurda and Puri and is about the nearest point of the East Coast Railway to the best crossing of the Dyah river at Bonapanjari.

I have the honour to attach a tracing showing the various routes under consideration.

From the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Waltair, 17th October 1892, No. 7380/493.

In continuation of the correspondence ending with my letter No. 7023, dated the 4th October 1892, on the subject of the best point for the junction of the Bengal-Nagpur Railway and of the Puri branch with the East Coast Railway, I now have the honour to return your office copy of Mr. G. A. Anderson's report. On the map which is appended to the report I have taken the liberty of marking in red the Naraj-Puri alignment which was finally staked out under Mr. Parker's orders after careful examination and full discussion of the relative merits of the direct route through Bhubaneswar along the pilgrim road and of the more eastern though indirect route *via* Khurda. I don't think that the locators of the East Coast Railway were in possession of the facts about the latter route; but, having been on the staff of the Benares-Cuttack-Puri Railway Survey, I have my own copies of all the papers and have also obtained from the Bengal Government a copy of the plan of the staked outline.

There are two printed collections of papers containing all the reports and estimates of the Benares-Puri project and in pages 54—75 of volume I of this collection will be found the reports and correspondence on the best route between Cuttack (or Naraj) and Puri. The whole question of the difficulties of the waterways is in these pages thoroughly gone into by the Irrigation Department Engineers. The result will be found at pages 44, 51 and 109 of the second volume of the collection, in which full details are given of the Khurda route which was finally selected.

This Khurda route, as located by Mr. Parker, after full discussion amongst all concerned, local Civil officers, Survey engineer, and Irrigation authorities, cuts the East Coast Railway some two miles south of the Khurda road station; but there is nothing in the lie of the ground which would prevent the Puri branch from starting either from Chatipur or from the Khurda road station to which the Bengal-Nagpur Railway Engineers have brought their Mahanadi valley line. Mr. Parker's section shows that the Puri branch on this general alignment will be an extremely easy bit of line and there is apparently no reason to anticipate the difficulties with the floods of the Dyah river which Mr. Anderson appeared to foresee.

I recommend therefore that either Khurda road or Chatipur be made the junction and no Bhubaneswar. The balance of evidence seems up to this to be in favour of Chatipur, but when I go north I will look into the question more carefully on the ground and address you again.

Note by the Consulting Engineer for Railways, dated 31st October 1892.

The chief points to be considered are, first, the best junction between the East Coast and Bengal and Nagpur Railways, and, secondly, the most advantageous place on the East Coast line from which the Puri branch should start. All the circumstances of the case from an engineering point of view point to Khurda road or Chatipur for the junction as well as the starting point for the Puri line. Mr. Spring's opinion is altogether in favour of Khurda road or Chatipur and Mr. Anderson's ideas evidently lay in the same direction until he was influenced by the antiquity and sacredness of Bhubaneswar or the wish to add to the length of the Nagpur-Bengal Railway.

In my opinion Mr. Spring's arguments are convincing, but, as we have no power over the Bengal-Nagpur line, I suggest that the matter be sent to the Government of India for decision.

10TH NOVEMBER 1892, No. 2654 R., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

Railway.

LETTER—from

F. B. WALKER, Esq.,

Offg. Joint Secretary to the Government of Madras,

Public Works Department,

Railway Branch,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

With reference to your letter No. 772 R.C., dated 11th July 1892, and memorandum No. 935 R.C., dated 24th August 1892, I am directed to forward, herewith, for the information of the Government of India, copies of the marginally-noted letters from the Engineer-in-Chief, East Coast Railway, together with a note, dated 31st October 1892, by the Consulting Engineer for Railways regarding the site for a junction station with the East Coast line from Sambalpur-Bongal-Nagpur Railway. The opinion of Major White, Superintendent of Works, Northern Section, on the subject is forwarded with the first of the letters quoted above.

I have the honour to be,

Sir,

Your most obedient servant,

(Signed) F. B. WALKER,
Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

FORT ST. GEORGE,
10th November 1892.

Exd. S. J. Pereira.
Spare Copies

RAILWAY.
Govt. of {1892} Madras.
PUBLIC WORKS.

Dated November, 10th.

Recd.

Encl.

10th November 1892, No. 2654 R.

NOVEMBER.

Junction Station

Forwarding copies of certain correspondence on the subject of a site for a — with the East Coast Railway from Sambalpur-Bengal-Nagpur Railway.

4TH MARCH 1892, No. 591 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.
PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers :—

Telegram from the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Vizagapatam, 24th February 1892, No. A. 69.

Please settle whether engine station be at Berhampore or Chatrapur. Runs are Thelara to Berhampore 80 miles; Berhampore Naraj 119; Thelara Chatrapur 93; Chatrapur Naraj 106 miles. I beg an immediate reply.

Telegram from the Joint Secretary to Government, Public Works Department, Railway Branch, to the Engineer-in-Chief, East Coast Railway, dated 25th February 1892, No. B. 96.

Your A. 69. Please say if you recommend Berhampore or Chatrapur and state reasons briefly which is more suitable from engineering view.

Telegram from the Engineer-in-Chief, East Coast Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, dated Vizagapatam, 26th February 1892, No. A. 77.

Berhampore best site for engine shed and buildings; Chatrapur gives best engine runs.

ORDER—dated 4th March 1892, No. 591 R., Public Works.

Ordered that the following telegram be despatched to the Engineer-in-Chief, East Coast Railway :—

"B. 103. Your wire A. 77. Engine station should be at Berhampore."

(True Extract.)

(Signed) W. H. COAKER, Lieut.-Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.
.. Engineer-in-Chief, East Coast Railway.

Exd. S. J. Pereira.
Spare Copies

RAILWAY.

Govt. of {1892} Madras.
PUBLIC WORKS.

Dated March, 4th.

Recd.

Encl.

G.O., 4th Mar. 1892, No. 591 R.

MARCH

Engine Station

Telegram to the Engineer-in-Chief, East
Coast Railway, stating that the — should
be at Berhampore.