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MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 870-77

467-468-469

Press

Mis.

Dated 27 3

1870

Not to be folded or roughly handled

No. 467. Read the following letter from the Consulting Engineer for Railways, to the Secretary to Government, Public Works Department, dated Madras, 25th February 1870, No. 79 :—

I HAVE the honour to submit the following report upon the progress of the works on the North-West Line of the Madras Railway, which I have lately inspected in company with the Agent and Manager and the Acting Chief Engineer.

2. The Government are aware that the line is at present available for traffic as far as Ghooty, to which point it was opened on the 1st August 1869; the distance from Madras being 258 miles.

3. Beyond Ghooty the whole of the work on the main line up to the junction with the Great Indian Peninsula Railway at Raichore has been given on contract to Mr. E. W. Barnett, with the exception of the various stations which are being constructed under the charge of the Company's Engineers. The works on the Bellary branch have been given on contract between Balakistnamah Naidoo and Mr. E. M. Ross. The two stations on the branch at Veerapoor and Bellary have also been given to Mr. Ross. The particulars of the various contracts are given in a summary appended to this report.

4. *District XI., Main Line.*—The work on this district has not made good progress of late. According to the terms of the agreement with the contractor, the line should have been completed as far as the Bellary branch junction by the 31st December 1868; and there can be no doubt that this would have been accomplished long ago, had proper energy been shown by Mr. Barnett. When proceeding up the line we found that one single thirty feet arch bridge, one double twenty feet arch bridge, and two single twenty feet arch bridges were still unfinished on this side of the junction. In addition to this a good deal of heavy rock cutting had to be excavated. The early opening to the junction was of such importance, and the prospect of further delay seemed so certain, that it was deemed necessary to serve the contractor with the notice required under clauses 12 and 24 of his agreement. I am glad to be able to report that this notice had the desired effect. On our return down the line we found that the two single twenty feet arch bridges were alone remaining unfinished; and I have now no doubt that an engine will be at the Goondacul junction before the end of March.

The Goondacul Station is making good progress under the energetic superintendence of Mr. Smith, the Resident Engineer in charge. Up to the 31st January three-fifths of the masonry had been completed. The work is of good quality and has been executed most economically.

5. *District XIV.*—This district carries the main line northwards from the Goondacul junction. The work is well advanced: rails are laid over the greater part of the district; and only one-twelfth of the masonry was unfinished on the 31st January. An engine will certainly be able to pass over this district in April.

The Nuncherla Station is in this district, and has only lately been commenced by departmental agency. About one-fourth of the masonry was finished on the 31st January. The rates are considerably below those of Mr. Barnett's contract.

6. *District XV.*—Here the work has not been pushed forward so energetically; and 1,500 cubic yards, being one-fourth of the whole masonry, remained unfinished at the end of last month. It was thought advisable to serve the con-

tractor with a notice for this district also, under clauses 12 and 24 of his agreement. I have no doubt that, with this incentive, the work will be carried on rapidly, and that an engine will be able to traverse the district by the end of April.

The Auspree Station is situated at the northern extremity of this district. The work has only lately been commenced by the Company's Engineer, and one-fifth of the masonry had been completed up to the end of last month. As at Goondacul and Nuncherla, the rates at which the work is being executed are considerably below those of Mr. Barnett's contract. It was intended that Auspree should be a watering station, and the estimated outlay has been sanctioned; but the situation of the station gives little reason to hope that a proper supply of water will be obtained, and I fear it will be necessary to establish watering arrangements at some point between Auspree and Adoni.

7. *District XVI.*—This district is the most backward of all on this side of the Toongabuddra river. Upwards of 2,800 yards of masonry, nearly one-third of the whole amount, remained unfinished on the 31st January. Here also, as in Districts XI. and XV., it was thought advisable to bring the provisions of clauses 12 and 24 of the agreement into force, and to serve the contractor with the required notice. I understand that the result has been so far favourable that it has not yet been necessary to act upon the notice, by supplementing the contractor's labour at his expense. The progress of the work must, however, be watched most carefully from day to day, and immediate action taken upon any backward tendency being shown.

The early completion of the work in this district is a point of very great importance, as upon it depends the possibility of carrying forward the girders for the bridge over the Toongabuddra before the freshes in that river may be expected.

* In No. 65, dated 16th February 1870. With a view to make this result more certain, I have already recommended* the substitution of girders for arches in two of the unfinished bridges on this district. Mr. H. C. West, one of the most energetic Engineers in the Company's service, has been sent to supervise the progress of the work, and I have every hope that an engine will be able to pass over the district in the early part of May.

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The Adoni Station, which lies within this district, is making rapid progress under Mr. Scott's superintendence. At the end of last month considerably more than half the masonry had been completed.

9. *District XVIII.*—The work in this district has also made excellent progress. Although 1,000 yards of masonry are nominally unfinished, all the bridges are ready for the passage of an engine with the exception of those for which girders must be brought up by rail.

The Kosgee Station in this district is well advanced. It is being carried out under the superintendence of Mr. Jones, the Resident Engineer; and, like all the other stations on the main line, at rates considerably below those of Mr. Barnett's contract. Nearly three-fourths of the masonry were completed at the end of January.

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The large bridge over the Toongabuddra river, which consists of fifty-eight girder openings measuring each seventy feet from centre to centre, has made good progress since the subsidence of the water in the river. During January upwards of 1,100 yards of masonry were completed; and at the beginning of this month there remained nearly 5,400 yards to be done, being less than one-third of the whole amount. Of the fifty-seven piers, sixteen on the north bank of the river, and ten on the south bank, are finished; the remaining thirty-one piers being more or less advanced towards completion. The work is excellent, and confers great credit on all concerned. Unless prevented by an outbreak of cholera among the work-people, or by unseasonable freshes in the river, I see no reason why the masonry of this bridge should not be completed before the coming monsoon. The Government may rest assured that every effort will be made, both by the Engineer in charge and by the contractor's agent, to secure this result. The completion of the bridge will, however, depend upon the date when an engine is able to come up to Adoni, that is to say, upon the completion of the masonry in Districts XV. and XVI. If the girders for the Toongabuddra bridge can be delivered on the south bank of that river early in May, the temporary tramway across the river-bed can be used to transport half of them to the north side, where they can be put together and rivetted during the rains, so as to be ready for rolling by the end of the year.

I wish to take this opportunity to bring prominently to the notice of Government the excellent service which has been rendered in connection with the Toongabuddra bridge by Mr. Robinson, the Resident Engineer in charge of District XIX., a position which he has held for more than four years past. Mr. Robinson has had the supervision of the bridge over the Toongabuddra from first to last; and I attribute entirely to his professional skill, backed by his indomitable energy and perseverance, the admirable masonry which has been used upon this very important bridge. At the commencement of the work, as I have already had occasion to report, considerable difficulty was experienced by Mr. Robinson, before he succeeded in obtaining from the contractor masonry of a quality suited to the importance of the bridge; but these difficulties were overcome, and since the commencement of the year 1868 the work has been carried on satisfactorily, and in accordance with the terms of the revised specification which was then drawn up. When the work is completed there will be nearly 18,000 yards of masonry in the bridge, and I believe that every foot will challenge comparison with the best work of the kind in India.

11. *District XX.*—This district has not as yet made much progress; up to the first of this month only one-third of the masonry having been finished. This state of backwardness is not, however, altogether attributable to the contractor, inasmuch as the commencement of the masonry was delayed, owing to the fact

*Proceedings of the Madras Government, Public Works Department,
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that no Engineer was available for supervision; and it was on this plea that
** Vide G. O., dated 2nd April 1869, No. 1,075.* sanction* was accorded to the alteration of the date fixed for the completion of the work from 31st December 1869, to 31st December 1870. There is at present little or no masonry being done; the only work now in active progress being the collection of material. It is expected that a large body of masons will be set free from the Toongabuddra bridge in June, and the work in District XX. will then be pushed on with vigour. The scarcity of water along the greater part of this district renders this course advisable on all grounds.

The Mutamurri Station lies within this district; but, beyond collecting materials, nothing has yet been done.

12. *Raichore Terminus.*—It will be within the recollection of the Government that the site fixed* on for the station at Raichore was about one and-a-quarter mile to the north of the point where the Madras and the Great Indian Peninsula Railways join. The letter from the Consulting Engineer to the Bombay Government† dated the 13th October 1869, will show that a plan was prepared by the Great Indian Peninsula authorities, and that the work was to be put in hand at once by that agency. The plan was objected to by the Madras Railway authorities chiefly on account of the rates which were much above those prevailing on our lines. With a view to reduce the cost of the station, an offer was made that the work should be undertaken by the Madras Railway agency; and, as will be seen from Colonel Trevor's report‡ dated the 12th January 1870, this has been agreed to, subject to the approval of this Government. Colonel Trevor explains that, owing to the terms of the agreement with Mr. Bray, it is necessary to select a site on the Madras Railway line. A site, in every respect excellent, has accordingly been chosen by the Acting Chief Engineer of the Madras Railway. It is about a mile south of the point of junction; and, though slightly further from the town of Raichore, is better supplied with water and has gradients more suitable for station purposes. I concur with the Railway authorities in recommending that the station be built on this site; and, if this meets with the approval of the Government, I trust that the construction of the station will now be pushed on rapidly.

13. *District XI., Bellary branch.*—The portion of this district which forms part of the Bellary branch is under four miles in length. The masonry is complete and the line will be ready for the passage of an engine as soon as the Goondacul junction is reached.

14. *District XII.*—The masonry on this district is also finished; and, as soon as girders can be brought up from the Goondacul junction, it will be ready for the passage of an engine from end to end.

The Veerapoor Station is situated within this district, and I regret to say that we found the work progressing at a very unsatisfactory rate. It has been let on contract to Mr. Ross, and the time specified in the agreement expired on the 31st December 1869. Up to the end of January only two-fifths of the masonry had

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been done. It was thought advisable to give Mr. Ross notice under clauses 12 and 24 of his agreement, and I trust that this measure will have the desired effect.

15. *District XIII.*—This district completes the Bellary branch; and, with the exceptions of the bridge over the Huggry river and the terminal station at Bellary, the work is almost finished.

The Huggry bridge is to consist of thirty-four openings, each 70 feet from centre to centre, spanned by wrought-iron girders, resting on screw piles. The only masonry is in the abutments, which are now in progress, and in which some 1,200 yards remained unfinished on the 1st instant. The abutment on the east side has a good foundation in clay; but on the west side it was found necessary to sink wells, and, owing to an error in the plan, these were carried five feet too high. The removal of this has caused some delay; but there is plenty of material on the ground, and the work ought to be soon brought to a close. The delay in opening up to the Goondacul junction has thrown the work at this bridge back, inasmuch as the girders and piles must be brought up by engine.

The work at the Bellary Station has not been carried on of late as rapidly as should have been the case. On the 31st January more than half the masonry was unfinished, and, as the time named in the agreement expires on the 31st August, the contractor has as much as he can do to complete his task.

The inquiry into the question of water-supply along the Bellary branch has not been altogether satisfactory. The town of Bellary has of late years been notorious for scarcity of good water; and, after careful investigation, the attempt to establish watering arrangements for engines has been abandoned. At Veerapoor also the attempt is considered hopeless. It has been therefore proposed to establish a permanent watering place at the Huggry river, eight miles from Bellary, and another at a spot $4\frac{1}{2}$ miles east of Veerapoor Station. Engines will be able to take at the Huggry a supply of water for the double journey to Bellary and back; while an old well on the fort glacis, close to the station enclosure, will give water which though brackish will answer for cleaning out engines, etc.

16. It is with great pleasure that I am able to report in most favourable terms upon the quality of the work on the unopened line. I have already drawn special attention to the character of the masonry in the bridge over the Toongabuddra; but throughout the line the work is of a very high average standard, and the instances in which I observed any short-comings were few and far between. The Government and the Madras Railway Company may both be congratulated on the results which have been secured.

17. In the Order of Government, dated the 23rd instant, No. 604, I was directed to report upon the present prospects of opening the North-West Line of the Madras Railway to Raichore. In reply I beg to state that, unless the progress of the work is delayed by some unforeseen occurrence, I have every reason to anticipate the opening of the line to Kosgee during September next, and to Raichore by April or May 1871.

The Bellary branch ought also to be opened throughout early in 1871.

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Summary of the various Contracts given out on the North-West Line.

... on the North-West Line.

District.	Length in miles.	Date of sanction.	Name of Con- tractor.	Time of completion.
<i>Main Line.</i>				
District 11, Section I	11	7th March 1866.	Mr. E. W. Barnett.	1st July 1868.
Do. 11, " II.	7½	13th March 1867.	Do. ...	31st Dec. "
Do. 14	10	20th Nov. 1866.	Do. ...	31st Dec. 1869.
Do. 15	10			
Do. 16	10			
Do. 17	10			
Do. 18	11			
Do. 19	9	10th April 1869.	Do. ...	31st Dec. 1870.
Do. 20	16½			
<i>Bellary Branch Line.</i>				
District 11, Section II.	4	13th March 1867.	Balakistnamah	30th Sept. 1868.
Do. 12, " I.	10	30th Aug. 1866.	Naidoo & Co.	30th July "
Do. 12, " II.	6	25th Jan. 1867...	Mr. M. Ross	Do.
Do. 13	10½	25th " " " "	Do. ...	Do.
Veerapoor Station	...	9th April 1869.	Do. ...	31st Dec. 1869.
Bellary "	...	17th May " " "	Do. ...	Do.
			Do. ...	31st Aug. 1870.

MADRAS

MADRAS,
February 1870.

(Signed) J. H. M. SHAW STEWART, Major, R.E.,
Consulting Engineer for Railways.

No. 468.

ORDER THEREON, 29th March 1870, No. 876.

RAILWAY, No. 51.

THE Government are gratified to learn from this report that the works on the extension of the North-West Line of the Madras Railway towards Raichore and on the Bellary branch are progressing satisfactorily.

2. Under the circumstances brought to notice in paragraph 12, His Excellency the Governor in Council approves of the construction of the station at Raichore being undertaken by the Madras Railway Company on the site selected by the Acting Chief Engineer, and His Excellency trusts that no time will be lost in submitting the requisite plans and estimates.

3. Adverting to the observations of the Government of India in their letter communicated in G. O., No. 723, dated 8th March 1870, the Consulting Engineer will impress upon the attention of the Railway authorities the necessity of their taking special care to prevent any expenditure being incurred except upon sanctioned estimates, and as it is of importance that the works on the unopened portion

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of the North-West Line should not be delayed, the submission of those estimates should be expedited.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the Consulting Engineer for Railways.

Exd. E. C. Shunker.

Govt. of Madras.

PUBLIC WORKS.

To
THE CONSULTING ENGINEER FOR
RAILWAYS.

Dated March, 29th.

Recd

G. O., 29th March 1870, No 875

MARCH

Nos. 467-468

Works (Railway) - The following is a copy of the letter from the Consulting Engineer for Railways, dated 29th March 1870, No 875, reporting on the progress of the works on the North-West Line of the Madras Railway.

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The Goondacul Station is making good progress under the energetic superintendence of Mr. Smith, the Resident Engineer in charge. Up to the 31st January three-fifths of the masonry had been completed. The work is of good quality and has been executed most economically.

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The Kosgee Station in this district is well advanced. It is being carried out under the superintendence of Mr. Jones, the Resident Engineer; and, like all the other stations on the main line, at rates considerably below those of Mr. Barnett's contract. Nearly three-fourths of the masonry were completed at the end of January.

10. *District XIX.*—On this district also the works are well advanced. With the exception of the Toongabuddra bridge, six-sevenths of the masonry were finished on the 31st January; only 670 yards being then required to complete the district. The only work of any importance unfinished at the time of our visit was a double thirty feet arch bridge which is probably completed by this time.

The large bridge over the Toongabuddra river, which consists of fifty-eight girder openings measuring each seventy feet from centre to centre, has made good progress since the subsidence of the water in the river. During January upwards of 1,100 yards of masonry were completed; and at the beginning of this month there remained nearly 5,400 yards to be done, being less than one-third of the whole amount. Of the fifty-seven piers, sixteen on the north bank of the river, and ten on the south bank, are finished; the remaining thirty-one piers being more or less advanced towards completion. The work is excellent, and confers great credit on all concerned. Unless prevented by an outbreak of cholera among the work-people, or by unseasonable freshes in the river, I see no reason why the masonry of this bridge should not be completed before the coming monsoon. The Government may rest assured that every effort will be made, both by the Engineer in charge and by the contractor's agent, to secure this result. The completion of the bridge will, however, depend upon the date when an engine is able to come up to Adoni, that is to say, upon the completion of the masonry in Districts XV. and XVI. If the girders for the Toongabuddra bridge can be delivered on the south bank of that river early in May, the temporary tramway across the river-bed can be used to transport half of them to the north side, where they can be put together and rivetted during the rains, so as to be ready for rolling by the end of the year.

I wish to take this opportunity to bring prominently to the notice of Government the excellent service which has been rendered in connection with the Toongabuddra bridge by Mr. Robinson, the Resident Engineer in charge of District XIX., a position which he has held for more than four years past. Mr. Robinson has had the supervision of the bridge over the Toongabuddra from first to last; and I attribute entirely to his professional skill, backed by his indomitable energy and perseverance, the admirable masonry which has been used upon this very important bridge. At the commencement of the work, as I have already had occasion to report, considerable difficulty was experienced by Mr. Robinson, before he succeeded in obtaining from the contractor masonry of a quality suited to the importance of the bridge; but these difficulties were overcome, and since the commencement of the year 1868 the work has been carried on satisfactorily, and in accordance with the terms of the revised specification which was then drawn up. When the work is completed there will be nearly 18,000 yards of masonry in the bridge, and I believe that every foot will challenge comparison with the best work of the kind in India.

11. *District XX.*—This district has not as yet made much progress; up to the first of this month only one-third of the masonry having been finished. This state of backwardness is not, however, altogether attributable to the contractor, inasmuch as the commencement of the masonry was delayed, owing to the fact

that no Engineer was available for supervision; and it was on this plea that sanction* was accorded to the alteration of the date fixed for the completion of the work from 31st December 1869, to 31st December 1870. There is at present little or no masonry being done; the only work now in active progress being the collection of material. It is expected that a large body of masons will be set free from the Toongabuddra bridge in June, and the work in District XX. will then be pushed on with vigour. The scarcity of water along the greater part of this district renders this course advisable on all grounds.

The Mutamurri Station lies within this district; but, beyond collecting materials, nothing has yet been done.

12. *Raichore Terminus.*—It will be within the recollection of the Government that the site fixed* on for the station at Raichore was about one and-a-quarter mile to the north of the point where the Madras and the Great Indian Peninsula Railways join. The letter from the Consulting Engineer to the Bombay Government† dated the 13th October 1869, will show that a plan was prepared by the Great Indian Peninsula authorities, and that the work was to be put in hand at once by that agency. The plan was objected to by the Madras Railway authorities chiefly on account of the rates which were much above those prevailing on our lines. With a view to reduce the cost of the station, an offer was made that the work should be undertaken by the Madras Railway agency; and, as will be seen ‡ *Vide G. O., 23rd February 1870, No. 604.* from Colonel Trevor's report ‡ dated the 12th January 1870, this has been agreed to, subject to the approval of this Government. Colonel Trevor explains that, owing to the terms of the agreement with Mr. Bray, it is necessary to select a site on the Madras Railway line. A site, in every respect excellent, has accordingly been chosen by the Acting Chief Engineer of the Madras Railway. It is about a mile south of the point of junction; and, though slightly further from the town of Raichore, is better supplied with water and has gradients more suitable for station purposes. I concur with the Railway authorities in recommending that the station be built on this site; and, if this meets with the approval of the Government, I trust that the construction of the station will now be pushed on rapidly.

13. *District XI., Bellary branch.*—The portion of this district which forms part of the Bellary branch is under four miles in length. The masonry is complete and the line will be ready for the passage of an engine as soon as the Goondacul junction is reached.

14. *District XII.*—The masonry on this district is also finished; and, as soon as girders can be brought up from the Goondacul junction, it will be ready for the passage of an engine from end to end.

The Veerapoor Station is situated within this district, and I regret to say that we found the work progressing at a very unsatisfactory rate. It has been let on contract to Mr. Ross, and the time specified in the agreement expired on the 31st December 1869. Up to the end of January only two-fifths of the masonry had

been done. It was thought advisable to give Mr. Ross notice under clauses 12 and 24 of his agreement, and I trust that this measure will have the desired effect.

15. *District XIII.*—This district completes the Bellary branch; and, with the exceptions of the bridge over the Huggry river and the terminal station at Bellary, the work is almost finished.

The Huggry bridge is to consist of thirty-four openings, each 70 feet from centre to centre, spanned by wrought-iron girders, resting on screw piles. The only masonry is in the abutments, which are now in progress, and in which some 1,200 yards remained unfinished on the 1st instant. The abutment on the east side has a good foundation in clay; but on the west side it was found necessary to sink wells, and, owing to an error in the plan, these were carried five feet too high. The removal of this has caused some delay; but there is plenty of material on the ground, and the work ought to be soon brought to a close. The delay in opening up to the Goondacul junction has thrown the work at this bridge back, inasmuch as the girders and piles must be brought up by engine.

The work at the Bellary Station has not been carried on of late as rapidly as should have been the case. On the 31st January more than half the masonry was unfinished, and, as the time named in the agreement expires on the 31st August, the contractor has as much as he can do to complete his task.

The inquiry into the question of water-supply along the Bellary branch has not been altogether satisfactory. The town of Bellary has of late years been notorious for scarcity of good water; and, after careful investigation, the attempt to establish watering arrangements for engines has been abandoned. At Veerapoor also the attempt is considered hopeless. It has been therefore proposed to establish a permanent watering place at the Huggry river, eight miles from Bellary, and another at a spot $4\frac{1}{2}$ miles east of Veerapoor Station. Engines will be able to take at the Huggry a supply of water for the double journey to Bellary and back; while an old well on the fort glacis, close to the station enclosure, will give water which though brackish will answer for cleaning out engines, etc.

16. It is with great pleasure that I am able to report in most favourable terms upon the quality of the work on the unopened line. I have already drawn special attention to the character of the masonry in the bridge over the Toongabuddra; but throughout the line the work is of a very high average standard, and the instances in which I observed any short-comings were few and far between. The Government and the Madras Railway Company may both be congratulated on the results which have been secured.

17. In the Order of Government, dated the 23rd instant, No. 604, I was directed to report upon the present prospects of opening the North-West Line of the Madras Railway to Raichore. In reply I beg to state that, unless the progress of the work is delayed by some unforeseen occurrence, I have every reason to anticipate the opening of the line to Kosgee during September next, and to Raichore by April or May 1871.

The Bellary branch ought also to be opened throughout early in 1871.

*Proceedings of the Madras Government, Public Works Department,
29th March 1870.*

Summary of the various Contracts given out on the North-West Line.

District.	Length in miles.	Date of sanction.	Name of Con- tractor.	Time of completion.
<i>Main Line.</i>				
District 11, Section I. ...	11	7th March 1866.	Mr. E. W. Barnett.	1st July 1868.
Do. 11, " II. ...	7½	13th March 1867.	Do. ...	31st Dec. "
Do. 14 " ...	10	20th Nov. 1866.	Do. ...	31st Dec. 1869.
Do. 15 " ...	10			
Do. 16 " ...	10			
Do. 17 " ...	10			
Do. 18 " ...	11			
Do. 19 " ...	9			
Do. 20 " ...	16½	10th April 1869.	Do. ...	31st Dec. 1870.
<i>Bellary Branch Line.</i>				
District 11, Section II. ...	4	13th March 1867.	Balakistnamah	30th Sept. 1868.
Do. 12, " I. ...	10	30th Aug. 1866.	Naidoo & Co.	30th July "
Do. 12, " II. ...	6	25th Jan. 1867...	Mr. M. Ross ...	Do. "
Do. 13 " ...	10½	25th " ...	Do. ...	31st Dec. 1869.
Veerapoor Station ...	...	9th April 1869.	Do. ...	Do. "
Bellary " ...	...	17th May " ...	Do. ...	31st Aug. 1870.

MADRAS,
February 1870.

(Signed) J. H. M. SHAW STEWART, Major, R.E.,
Consulting Engineer for Railways.

No. 468.

ORDER THEREON, 29th March 1870, No. 876.

RAILWAY, No. 51.

THE Government are gratified to learn from this report that the works on the extension of the North-West Line of the Madras Railway towards Raichore and on the Bellary branch are progressing satisfactorily.

2. Under the circumstances brought to notice in paragraph 12, His Excellency the Governor in Council approves of the construction of the station at Raichore being undertaken by the Madras Railway Company on the site selected by the Acting Chief Engineer, and His Excellency trusts that no time will be lost in submitting the requisite plans and estimates.

3. Adverting to the observations of the Government of India in their letter communicated in G. O., No. 723, dated 8th March 1870, the Consulting Engineer will impress upon the attention of the Railway authorities the necessity of their taking special care to prevent any expenditure being incurred except upon sanctioned estimates, and as it is of importance that the works on the unopened portion

*Proceedings of the Madras Government, Public Works Department,
29th March 1870.*

of the North-West Line should not be delayed, the submission of those estimates should be expedited.

(True Extract.)

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

No. 469. DOCKET No. 877, dated 29th March 1870.

COPY of the above forwarded to the Government of India with reference to their letter, dated 5th February 1870, No. 227-R.

(True Extract.)

Colonel, R. E.,

Secretary to Government.

Exl. E. C. Shunker.

*Proceedings of the Madras Government, Public Works Department,
29th March 1870.*

Summary of the various Contracts given out on the North-West Line.

Contracts given out on the North-West Line.

District.	Length in miles.	Date of sanction.	Name of Con- tractor.	Time of completion.
<i>Main Line.</i>				
District 11, Section I.	11	7th March 1866.	Mr. E. W. Barnett.	1st July 1868.
Do. 11, " II.	7½	13th March 1867.	Do. ...	31st Dec. "
Do. 14 " "	10	20th Nov. 1866.	Do. ...	31st Dec. 1869.
Do. 15 " "	10			
Do. 16 " "	10			
Do. 17 " "	10			
Do. 18 " "	10			
Do. 19 " "	11	10th April 1869.	Do. ...	31st Dec. 1870.
Do. 20 " "	9			
Do. 20 " "	16½			
<i>Bellary Branch Line.</i>				
District 11, Section II.	4	13th March 1867.	Balakistnamah	30th Sept. 1868.
Do. 12, " I.	10	30th Aug. 1866.	Naidoo & Co.	30th July "
Do. 12, " II.	6	25th Jan. 1867...	Mr. M. Ross ...	Do. ...
Do. 13 " "	10½	25th " " "	Do. ...	Do. ...
Veerapoor Station	...	9th April 1869.	Do. ...	31st Dec. 1869.
Bellary " "	...	17th May " " "	Do. ...	Do. ...
				31st Aug. 1870.

MADRAS,

(Signed)

MADRAS,
February 1870.

(Signed) J. H. M. SHAW STEWART, Major, R.E.,
Consulting Engineer for Railways.

No. 468.

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*Proceedings of the Madras Government, Public Works Department,
29th March 1870.*

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

No. 469. DOCKET No. 877, dated 29th March 1870.

COPY of the above forwarded to the Government of India with reference to their letter, dated 5th February 1870, No. 227-R.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

Exl. E. C. Shunker.

Works (Railway).—A copy of the Proceedings relative to the progress of works on the North-West Line of the Madras Railway, forwarded to the Government of India.

MARCH
Nos. 467-469

Govt. of Madras.
PUBLIC WORKS.

THE SECRETARY TO THE GOVERNMENT

OF INDIA

Dated March, 29th

Recd.

Encl.

G. O., 29th March 1870, No 877.

Summary of the various Contracts given out on the North-West Line.

District	Length in miles.	Date of sanction	Name of contractor	Time of completion	Remarks
<u>Main Line.</u>					
District II, Sec. I.	11	7th March 1866	Mr E. W. Barnett.	1st July 1868	
" " " " " "	7 3/4	18th " "	Mr E. W. Barnett.	31st Dec. 1868.	
" " " " " "	10	20th Nov. 1866	Mr E. W. Barnett.	31st Dec. 1869.	
" " " " " "	10				
" " " " " "	10				
" " " " " "	10				
" " " " " "	11				
" " " " " "	9	10th April 1869	Mr E. W. Barnett	31st Dec. 1870.	
" " " " " "	16 1/4				
<u>Bellary branch line.</u>					
District II, Sec. II.	4	13th March 1867	Bala Krishna Rao	30th September 1868	
" " " " " "	10	30th August 1866	Mr. M. L. S. Rao	30th July 1868	
" " " " " "	6	25th Jan. 1867	Do	30th July 1868.	
" " " " " "	10 1/2	25th Jan. 1867	Do	31st Dec. 1869.	
" " " " " "		9th April 1869	Do	31st December 1869	
" " " " " "		17th May 1869	Do	31st August 1870.	
<u>Veerapoor station</u>					
<u>Bellary station</u>					

Madras, February 1870. }
Major, R.E., 17/2
Consulting Engineer for Railways.

Railway Department

Consulting Eng^r Office

N^o 79-

1902

From

Major J. H. M. Phau Stewart R.E.

Consulting Eng^r for Railways

To

Colonel C. A. O. R. R. E.

Secretary to Government

Public Works Department

Fort Saint George

Sir,

I have the honour to submit the following report upon the progress of the works on the North West Line of the Madras Railway, which I have lately inspected in company with the Agent and Manager, and the Acting

Chief

799/70

Chief Engineer.

2. The Government are aware that the line is at present available for traffic as far as Ghooty, to which point it was opened on the 1st August 1869; the distance from Madras being 258 miles.

3. Beyond Ghooty, the whole of the work on the main line up to the junction with the Great Indian Peninsula Railway at Paichore has been given on contract to Mr E. W. Barnett, with the exception of the various stations, which are being constructed under the charge of the Company's Engineers. The work on the Bellary Branch has been given on contract.

contract between Balakrishnamah Naidoo and Mr E. M. Poff. The two stations on the Branch at Veerapoor and Bellary have also been given to Mr Poff. The particulars of the various contracts are given in a summary appended to this report.

4. District XI. - Main line. The work on this district has not made good progress of late. According to the terms of the agreement with the Contractor, the line should have been completed as far as the Bellary Branch junction by the 31st December 1868, and there can be no doubt that this would have been accomplished long ago, had proper energy been shown by Mr Barnett.

When proceeding up the line we found that one single 30 feet arch bridge, one double 20 feet arch bridge, and two single 20 feet arch bridges were still unfinished on this side of the junction.

In addition to this a good deal of heavy rock cutting had to be excavated.

The early opening to the junction was of such importance, and the prospect of further delay seemed so certain, that it was deemed necessary to serve the Contractor with the notice required under clauses 12 and 24 of his agreement.

I am glad to be able to report that this notice had the desired effect.

On our return down the line we

found

3
232
found that the two single 20 feet arch bridges were alone remaining unfinished, and I have now no doubt that an engine will be at the Gondaul junction before the end of March.

The Gondaul station is making good progress under the energetic superintendence of Mr Smith, the Resident Engineer in charge. Up to the 31st January three-fifths of the masonry had been completed. The work is of good quality, and has been executed most economically.

5. District XIV.— This district carries the main line northwards from the Gondaul junction.

The

The work is well advanced: rails are laid over the greater part of the district; and only one-twelfth of the masonry was unfinished on the 31st January. An engine will certainly be able to pass over this district in April. The Kuncherla station is in this district, and has only lately been commenced by departmental agency. About one-fourth of the masonry was finished on the 31st January. The rates are considerably below those of Mr. Barnett's contract.

b. District XV. — Here the work

4
250
work has not been pushed forward so energetically; and 1500 cubic yards, being one-fourth of the whole masonry, remained unfinished at the end of last month. It was thought advisable to serve the Contractor with a notice for this district also, under clauses 12 and 24 of his agreement. I have no doubt that, with this incentive, the work will be carried on rapidly, and that an engine will be able to traverse the district by the end of April.

The Asprey station is situated at the northern extremity of

of this district. The work has only lately been commenced by the Company's Engineer, and one-fifth of the masonry had been completed up to the end of last month. As at Goudamb and Nunchesla, the rates at which the work is being executed are considerably below those of Mr. Barnett's contract. It was intended that Auspree should be a watering station, and the estimated outlay has been sanctioned; but the situation of the station gives little reason to hope that a proper supply of water will be obtained, and I fear it will be necessary to establish watering

arrangements

27 1/2
arrangements at some point between Auspree and Adouin.

7. District XVII. This district is the most backward of all on this side of the Soongabudra river. Upwards of 2800 yards of masonry, nearly one-third of the whole amount, remained unfinished on the 31st January. Here also, as in districts XI and XV, it was thought advisable to bring the provisions of clauses 12 and 24 of the agreement into force, and to serve the Contractor with the required notice. I understand that the result has been so far favourable that it has not yet been necessary to

ait upon the notice, by supplementing
the Contractor's labour at his expense.
The progress of the work must
however be watched most carefully
from day to day, and immediate
action taken upon any backward
tendency being shown.

The early completion
of the work in this district is a point
of very great importance, as upon it
depends the possibility of carrying
forward the girders for the bridge
over the Soongabudra, before the freshes
in that river may be expected. With
a view to make this result more certain
I have already recommended the
substitution of girders for arches in

x No 65
dated 16th
February 1870.

two of the unfinished bridges in the
district. Mr. H. C. West, one of
the most energetic Engineers in the
Company's service, has been sent to
superintend the progress of the work,
and I have every hope that an engine
will be able to pass over the district
in the early part of May.

8. District XVII. The work
in this district may be said to be
completed. Some 400 yards of masonry
remain to be done, but this consists
entirely of coping, &c. With the
exception of gaps which cannot be
closed over till girders are brought
up by rail, an engine could now
traverse

traverse this district from end to end.
The Adoni station,
which lies within this district, is
~~now being~~ ⁱⁿ progress under Mr.
Scott's superintendence. At the
end of last month considerably more
than half the masonry had been
completed.

9. District XVIII. The
work in this district has also made
excellent progress. Although 1000
yards of masonry are nominally un-
finished, all the bridges are ready
for the passage of an engine with
the exception of those for which
timbers must be brought up by rail.
The

310
The Hosjee station in
this district is well advanced. It
is being carried out under the super-
intendence of Mr. Jones, the Resi-
dent Engineer; and, like all the
other stations on the main line, at
rates considerably below those of Mr.
Parnett's contract. Nearly three-
fourths of the masonry were com-
pleted at the end of January.
10. District XIX. On this
district also the works are well
advanced. With the exception of
the Tangabudra bridge, six-sevenths
of the masonry were finished on the
31st January; only 670 yards being
then

then required to complete the district.
The only work of any importance un-
finished at the time of our visit
was a double 30 feet arch bridge,
which is probably completed by this
time.

The larger

bridge over the Soongabudra river, which
consists of 58 girder openings
measuring each 70 feet from centre to
centre, has ~~made~~ good progress since
the subsidence of the water in the river.
During January upwards of 1,100 yards
of masonry were completed; and at
the beginning of this month there
remained nearly 5,400 yards to be done,
being

being less than one-third of the whole
amount. Of the 57 piers, 16 on the
north bank of the river, and 10 on the
south bank, are finished; the
remaining 31 piers being more or less
advanced towards completion. The
work is excellent, and confers great
credit on all concerned. Unless
prevented by an outbreak of cholera
among the work people, or by unseason-
able freshets in the river, I see no
reason why the masonry of this bridge
should not be completed before the
coming monsoon. The Government
may rest assured that every effort
will be made, both by the Engineer in
charge

charges and by the Contractor's agents to secure this result. The completion of the bridge will however depend upon the date when an engine is able to come up to Adony that is to say, upon the completion of the masonry in districts XV and XVI. If the girders for the Soongabudra bridge can be delivered on the south bank of that river early in May, the temporary tramway across the river bed can be used to transport half of them to the north side, where they can be put together and rivetted during the rains, so as to be ready for rolling by the end of the year.

I wish to take this opportunity to bring prominently to the notice of Government the excellent service which has been rendered in connection with the Soongabudra bridge by Mr. Robinson, the Resident Engineer in charge of district XIX, a position which he has held for more than four years past. Mr. Robinson has had the supervision of the bridge over the Soongabudra from first to last; and I attribute entirely to his professional skill, backed by his indomitable energy and perseverance, the admirable masonry which has been used upon this

this very important bridge. At the commencement of the work, as I have already had occasion to report, considerable difficulty was experienced by Mr. Robinson, before he succeeded in obtaining from the Contractor masonry of a quality suited to the importance of the bridge; but these difficulties were overcome, and since the commencement of the year 1868 the work has been carried on satisfactorily, and in accordance with the terms of the revised specification which was then drawn up. When the work is completed there will be nearly 18,000 yards of masonry in the bridge, and I believe that

10
370
that every foot will challenge comparison with the best work of the kind in India.

11. District XX. This district has not as yet made much progress; up to the first of this month only one third of the masonry having been finished. This state of backwardness is not however altogether attributable to the Contractor, inasmuch as the commencement of the masonry was delayed owing to the fact that no Engineer was available for supervision; and it was on this plea that sanction was accorded to the alteration of the date fixed for the completion

* Vide G.O.
27 April 1869.
No. 1075.

completion of the work from 31st
December 1869 to 31st December 1870.

There is at present little or no masonry
being done; the only work now in active
progress being the collection of materials.
It is expected that a large body of
masonry will be set free from the
Sougabudra bridge in June, and the
work in district XX will then be
pushed on with vigour. The scarcity
of water along the greater part of this
district renders this course advisable
on all grounds.

The Mulamurri
station lies within this district; but,
beyond collecting materials, nothing has

yet

yet been done.

12. Raichore terminated. It will

be within the recollection of the Govern-

ment that the site fixed on for the

station at Raichore was about $1\frac{1}{4}$

miles to the north of the point where the

Madras and the Great Indian

Peninsula Railways join. The letter

from the Consulting Engineer to the

Madras Government dated the 13th

October 1869 will show that a plan was

prepared by the Great Indian Peninsula

Authorities; and that the work was

to be put in hand at once by that

agency. The plan was objected to

by the Madras Railway Authorities chiefly

on

* Vide G. O.
22nd April 1868.
No. 1227.

* Vide G. O.
9th November
1869. No. 2921.

on account of the rates, which were
much above those prevailing on our
lines. With a view to reduce the
cost of the station, an offer was
made that the work should be
undertaken by the Madras Railway
agency, and, as will be seen from
Colonel Trevor's report dated the
12th January 1870, this has been agreed to,
subject to the approval of this Govern-
ment. Colonel Trevor explains
that, owing to the terms of the agreement
with Mr. Braz, it is necessary to
select a site on the Madras Railway
line. A site, in every respect excellent,
has accordingly been chosen by the Acting
Chief

* Vide G.O.
23rd February
1870. No. 664

Chief Engineer of the Madras Railway.
It is about a mile south of the point
of junction; and, though slightly
further from the town of Baichore,
is better supplied with water and
has gradients ~~more~~ suitable for
station purposes. I concur with the
Railway Authorities in recommending
that the station be built on this site;
and if this meets with the approval
of the Government I trust that the
construction of the station will now
be pushed on rapidly.

13. District XI. Bellary Branch.
The portion of this district which
forms part of the Bellary Branch is

under

under

under four miles in length. The masonry is complete, and the line will be ready for the passage of an engine as soon as the Goondacul junction is reached.

14. District XII. The masonry on this district is also finished; and, as soon as girders can be brought up from the Goondacul junction, it will be ready for the passage of an engine from end to end.

The Veerapoor station is situated within this district, and I regret to say that we found the work progressing at a very unsatisfactory rate. It has been let on

contract.

13
1132
contract to Mr. Rofs, and the time specified in the agreement expired on the 31st December 1869. Up to the end of January only two-fifths of the masonry had been done. It was thought advisable to give Mr. Rofs notice under clauses 12 and 24 of his agreement, and I trust that this measure will have the desired effect.

15. District XIII. This district completed the Bellary Branch; and with the exceptions of the bridge over the Muggery river, and the terminal station at Bellary, the work is almost finished.

The Muggery bridge is

to

to consist of thirty-four openings, each
70 feet from centre to centre, spanned
by wrought iron girders, resting on
screw piles. The only masonry is
in the abutments, which are now in
progress, and in which some 1200
yards remained unfinished on the
1st instant. The abutment on the
East side has a good foundation in
clay; but on the West side it was
found necessary to sink wells, and,
owing to an error in the plan, these
were carried 5 feet too high. The
removal of this has caused some
delay; but there is plenty of
material on the ground, and the
work

452
work ought to be soon brought to
a close. The delay in opening up
to the Gouda junction has
thrown the work at this bridge
back, inasmuch as the girders and
piles must be brought up by engine.
The work at the
Bellary station has not been carried
on of late as rapidly as should
have been the case. On the 31st
January more than half the masonry
was unfinished, and as the time
named in the agreement expired
on the 31st August, the Contractor
has as much as he can do to complete
his task.

The

The inquiry into the question of water supply along the Bellary Branch has not been altogether satisfactory. The town of Bellary has of late years been notorious for scarcity of good water; and after careful investigation, the attempt to establish watering arrangements for engines has been abandoned. At Veerapoor also the attempt is considered hopeless. It has been therefore proposed to establish a permanent watering place at the Thugger river, 8 miles from Bellary; and another at a spot $4\frac{1}{2}$ miles east of Veerapoor station.

Engines

1170
Engines will be able to take at the Thugger a supply of water for the double journey, to Bellary and back; while an old well on the Fort glacis, close to the station enclosure, will give water which though brackish will answer for cleaning out engines.

16. It is with great pleasure that I am able to report in most favourable terms upon the quality of the work on the unopened line. I have already drawn special attention to the character of the masonry in the bridge over the Toongabudra; but throughout the

line

The inquiry into the question of water supply along the Bellary Branch has not been altogether satisfactory. The town of Bellary has of late years been notorious for scarcity of good water; and after careful investigation, the attempt to establish watering arrangements for engines has been abandoned. At Veerapoor also the attempt is considered hopeless. It has been therefore proposed to establish a permanent watering place at the Huggly river, 8 miles from Bellary; and another at a spot $4\frac{1}{2}$ miles east of Veerapoor station.

Engines

11/10
Engines will be able to take at the Huggly a supply of water for the double journey, to Bellary and back; while an old well on the Fort glacis close to the station enclosure, will give water which though brackish will answer for cleaning out engines.

16/10
It is with great pleasure that I am able to report in most favourable terms upon the quality of the work on the new line. I have already drawn special attention to the character of the masonry in the bridge over the Toongabudra; but throughout the line

line the work is of a very high
average standard, and the instances
in which I observed any short-
comings were few and far between.
The Government and the Madras
Railway Company may both be con-
gratulated on the results which
have been secured.

17. In the order
of Government dated the 23rd
instant, No. 604, I was directed
to report upon the present prospects
of opening the North-West Line of
the Madras Railway to Paichore.
In reply I beg to state that, unless
the progress of the work is delayed
by

by some unforeseen occurrence, I
have every reason to anticipate the
opening of the line to Hosjee during
September next, and to Paichore
by April or May 1871.

The Bellary Branch
ought also to be opened throughout

early in 1871.

I have the honour to be,
Sir,

Madras
25th February
1870

Your most obedient servant.
Mantle Major R. E.

Consulting Engineer for
Railways.

P. W. Dept.
H. of Govt. for P. W. Dept.
No 799

The Consulting Engineer
for Railways.

The Secretary to Govt.
P. W. Dept.

Dated 25th }
Recd 28th } Feb 07/70.

No 79.

Encls: 1

Reporting upon
the progress of the
works on the North
West line of the Madras
Railway.

No 876 & 877. 29 March 70.

No 467

C. 4. March 1870 A 224

P. W. Department.
No 876 512

Proceedings of the Madras Government.

Under date the 29 March 70.

Read the following

From The Consulting Engineer
for Railways
H. E. No 79 of 25 Feb 70

The Government are
gratified to learn from this
report that the works on
the extension of the North
West Line of the Madras
Railway towards Raichore
and on the Bellary Branch
are progressing satisfactorily.

N.
M. A.
J. D. S.

Under the circum-
stances brought to notice in
Para 12 of this despatch the
Governor in Council ap-
proves of the construction of
the Station at Raichore
being undertaken by

the

the Madras Railway Com-
pany on the site selected
by the Chief Engineer,
and His Excellency trusts
that no time will be lost
in submitting the requisite
plans and estimates.

Working to the
instructions of the Govt. of
India in their letter com-
municated in No. 10
dated the Chief
Engineer will impress upon
the attention of the Railway
authorities the necessity
of their taking special care
to prevent any expenditure
being incurred except upon
sanctioned estimates, and
as it is of importance

that

that the works on the un-
opened portion of the North
West Line should not be
delayed, the submission of
these estimates should be
expedited.

To The Chief Engineer Docket No 877 of 29 March 20.
for Railways
Recd 20/3/70

Copy of the above for-
warded to the Govt. of
India with reference to
their letter dated 5 Feb/70.
No 227 R.

Recd 20/3/70 with 34 spec
copies -



Cue 799
Govt. of 1870 Madras.

PUBLIC WORKS.

To The Consulting Engrs.
for Railways
and

To The Secretary to the
Govt. of India

Dated

Recd.

Recd. /

G. O. 29 March 1870, Nos 467 & 468

Nos. 467-468 & 469

Works (By) Papering orders on the letter
from the Consulting Engrs. respecting upon the
progress of the works on the Madras Ry.
the Madras Ry.

Works (By) A copy of the Govt. relation
to the progress of works on the Madras Ry.
of the Madras Ry. forwarded to the
Govt. of India.