

28-1-24 III ✓

Public Works (1898) Department.

Railway Branch

G.O., No. 1521. Ky

DATED 10th Decr 1898

Print

120
14

[Despatch Abstract.]

Damage caused to the Nilgiri Railway
by extensive land slips
Permitting the Madras Railway
Co. to encroach on Govt. land whether
waste or reserved as forest, whenever it
is necessary to do so for the purpose of
repairing the —

Government {1898} of Madras.
PUBLIC WORKS.

Spare copies

DECEMBER.

Permitting the Madras Railway Company to encroach on Government land, whether waste or reserved as forest, wherever it is necessary to do so for the purpose of repairing the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers :—

Note by the Consulting Engineer for Railways, dated 20th November 1898, on the slips which occurred on the Nilgiri Railway during the north-west monsoon of 1898.

The Nilgiri Railway having constantly been reported as damaged during the heavy north-east monsoon of the past few weeks, I walked over the whole of the slips on November 19th in company with Mr. H. J. Thompson, Resident Engineer of the Madras Railway, in whose charge the Nilgiri Railway lies. The slips, which are from 180 to 200 in number and from 5 cubic yards to 2,000 cubic yards in volume, are all contained within a length of some 9 miles beginning about $1\frac{1}{2}$ miles below Coonoor. The greatest number and the worst of them are between Adderley and Hillgrove.

2. In almost every instance the fall of rock and clay has been accompanied by a greater or less wreck of rails, rack bars and sleepers. It is possible that quite half a mile of rack, rails, and sleepers may have to be renewed.

3. In no case has there been any subsidence of road bed, the falls are all from the slopes and from the hillside above the line.

4. Some semi-indurated rock has fallen from the roof of the tunnel at chain 484, owing to percolation of water, and about 70 lineal feet of lining will be necessary at the upper end of this tunnel. The north end of the tunnel at chain 220 also requires some lining, a half arch in the roof will probably suffice.

5. The troublesome place referred to in several previous reports as the great Glenmore slip, chain 100, is on the whole behaving very well, but a good deal of the earth slope above the retaining wall has come down, and will require proper sloping back and pitching. My recommendation to acquire a further strip of land at the back of it and to cut the trees and coffee bushes has not been attended to.

6. The great Burliar boulder slip, chain 410, has been doing fairly well. But it seems now to be quite essential that the retaining wall should be raised some 8 or 10 feet more or as high as its section will allow of, and that the earth slope above it should be well pitched, up to the great boulders, and the joints well pointed to keep water out. If ever one of these three great boulders falls, it will block traffic for a month. The retaining wall here wants lengthening 50 feet at the upper end.

7. At the great land-slide at chain 264, the new diversion has had a bad slip of rock and clay, half filling it, and a pipe culvert at its north end has been wrecked. I think that the diversion here will be permanent enough when its slopes have been attended to. The old original cutting is almost quite filled up by rock and earthfalls.

8. The 30 feet girder bridge at chain 400 has been utterly wrecked by 150 tons of a boulder falling on it from 1,000 feet up the mountain. The ravine down which this boulder rolled has got any number of other boulders lying in it. It will have to be attended to in much detail for a long way up.

9. The worst slip of all, perhaps 2,000 cubic yards, is in the cutting at chain 271. It consists of disintegrated gneiss which has weathered to sand and kaolin, mixed with great loose rocks.

10. The majority of the slips have occurred in cracked and loosened rock with clay in its cleavage planes. When the clay is wetted the rock slides. Many of the slips, indeed parts of most of them, consist of disintegrated gneiss which when dry looks like rock, but which falls to pieces when soaked with water. This very often fills great pockets in the rock and falls out when wetted. Often hundreds of tons of hidden rock and boulders fall out through the clay slope which concealed them, on the latter becoming rain-soaked. In most of the cuttings the overlying layer of softer stuff on the top wants sloping back. There is scarcely a cutting, except those in hard rock, which will not need careful treatment in the light of the information afforded by the effects of the north-east monsoon of 1898.

11. It is most difficult to make an estimate of what it will cost to make the line fit for traffic. Arriving at it in various rough ways, I produce figures varying around a lakh of rupees, and I do not think that there can be much hope of opening for less than this figure or perhaps a lakh and a quarter. I understand that even before the effect of the monsoon was known, Mr. Weightman warned his Board that half a lakh would be needed to finish things off properly.

12. I do not think that the railway will be ready for opening much before March next. On the day of my inspection, I saw practically no labour though it was a fine working day. The labour problem will have to be tackled on rather a large scale if there is to be any chance of opening before March next.

From—The Agent and Manager, Madras Railway.

To—The Consulting Engineer for Railways.

Dated—Madras, 7th December 1898, No. 10971/B-1172.

With reference to the enclosed copy of a letter from the Company's Chief Engineer No. C./274, dated the 5th instant, I have the honour to request that you will kindly give the permission asked for in paragraph 7 of the Chief Engineer's letter as early as possible.

The estimate will be forwarded as soon as it is ready for submission.

ENCLOSURE.

From—The Chief Engineer, Madras Railway Company.

To—The Agent and Manager, Madras Railway.

Dated—Madras, 5th December 1898, No. 274 C.

Nilgiri Mountain Railway.

I left Madras by mail on the 28th November and spent Tuesday 29th, Wednesday 30th, Thursday 1st and Friday December 2nd walking over the Nilgiri Mountain Railway between Coonoor and Kullar accompanied by Mr. Thompson and Mr. Alexander. A minute inspection was made by me of the earthworks especially the cuttings, with a view to determine the works necessary to secure their safety. The weather during our inspection was wet, so that I was able to see the earthwork in its worst condition.

2. Speaking generally, the sides of these are much too steep, and notes of over 100 places were made which require cutting back to such slopes as experience shows necessary for stability, about 1 to 1, to $1\frac{1}{4}$ to 1: large trees and bamboos are growing close up to the top edge of the

cuttings, these when shaken by wind tend to loosen and bring down the top earth thus causing slips. The cuttings at 92 chains and 360 chains are the worst and are, I consider, at present very unsafe; water also comes over the faces of cuttings in several places, thus making them soft and more liable to slip.

3. The following works should, in my opinion, be at once carried out:—

(a) A strip of land 20 feet wide from the top edges of all cuttings should be cleared of trees and large bamboos, as these loosen the earth and cause slips, and many trees are now in dangerous proximity to the Railway, and would if they fell come on to the rails and obstruct the line. In valuable land it may suffice to clear a width of from 10 to 15 feet.

(b) Surface drainage and springs which now tend to get behind retaining walls, and flow over the face of cuttings causing slips should, wherever possible, be intercepted and discharged by pipes. This is specially required at 92 and 100 chains.

(c) The layer of earth on top of cuttings requires to be well sloped back, say, to about 1 to 1 or $1\frac{1}{4}$ to 1, and all loose and decayed soil on the face of slopes now slipping, or liable to slip, should be stripped down to the rock behind, or to such slope short of this as will stand.

(d) A length of 213 feet at 409 chains where there is now a wall on the upper side 163 feet long will need to be converted into covered way, by building a strong wall with counter-parts outside and arching over, after which this will need being covered by a deep cushion of earth and sloped well down, and the boulders above must then be secured as far as possible by underpinning, &c.

(e) The 28 feet girder bridge at 400 chains lately destroyed by a boulder avalanche will have to be rebuilt, after all loose boulders in the stream above have been thrown down below the bridge site.

(f) The culvert at 265 chains to be rebuilt.

(g) A soft pocket in the roof of No. 2 tunnel will need to be secured by masonry lining.

(h) Damaged rails and rack bars to be replaced where necessary.

4. The sloping back necessary for cuttings and the natural slopes formed by recent slips extended probably in many cases considerably beyond the land originally acquired, so that the extra land needed will have to be applied for and taken up as soon as possible.

5. The boundaries of the Nilgiri Railway Company's lands have not been demarcated nor has (I was told) compensation been yet paid for them.

6. It will therefore be necessary to demarcate the Nilgiri Railway Company's lands, and then prepare land plans and apply to Government for such extra land as may be required. This will all take a considerable time to do, and in the ordinary course it would be several months before these extra lands would be in our possession.

7. Meantime, in order not to delay the execution of the requisite earthworks, will you kindly ask Government to issue the necessary orders to permit us to cut down all trees and bamboos through Government lands and forests for a width of 20 feet back from tops of finished cuttings, and also permit us to enter on such lands for the purposes of extending earthwork slopes where these fall without lands already acquired.

8. Where the new slopes fall on private land the owners will be asked to allow us to enter thereon pending the formal acquirement and transfer of this, and if they refuse this, work will of course be delayed till such land can be acquired and handed over, which will occupy months.

9. The necessary flattening of the cutting slopes will, while the work is in progress, render these impassable, and it is hoped that when the proposed work is completed they will be fairly safe, but there will always be the liability to the line being blocked by slips during the monsoon, so that for a couple of years at all events, passenger traffic cannot, I think, be conducted in safety during the monsoon, say, from 15th September to 15th December, and Mr. Thompson, the District Engineer, concurs with me in this opinion.

10. The District Engineer will have an approximate estimate of the quantities and cost of the works our inspection showed to be necessary as previously described, made as soon as possible, and these will be carried out as quickly as circumstances permit, on receipt of your authority for the outlay.

11. From the foregoing you will see that progress depends on some circumstances over which this department has no control, viz.—

(1) Permission to enter on and carry slopes into and cut trees upon land outside Nilgiri Railway premises.

(2) Sanction for the necessary expenditure.

12. My inspection has shown that there is an immense quantity of work to do; labour is also difficult to get, so that it is at present impossible to say when the Nilgiri Mountain Railway will be ready to re-open for even goods traffic as so much depends on obtaining the requisite land and funds without delay.

ORDER—No. 1521 Ry., dated 10th December 1898.

Inasmuch as it has come to the notice of Government that, owing to extensive land-slips, the Madras Railway Company, who are completing the construction of the Nilgiri Railway Company's railway from Metupallium to Connoor, will probably in many places be obliged to carry on work outside the boundaries of the land already formally handed over to the Nilgiri Railway Company; permission is hereby given to the Madras Railway Company to work beyond the boundaries of the land now in the possession of the Nilgiri Railway Company, wherever it is necessary to do so for the purpose of improving the slopes, depositing debris, or removing tress boulders, &c. Provided that it is clearly understood that the permission hereby accorded relates solely to Government land, whether waste or reserved as forest. Revised land plans showing the additional Government land thus required should be submitted to Government as soon as practicable.

Revised plans should also be submitted of any land, the property of private parties, which it is deemed necessary to acquire for the purpose of completing the work of construction of the Nilgiri Railway.

If any valuable timber is cut in reserved forests encroached on, under the authority of this order, the Madras Railway Company should give notice to the Forest Department, who will take such steps in regard to it as may be necessary.

(True Extract.)

FRANCIS J. E. SPRING,
Joint Secretary.

To the Consulting Engineer for Railways.

" Revenue Department.

" Board of Revenue.

" Agent and Manager, Madras Railway.

Editors' Table.

2 Standing

SLIPS ON THE NILGIRI RAILWAY.

Report by the Senior Government Inspector of Railways, Madras.

The Nilgiri Railway having constantly been reported as damaged during the heavy north-east monsoon of the past few weeks, I walked over the whole of the slips on November 19th in company with Mr. H. J. Thompson, Resident Engineer of the Madras Railway, in whose charge the Nilgiri Railway lies. The slips, which are from 180 to 200 in number and from 5 cubic yards to 2000 cubic yards in volume, are all contained within a length of some 9 miles beginning about $1\frac{1}{2}$ miles below Coonoor. The greatest number and the worst of them are between Adderley and Hillgrove.

2. In almost every instance the fall of rock and clay has been accompanied by a greater or less wreck of rails, rack bars and sleepers. It is possible that quite half a mile of rack, rails, and sleepers may have to be renewed.

3. In no case has there been any subsidence of road bed, the falls are all from the slopes and from the hillside above the line.

4. Some semi-indurated rock has fallen from the roof of the tunnel at chain 484, owing to percolation of water, and about 70 lineal feet of lining will be necessary at the upper end of this tunnel. The north end of the tunnel at chain 220 also requires some lining, a half arch in the roof will probably suffice.

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6. The great Burliar boulder slip, chain 410, has been doing fairly well. But it seems now to be quite essential that the retaining wall should be raised some 8 or 10 feet more or as high as its section will allow of, and that the earth slope above it should be well pitched, up to the great boulders, and the joints well pointed to keep water out. If ever one of these three great boulders falls, it will block traffic for a month. The retaining wall here wants lengthening 50 feet at the upper end.

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8. The 30-ft. girder bridge at chain 400 has been utterly wrecked by 150 tons of a boulder falling on it from 1000 feet up the mountain. The ravine down which this boulder rolled has got any number of other boulders lying in it. It will have to be attended to in much detail for a long way up.

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CALICUT,
20th November 1898.

FRANCIS J. E. SPRING,
Senior Govt. Inspector of Railways, Madras.

Madras Railway Company,
Chief Engineer's Office,
Madras. 5th December 1898.

The Agent and Manager.

Dear Sir,

Nilgiri Mountain Railway.

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MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated

188

Recd.

No.

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there

MADRAS RAILWAY

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated

188

Recd.

No.

789
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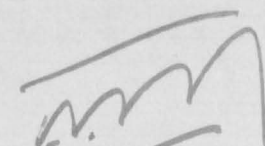
12. My inspection has shown that there is an immense quantity of work to do; labour is also difficult to get, so that it is at present impossible to say when the Nilgiri Mountain Railway will be ready to re-open for even goods traffic, as so much depends on obtaining the requisite land and funds without delay.

Yours faithfully

150f E. W. Stoney

Chief Engineer.

(True Copy)


Agent & Manager

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer
for Railways.

Dated

188

Recd.

No.

ENC. No. 1 TO E. R's. C. No. 5775 OF 1898
 LETTER No. 10971 D 7/12/98
 FROM B. 1172

To
 The Agent and Manager.
 Madras Railway.
 From
 The Consulting Engineer
 for Railways.
 No. 188
 Dated
 Recd.



(No. 1.)
 No. 10971

5,000-14-11-85.

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

MADRAS, 7th December 1898

From

2. Print

The Agent and Manager.

M. R. Co.

To

The Consulting Engineer for Railways.

SIR,

Madras

With reference to the enclosed copy of a letter from the Company's Chief Engineer No. 6/274 dated the 15th instants - I have the honour to request that you will kindly give the permission asked for in para 7 of the Chief Engineer's letter, as early as possible.

The estimate will be forwarded as soon as it is ready for submission.

I have the honour to be,
 Sir,

Yours most obedient servant

Edmund

Agent and Manager.

Per. one. A.

U.O.

Public Works Department,
Railway Branch.

OFFICE NOTE No. _____

1521 R

Dated _____ 189 .

From

THE JOINT SECRETARY TO GOVERNMENT, P. W. D. (RAILWAY BRANCH),

To

THE Secretary Revenue Dept.

I put up for perusal a copy of my report on the recent slips on the Nilgiri R. It will be necessary in many places to flatten the slopes, and yet it is scarcely possible, until men get to work, to say precisely where, or how much the slopes must be flattened.

The land that has been made over to the Nilgiri R. Co. has never been demarcated. I take it that reliance has been placed on the land plan as a permanent record. The effect of the absence of boundary marks is that the Nilgiri R. Co. requires to whom duty it falls now to repair the slips, cannot say straight away what land they have possession of and what not.

To trace out exactly what land they have, by setting out the land widths on the ground, would in the rough & country be a labour of weeks, or months, and when done it would not be worth its cost except when the line goes through

joint property. My own belief is that there is nearly everywhere enough land in the Company's possession. But, as explained, this cannot now be verified without an insupportable amount of time and trouble.

As regards tea and coffee plantations and other joint property, the Madras R.G. must obviously go to the trouble of ascertaining from the maps what their boundaries are, within the areas of joint property. Having done this they must apply in regular form for ~~the~~ such extra land, through such property, as they may require for the use of the Nilgiri R.G.

But as regards Government waste land through which to the best of my belief the greater length of the railway passes, I think that Government might allow them to encroach on such waste land without any further formality than the issue of an order to the effect that they have leave to do so.

I put up the draft of such an order for issue in the Pres. Dept.

The matter is one of extreme urgency if the Nilgiri Railway is to be open before the movement of Botumamund troops onwards in March next.

F.R.S.
7/12/98

NOTE FOR THE UNDER SECRETARY.

There are no papers in the office ~~but~~ giving a detailed description of the lands through which the Nilgiri Railway passes. Land plans and schedules furnishing the necessary information will be in the Collector's office - The permission proposed to be accorded relates, it is submitted, solely to Govt waste lands and the Railway Co. should submit revised land plans showing Govt waste lands thus encroached upon.

- 48244 4.30.8.97 (Rev.)
- " 3730 4.20.7.97 (")
- " 3455 4.9.94 (")
- " 2875 4.7.94 (")
- " 2077 3.28.5.94 (")
- " 989 3.17.11.93 (")
- " 5668 3.23.12.92 (")
- " 4224 3.27.9.92 (")
- " 3868 3.29.8.92 (")
- " 5874 3.14.11.91 (")
- " 3159 3.27.5.91 (")
- " 3099 3.23.5.91 (")
- " 5503 3.5.9.90 (")

The above papers were returned to the Rev. Secy on the 13/12/98.

C.R.
8/12/98. Secy

There are apparently no papers in this office to show whether there is any objection to the Regulation of more Govt land in any particular spot. Prima facie, there is, as the Secy has noted no objection to the order. Govt "waste land" & Govt "Reserved forest" are

two different things
and the ~~It~~ Secy
clearly means to include
both; submitted that
the words "reserved
forest" ~~shall~~
enter in the draft
as indicated in
pencil

~~as~~
~~draft~~
H.M.
The D.M. draft may
be accepted in principle
R. S. 1/8

To P.M.D. Ry
Please see
this alteration
made in the draft
below

~~as~~
~~draft~~
To P.M.D. Ry
Ry

Form No. 1.

PUBLIC WORKS DEPARTMENT,

RAILWAY BRANCH.

Papers to be read in Proceedings:—

Again G.O., dated

189 , No.

Again G.O., dated

189 , No

Current No.

of 189 , dated

, from

" "

" 189 , "

" "

" "

" 189 , "

" "

Read, Note of the Com. Ry. for Ry. Madras dated 20th Nov. 98
on the ships which occurred on the Nilgiri R. during the N.W. Monsoon of 1898.

Read letter from Agent M.R. No. 10941, dated the 7th Dec. 98.
ORDER.

No. 1521 Ry of 10-12-98.

owing to extensive
land-slips

Inasmuch as it has come to the notice

of Government that the Madras R. Co., who are
completing the construction of the Nilgiri R. Co.
railway from Mettupalayam to Coonoor, will
probably in many places be obliged to ~~work~~^{carry on work}
outside the boundaries of the land already
formally handed over to the Nilgiri R. Co.; permission
is hereby given to the Madras R. Co. to
work, where it is necessary for the purpose of
improving the slopes, depositing debris, or
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of the land now in the possession of the Nilgiri R. Co.

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as forest?

It is provided that it is clearly understood
that the permission hereby accorded relates solely
to Government waste land. Revised land plans
showing the additional ^{required} land then ~~enclosed~~^{enclosed} should
be submitted to Government in form as prescribed.

Revised ~~land~~ plans should also be submitted
of any land, the property of private parties, and

deemed acquire
which it is necessary to ~~acquire~~ for the purpose
of completing the work of construction of
the Nilgiri R.

If any valuable timber is cut in reserved forest areas
on, under the authority of this order.

The Madras R. Co. should give notice

to the Forest Dept. who will take

such steps as regard to it as may

be necessary.

(as would this might
be taken to permit
encroachment on private
land prior to its
acquisition -
Hence my alteration)

I suppose no valuable
timber will be cut?
I don't know if there is
any - If there is the
Forest Dept. shd. have
notice to take charge of
it -

I have added
to the order
J.M.

To the Com. Engr. for B.R.

By the Secy. to Govt.

By the Secy. to Board of Revenue

By the Secy. to M.R.

By the Secy. to Public Works

will be sent to the Secy. to Govt. & Board
for the purpose of the order

Issue

10/12/98

Despatched on 19/12/98

13