

- (1) பக்கங்களின் எண்ணிக்கை 20
 (2) புதுக்கித் திருப்பிய நாள் 3/89
 (3) ஆதாரங்குறிப்பவர் கருக்கொப்பம் 6/89

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

P.W

துறை

அரசாணை எண். 581 W அச்சகம்
 மு. கோப்புத் தாள் எண். பலவகை

நாள் : 24.2.1890 198

மடிக்கலோ கண்டயடி கையாளலோ கூடாது

1001

No 105

To

The Consulting Engineer for Railways
Madras

From

Mr. H. G. Clift Executive Engineer
Chilka Lake Division
East Coast Railway Coy.
Pambela

Dated 29th January 1890.

Your No 44 dated January 9th
respecting Bellary Aramal.

Sir,

I have the honor to acknowledge the receipt of the above calling upon me for an explanation as to the omission to lay down the gravel protection etc.

2. With all deference to the Acting Chief Engineer, I must take exception to the Charge of omission, or what is implied neglect. There was no omission properly so called.

3. For the gravelled layer around the outside of a building intended to throw off the rain, falling from the roof, is never in my experience laid until a building is finished or until at all events the roof is on. It could not indeed

NO 44
5.2.90

well be otherwise. The erection of scaffolding, the piling of materials, and the traffic of work people, would speedily destroy any such gravel layer, if laid before the completion of a work.

4. The Acting Chief Engineer also gives as his opinion "that the foundation trench had not been filled in carefully round the work when it was completed" also that "the gravelled platform should have been laid as soon as the trench had been filled in."

5. With these however I had nothing to do for when I took charge the work was up to basement level, or 3 ft above ground generally. Mr. Garret thought this gravelled platform so essential to the safety of the foundation as he designed them he would it is presumed have laid it as soon as the foundations had been filled in.

6. I should however state here that when I saw the work last, immediately after the cracks had appeared the ground was certainly not soft or wet, outside the building. On the north side there was a natural growth of turf

5/11
no work having been done there a couple of months, on the south side it had been tramped hard by the daily coolie traffic. In some places (the earth filling not being absolutely level throughout) no gravelling outside would have prevented that.

7. But I must also take exception to the opinion that the gravelled flat form even if made much wider and thicker than it was to have been (10 ft x 6") would have protected the foundations. Had this at any time occurred to me I would certainly have laid it.

Underneath the concrete and especially if the foundations had been carried to a depth of 10 feet, a wide deep layer of gravel would probably have saved the building, but its effect on the surface of the ground is, to say the least doubtful.

8. I give a presumed section of the ground, but which although only presumed, I do not think can be far from the truth, to illustrate this.

Not merely would there be a percolation through the weak soil but there would

also be a creep of water along C.D.E. the drainage from the high ground beyond, the water entering at the junction of the mass soil with maiden earth, probably rock or gravel and comparatively impervious.

The pressure of this water caused the partial failure of the rampart and the consequent cracking of the mass earth as remarked by Mr. Russell. And this assumption will be borne out if the ground in the pit excavation was found damper as the excavation was carried downwards. How could a gravel platform have prevented or even modified this?

9. As I have taken a great interest in the work, and am greatly chagrined at its failure (for which at the same time I maintain that I am not in any degree responsible) I hope to be pardoned for expressing a further opinion as to what now should be done.

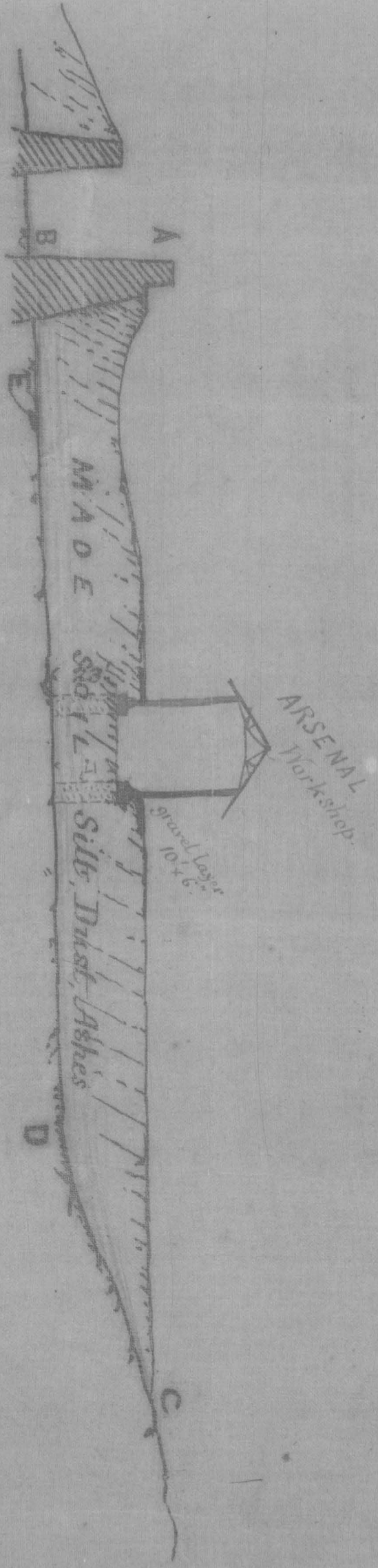
10. I am convinced that all bracing together with tie rods however they may temporarily assist, will only be unsatisfactory, the building will never be really secure. The walls should be

45/17
be carried down to the hard, underpinned in fact, but not necessarily the whole length. I would suggest concrete pillars 6' x 6' x 18' and 10 ft apart centre to centre, the concrete to be made with very fresh lime. Such concrete should be carried out departmentally at 15R per 100 ft. Allowing the length of exterior walls to be 400 ft - this would be $400 \times 6 \times 6 \times 18 = 25920$ ^{cu ft} or Rs 3367 for concrete. The excavation for each pillar, might be estimated at Rs 30 so that approximately a sum of Rs 5000 should ^{then} underpin all the exterior walls, which would be practically supported on concrete piles. That completed, the earth from the interior might be removed and as suggested by the Superintending Engineer, an underground store room might very easily be contrived. Considering how convenient the site is and the time it will take to construct another workshop, I do hope that an attempt will be made to utilize the present building.

I have the honor to be
Sir
Your most Obedient Servant
H. W. Clift
Executive Engineer

185/5

BELLARY ARSENAL, Presumed Section of Ground



A.B. Rampart, Dry Stone, pointed

REGISTER	
No.	88
FILE	
No.	

8m 1

P.W. line 2

1219/5

1407/9

W. L. G. L. G.

Exc. 23.1

Form No. 1

PUBLIC WORKS DEPARTMENT.

OFFICE OF CONSULTING ENGINEER FOR RAILWAYS,

Madras, 10th February 1890.

Letter from H. W. Skiff Esq.
No. 105 Dated 29th January 1890, with
enclosure.

No. 93

SUBMITTED

10

Government.

with reference to G. O.
No. 7 R. Dated 7th January
1890.

A. D. G. Chetty Esq. Secy.
for Prop. Engr. for Rys

No. 3442 W 4/4 - 12-89

" 1081 W - 10-4-88

" 1137 C - 16-3-88

" 3496 W - 20-12-87

" 190 W - 17-1-88

" 3491 W - 20-12-87

" 2879 W - 25-10-87

" 2527 W - 17-8-88

" 1199 W - 23-4-88

" 2497 W - 25-9-86

Form No. 3.

No 753.C d/11 Feb. 1900

his ch
9 Feb 1900

Transferred to the

Secretary to Government Public

Works Department, with re-

ference to para 1 of G.O. 143442 D.

Dated 4th December 1889.

C. Smith Colonal. R.E.
J. Secy: to Govt. P.W.D.
By: Branch.



From

THE CONSULTING ENGINEER

FOR RAILWAYS,

MADRAS,

No. 93

Dated

Received

6th February 1890.

No. of ENCLOSURES.

Subject.

W. shifts explanation as to the omission to lay down the gravel protection provided for in the estimate for the Arsenal workshops at Bellary.

No 581 W of 24 Feb 1890

1407
12-2-90

E/C

Bellary Arsenal Workshops

No 581 W

For

For orders, with reference to H.B. the Commr in Chief's note, whether the estimate shall be called for in view to the verification of provision in the estimate for plinth protection.

Apparently both the Hon. Mr. Stoller, & H.B. the Governor think that no advantage would be gained by going into the merits of the plan & estimate, & perhaps an order might be drafted expressing the regret of the Govt. at the failure of the lunch, & appointing a Committee to decide on the points mentioned at the end of your note. If approved, the Committee might be composed of the Super-

English, the Ex. Sec. Ballan
division. & an officer of
the Ordnance Dept. also
nominated by the Militia
Dept.

As the building
might be found open
for other military purposes
than that of the Ordnance
Dept. (eg. Comm. Dept.)
it is a question whether
so that the Officer Commanding
the Army Ballan should not
be responsible to the President of the
Committee - The draft
order would of course
be sent to the Militia
Dept for countersignature
with initials.

Cu
22.11.89

To W

Lb/a

The Hon. Mr. Stokes
suggests that you should
record a note of your
views, & then record
the papers.

The reconstruction
of the building is
being dealt with
separately.

If the note for
orders be considered
a sufficient expression
of your views, the
present paper might
simply be recorded.

Cu
22.2.90

P.W.S. 18/10

Read again the folly:—

Q.O. dated 4.12.89 No 3442 W.

Read also:—

Note by the C.E. for Railway No 93 of 6.2.90

Endt by the St. Secy to Gen. Secy No 953 of 11.2.90

For orders

Doctors differ.
To my unprofessional mind
Mr. Clift's views 3-7 seem
very forcible, on the point.
The Chief Engineer has written
in a note of his views & the
papers may then be decided.
There is nothing further to be done.

Circ. W.C.O.
18 Feb.

H.S. 10/12

On my opinion the building
is in a safe position & the
foundation is not to be
excavated down to the bed

This may be so
but it is a point for
the Chief Engineer
to decide about

I still consider
that if the drainage
had been carried away
from the line of
foundations and not
towards it as the natural
lie of the ground would
cause it to flow, the
subsoil at the founda-
tions would not

have been patented to
such an extent as
to have caused the
failure. Mr. Clift
was apparently not
responsible as Mr.
Garrett's omission to
lay down the platform
or facilitate means
of drainage away from
the work was accepted
by Mr. Clift as a
sign that they were
not absolutely essential.
Mr. Clift's view of the
subject was all
along that the
foundations had not

56/2
been carried out
deep enough. Any
attempt at underpinning
would I consider still
further shake the
structure.

Ruedo
12.2.50 W

am

For orders

Use Am. Ins. of H. for the

Dis. Ins. the person

No. 581 W. of 24. Subst
1890

Recorded

Recorded

Quadr

14.280

1902 25/2
Circ. 13-2-90
H. m. 12-2-90. *21/ii*

26/2