

- (1) பக்கங்களின் எண்ணிக்கை 34
 (2) புதுக்கித் திருப்பிய நாள் 2190
 (3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம் 1000

தமிழ்நாடு ஆவணக் காப்பகம்.

(4)

தமிழ்நாடு அரசு

P. M. D. துறை

அரசாணை எண். 2582 ம அச்சகம்
 மு. கோப்புத் தாள் எண். 1000 பலவகை

நாள் : 19 — 9 — 1889 198 .

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

17 Sheets

ஆவண. கா-1—18,006—15-6-87.

Sheet no 3 Map
 Sheet no 4 to 6 Statues
 Sheet no 13 Statues

10

2582

Public Works Department.

Current No. 7680
Letter No. 5450
Dated 16th August 1889
From the Military Depto:
See within Wm
21.8.89

NOTE OF REMARKS.

The Estimate under
review amounting
to Rs. 1064 provided
for remodeling the
lightning conductor
of No. 1 Magazine
attached to the
Arsenal at Tollymore

It is explained
in this report that
the existing lightning
is unsuitable it is
therefore proposed
to replace it by
a new one on the
principle laid down
in G.O. No. 845 N. 7/14th
March 1888.

The rates cannot
be checked in this
Office.

The plan & estimate
have been considered
by the Dy. Secy. to the
Public Works Department

21.8.89

20/8/89

The S.T. should have
the earth connections
examined, and then
test the whole system;
probably a small
sum spent in repairs
would make the
existing conductors
quite efficient

Wm
21.5.59

P. W. DEPARTMENT.

Current No. 7680

From The Military Dept.

ENCLOS.— 6

No. 5450

Dated 14th Aug. 1889

Received 17 - do - 1

Approving & transferring
letter from the Insp^r Genl
of Ordnance submitting
for disposal an estimate
amounting to Rs 1064 for
remodelling the Sighting
Conductors of No 1 Magazine
attached to the Bellary
Arsenal.

Referred to the Supply
Engineer III circle for
further consideration
and report.

2. It does not seem necessary to incur the expense of providing an ad lib er um arrangement

of lightning Conductors
for this magazine the
supdy. Engr. should have
the earth connections
examined, and the
whole system there
tested. It is probable
that a small sum
spent in repairs would
make the existing
Conductors quite
efficient.*

(sd) R. R. E. Drake Brockman
SA. Col. R. E.

Ag. Chief Engr. Bldg & Rds Div.

Dec'd
26/8/89

2582

2582

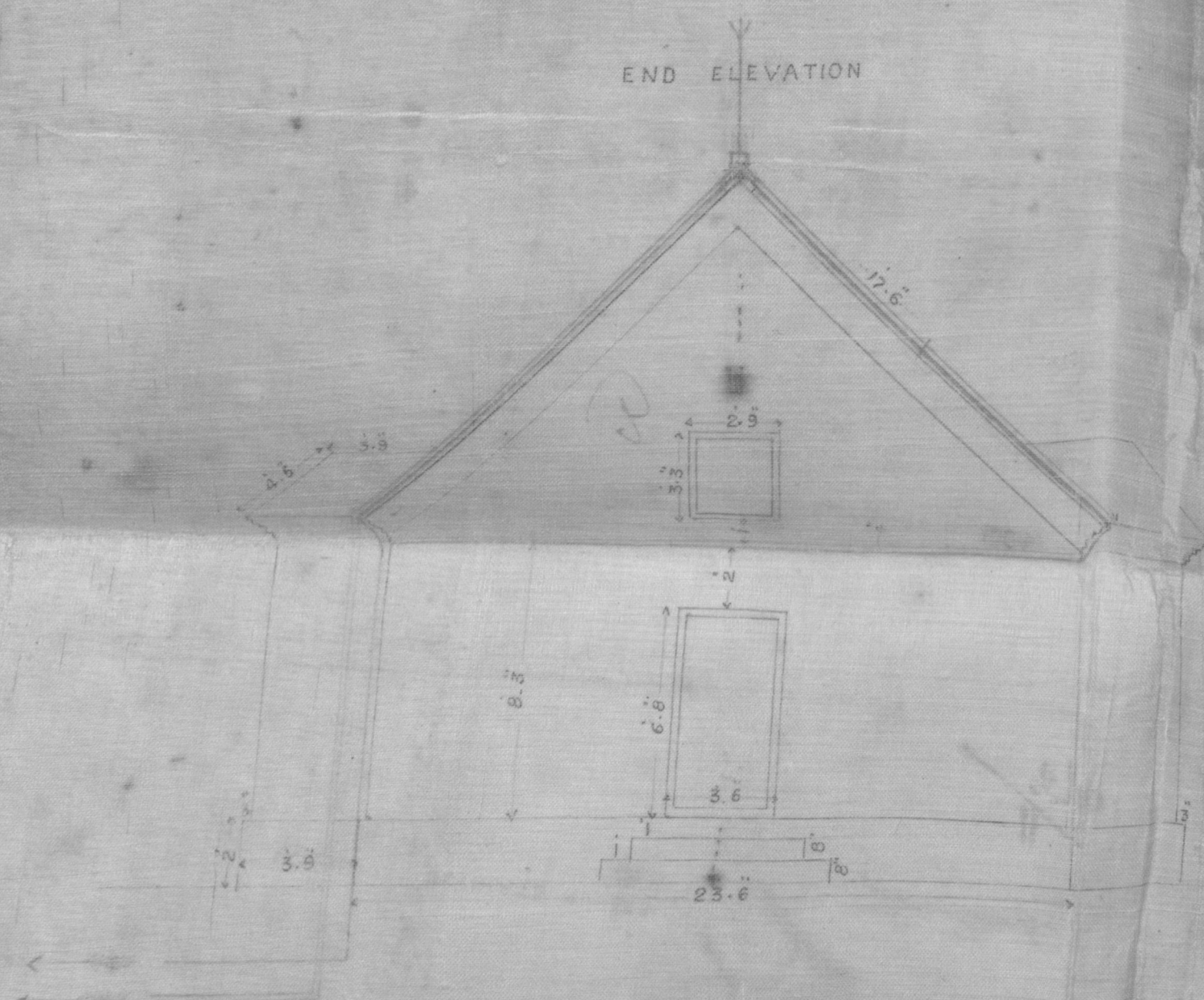
Nº 1
MAGAZINE

SCALE 5 TO AN INCH

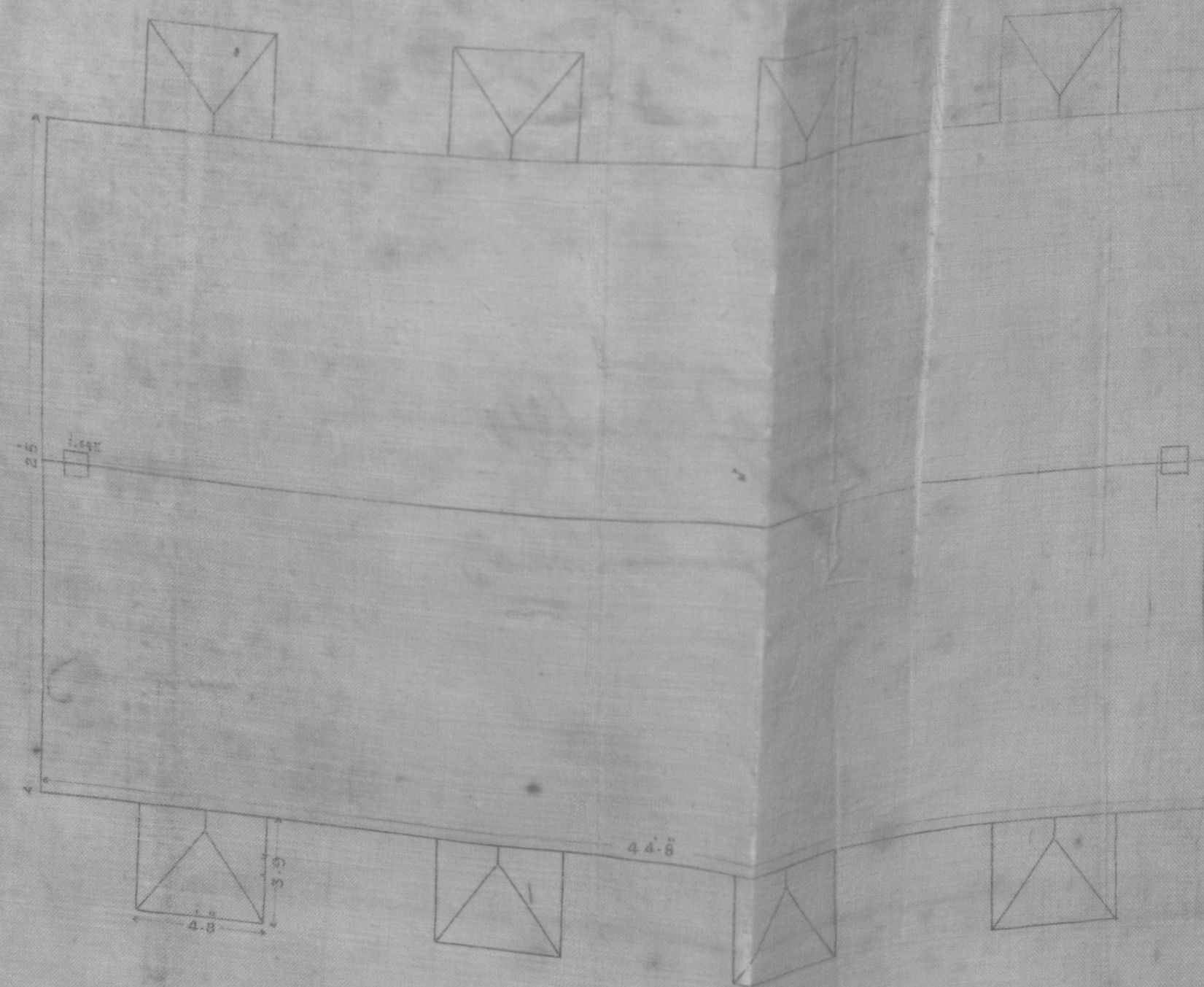
AMOUNT OF ESTIMATE RUPEES

AMOUNT OF ESTIMATE RS

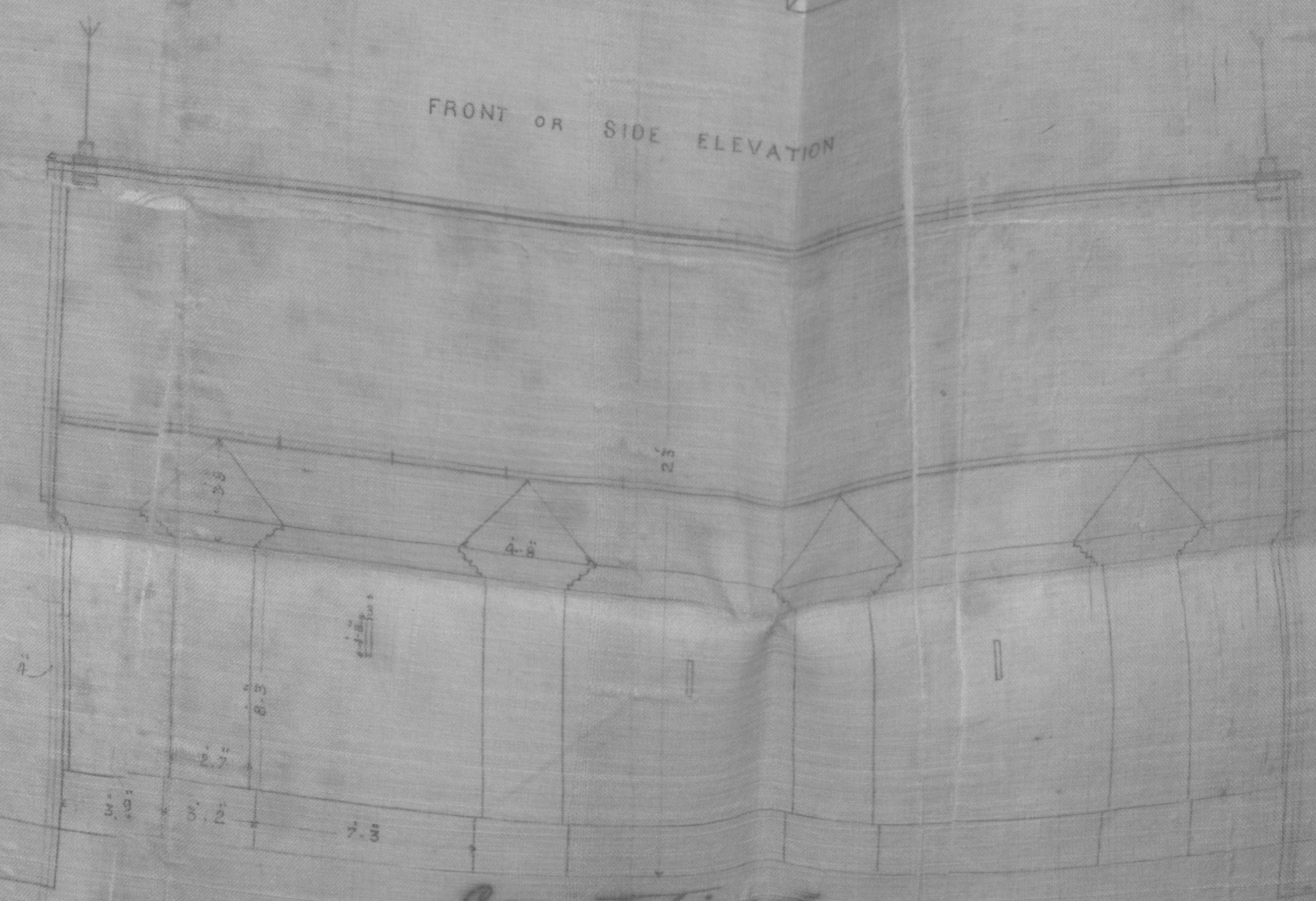
END ELEVATION



PLAN OF ROOF



FRONT OR SIDE ELEVATION



*Counting
H. S. S. S. S. S.
Off. Cash. for
for the office*

*H. S. S. S. S. S.
Superintending Engineer
III Circle
15-11-1944*

*Superintending Engineer's Office
Bellary April 1989*

Section and Tests of Lightning Rods made by the undersigned on the 6th July 1888.

Locality and name of building	When last tested	Description of condition, material, height, shape, position, or any other and number of upper to lower conductors and the nature of earth connection.	Electrical Resistance from top of rod to ground, in ohms.	Remarks including suggestions for improvement if necessary.
1 Battery Ford Magazine No. 1		The shape of the roof is that of an ordinary gabled end building, there are two terminal rods at the point of each gable. Copper tape runs along the ridge also along each eave a little way up the roof, the ends of these tapes are connected at the gables by two other tapes, run	<p>9 1/2</p> <p>14 1/2</p> <p>2 1/2</p>	<p>all was under 1000 ohms</p> <p>less than 1000 ohms</p> <p>N.E. corner = good</p> <p>N.E. — d₂ — fair</p> <p>S.E. d₂ good</p> <p>This magazine is used for small arms ammunition and</p>
Description		ing from one to point of gable, under the pole and down to the other corner. At the four corners of the building a copper tape descends into the ground (1 deficient see below) where they are connected and run into 2 pits outside the front of the magazine. One of the four tapes passing from the corner to ground viz that at the N.E. corner is deficient and there are no signs of it at all.		<p>perhaps requires no conductor.</p> <p>(G. O. K. 845 H dated 14 March 1888 rule III)</p> <p>should it be decided to retain the conductor the deficient tape should be replaced and petty repairs to loose pieces of tape be carried out.</p>

2552

Handwritten text, possibly a signature or name, oriented vertically.

Handwritten text, possibly a date or number.

Handwritten text, possibly a date or number.

Handwritten text, possibly a date or number.

Handwritten text, possibly a signature or name, oriented vertically.

Handwritten text, possibly a date or number.

Report to accompany estimate
for remodelling Lightning Rods of
Magazine No 1 Bellary Fort.

7562
Text report accompanies.

Although No 1 Magazine is
only used for small-arm ammu-
-nition made up in cartridges, it
is considered it should be provided
with a lightning rod. The present
rod is according to latest principle
but there are many joints in the
upper tape and they are not well
soldered and might fail at the
critical moment and they cannot
easily be repaired. The earth con-
-nections are doubtful. It is there-
-fore considered desirable to replace
the present lightning rod with an
entirely new one of continuous copper
tape and with earth coils bedded in
a mass of old iron. the old copper
will doubtless fetch a good price.

The new lightning rod will con-
-sist of 2 upper terminals 4 high one
over each gable, form according to

2/9/40 2/15/40 10/29/40 10/57/40 10/167/40

specification, and connected with continuous copper tape which will also pass down the hips and round the eaves and down the opposite angles of the magazine to the ground where it will be led off in trenches one 120 long towards the West end the other 60 long towards the South. At these points pits will be sunk and the tapes will be brought into the end coiled round wooden frames. As the ground is very dry and rocky a mass of old iron will be buried at the foot of the earth coils and coke will be bedded around them as also round the copper tape in the trenches. Copper hold-fasts 4" apart will be fixed along the ridge, hips and eaves of the roof of the magazine and on the walls to keep the lightning rod in place.

A. M. M. M.

C. A. R.

Supy Engineer 3 Circle

11/1/189

M. 7080/8039

Specification Report to accompany estimate for remodeling Lightning Rods No. 1 Magazine Battery Fort.

Fix teakwood frames in Portland cement at ends of ridge, sloped to ridge, to receive upper terminals. In these screw with $2\frac{1}{2}$ " copper screws. Copper saddle plates $12 \times 1 \times \frac{1}{8}$ ". In these solder copper blocks $3 \times 3 \times 3$ " with female screws in each corner to receive male screws. Prepare similar sized copper plates $3 \times 3 \times 3$ " with male screws to fit above and also with female screw in centre to receive rod of lightning rod.

Prepare 2 lightning rods each 4×1 " diameter, 1" diameter copper rod lower end fitted as screw to correspond with female screw in block. Upper end to be rounded off hemispherically. 1 ft top a ring to be soldered on in which 4 platitized needles each 6" long are to be placed.

The Conductor to consist of continuous copper tape $1\frac{1}{2} \times \frac{1}{8}$ ". It will be laid in the openings left for the purpose

11/1/189 9/26/189

in the lower blocks and then the upper blocks will be removed down fast on their sides to bring the lightning rod in close contact with the conducting tape. The tape will pass all along the ridge down the hips round the eaves and down two opposite angles of the building to the ground. The two branches will be led in trenches to pits sunk at 120' and 60' respectively East and West from the building and as no permanent water is to be found near, a mass of old iron will be buried beneath the earth plates.

H. Smalley Col. R.E.
Supt. Engineer
3rd Circle

15/4/89

Quantity.	Description of Work.	Rate.	Per	Amount	TOTAL.
		RS.		RS.	RS.
	Lightning Conductor for No. 1 Magazine Bellary Fort.				
	Stripping old Conductor	50.		50.	
2	No. Upper terminals of Copper wire long x 1" diameter complete.	15.	@	30	231
4	By ft. Copper bands 1 1/2" x 1/2"	1-4.	1/ft.	764	520
	Scaffolding lump sum			50	
	Trenching and filling			30	20
2	No. Teak frames for earth coils 4 1/2' long		@	20	
	Carriage only of 2 tons of old iron from				
	Thurnod for earth pits	35.	ton	70	
	Repairs to earth coils			100	520
	Rapes			1014	680
	Contingencies at 2%			20	10
	Manstry for 1 month at 300 Rs. minimum			30	15
					558
	Total Estimate Rapes.			1064	

N.B.
Old copper to be sold 10
Repairs to earth coils 100
Old iron to be sold 70
Cost of carriage of iron 10.5
Contingencies 20
Total 2015

Grand Total of Estimate 1064
SIGNED H. Smalley Col. R.E.
Supt. Engineer
Bellary
Dated 16 April 1889
for 1000 Rs.

CIRCLE— *Chind*
DIVISION— *Bellary*

ESTIMATE FORM.—Abstract.

(To accompany the Detailed Estimate No.
of 188 -8 for *)

*Remodelling Lightning
Conductor Mt Magazine
Fort Bellary amounting
to Rs 1064*

* Here enter the name and description of work in full.

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	MEASUREMENTS IN FEET.			Area or Contents.	Total Quantity of each description of Work.
		Length.	Breadth.	Depth.		
<i>Estimate for remodelling Lightning Conductor Mt Magazine Bellary Fort</i>						
<i>Taking down present Lightning Conductor and slaying</i>						<i>Rs 50</i>
<i>Upper terminals of Copper 4' long Complete 2.</i>					<i>2.</i>	<i>2.</i>
<i>Copper bands.</i>						
<i>Along ridge</i>		<i>45.</i>				
<i>Down hips</i>		<i>70</i>				
<i>Around eaves</i>		<i>140</i>				
<i>Down face walls.</i>		<i>20</i>				
<i>To Pits</i>		<i>200</i>				
<i>Along base</i>		<i>70</i>				
<i>With coils</i>		<i>66.</i>				
<i>Total sq. ft.</i>		<i>611. x 12" x 1/8"</i>				<i>330 611.</i>
<i>Scaffolding</i>						<i>Rs 50</i>
<i>Trenching and filling</i>						<i>Rs 30</i>
<i>Wooden frames for coils</i>	<i>2</i>					<i>Rs 20.</i>
<i>Carriage only of 2 tons of old iron from Murnool. for Earth pits.</i>						<i>Rs 70.</i>
<i>Repairs to present conductor</i>						<i>100</i>
<i>A.B. Old copper to be sold</i>						<i>89</i>

4/876

No. G.
53

2. August 1889.

Colonel CROMBIE COWIE, R. A.

Officiating Inspector General of Ordnance.

 T_0

The Secretary to Government.

Military Department.

Sir,

with the Governor
Stonehouse Hill.

I have the honor to forward
for the approval of Government
in the Military Department, and
for transfer, if approved, to the
Public Works Department for
disposal, an estimate, with the

- 1 Detail Estimate
- 1 Plan
- 1 Specification
- 1 Inspection Report
- 1 Report to accompany

accompaniments
cited in the margin,
amounting to
\$1064. for re.

- modelling the Lightning Conductors
of No. 1 Magazine attached to
the Bellary Arsenal.

2. The Estimate has received the approval of the Director General of Ordnance in India but the work cannot be taken in hand this year owing to funds not being available.

No. 3824C of 26 Aug 1889

Referred to the
Supdy: Engineer III circle
for further consideration
and report.

2. It does not seem
necessary to incur the
expense of providing an
entirely new arrangement
of lightning conductors
for this magazine. The
Supdy: Engr. should have
the earth connections
examined, and the whole
system then tested.
It is probable that
a small sum spent in
repairs would make
the existing conductors
quite efficient.

Ansdrake - Buchanan

Ed. Col. R. S.

Ag. Chief Engr. Bds + Rds Branch

needs disposal 12

WMB
22.5.59

The previous estimate was 2/8
sent to Govt. Please see message
2/8 12 26 8 89 - Enclosed

3. The work has become necessary
owing to the Lightning Conductors
at present in use, having been
condemned at a recent inspection,
vide Inspection Report, one of
the accompaniments mentioned
in para 1.

I have the honor to be
Sir
Your most obedt. servant
Wm. L. R. S.
Colonel R. S.
Offg. Inspector General of Ordnance.
C.W.B.

2582
13

Received in Executive Engineer's Office.

for all the items = Items

Estimate immediately

to be executed immediately.

Certificate of Completion.

I certify that the above suggestions have been duly complied with, and that
Conductors No. electrically perfect.

(Signed)

Electrician.

Executive Engineer,
Presidency Division.

P. 97. 8. 1889 no 5314 R

P.H. N 7650

8839

17.8.89

N-5450. Approved
and transferred to the
Public Works Depart-
ment for disposal.

A. Kenney Herbert Esq.
Secretary to Govt.

Obtained
14th August 1889

Recd
15.8.89

Canal
19/10/89

Military {1889} Department.

No. 5312

From

Colonel CROMBIE COWIE R.A.
Offg. Inspector General of Ordnance
Fort Saint George.

To

The Secretary to Government,
Military Department.

with the Governor
Stonehouse Hill

DATED 2nd August 1889.
RECEIVED

No. 6.
53

Forwards estimates
for approval and transfer
to Public Works Department

28.7.18

Earth Connectors Inspection and Tests of Lightning Rods made by *the design*

on the 21st August 1889.

No. of Items	Locality and Name of Building	When last tested	Description of Conductor, material, length, shape, sectional area, nature and number of upper terminals, number and kind of joints, soldered or not. How attached to building, nature of earth connections.	Vertical Distances		Remarks including suggestions for improvement if necessary.
				From Summit to Ground Line.	Of the Earth connection.	
	<i>Pollack - 2nd.</i> <i>Magazine No. 1.</i>	<i>4.7.88</i>		H. A. E.	H. A. E.	<i>100 ft. high</i>
	<i>Pollack</i> <i>Sept. 3. 1889.</i>					
				8.00	" "	<i>east</i>
						<i>12.50 South plot - north</i>

13

At 100 ft. high
South plot.

2582

7078



REPORT of the testing of the Lightning
Conductors at

Telegraph Dept., Madras Division.

P. W. Dept., Presidency Division.

Forwarded to
for information, as this Office No.
dated

Documents accompanying Completion
Report for signature and return are enclosed.

Station } Executive Engineer,
Dated 188 } Division.

For Orders with Tel.

No. 1746

Superintending Engineer's Office,

3RD CIRCLE,

Bellary 14 Sept 1889.

FROM,

Col. H. Smalley R.E.
SUPERINTENDING ENGINEER,

IIIrd CIRCLE.

TO,

THE Chief Engineer

P. W. Dept.

Sir,

Madras

Enclosures.

1 Brief end?
No 3824 C with
all instruments

I have the honor to report
that I have had the earth con-
nections of No. 1 magazine in the
Post at Bellary opened out and
tested and I find ^{them in} ~~there is~~ no
much better order than I anti-
cipated that I accept your sug-
gestion to retain the present
conductor and simply repair
it. The only thing I propose to
do in addition to repairs is to
bury a mass of old iron beneath
each earth plate as recommended
in Rule XVIII Regulations of the Royal
Engineer Department issued with army
circulars of 9 November 1887, the

the soil being very hard and dry.
An estimate not exceeding Rs 200
classed as Repairs will now be
sent to the Ordnance Department
for countersignature and the
work will be carried out at the
same time as the periodelling
the conductor of the 2 magazine
viz in February 1899 as already
arranged with the Ordnance Officer
Bellary.

I have the honor to be

Sir
Your most obedt servant

H Smalley Col. &
Supt. Engineer
3/10/99

(17)

2582

15

From, *W.C. 8639*
The Superintending Engineer,
2582 IIIrd Circle,
Bellary.

To, The *Chief Engineer*
P.W. Dept
Madras

Dated *14th* } *September 1889*
Received *16* }

Enclosures, *8*

No. *1746*

Subject.
No. 2582 W.C. 19 Sept. 1889

Magazine No. 1 in
the Fort at Bellary

(5) *Reporting upon the*
condition after
opening out & testing
the earth connections
of L.

No. 2582 W.C. 19 Sept. 1889
B

Communicated
to the Military Dept
with reference to its
endorsement No. 5450
dated 14th August 1889

W.C.
17.9.89

W.C.
17.9.89

17
✓ 8.19/9
To the Military Dept

17.9.89

W.C.