Archives I 10,006—16-8 77.

(1) Number of pages 28

(2) Date of repair 4-87.

(3) Initials of the Referencer lons

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

PUBLIC WORKS DEPARTMENT

G.O. No. / B.P. No.	2222-W	Press. / Mis.
Dated	30.8.1882.	

my

Not to be folded or roughly handled

V/2222

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Military Works.

No. 188.

Read—the following papers :—

From Lieutenant-Colonel W. H. BURTON, R.E., Executive Engineer, Presidency, to the Superintending Engineer, Fifth Circle, dated Chepauk, 24th November 1881, No. 3105.

On the 13th instant the Chief Engineer verbally ordered me to examine and report upon the success or otherwise of the repairs to the roof of the Grand Arsenal in the Fort.

This building is built in two storeys, the basement rooms being casemates, the upper rooms have a flat terraced roof, except the south end where the office is (which is 19 feet 2 inches wide); all the rooms are 41 feet wide and the larger teak girders of the roof rest on brick-pillars spaced 20 feet apart from centre to centre, and centrally placed in the upper storey.

The area of the roof contains 41,340 superficial feet; the larger teak girders are 15 inches × 18 inches in section, the smaller teak joists 4½ inches × 10 inches and 18 inches apart.

There is no suspicion that either the side-walls of this building (long and high as they are without any lateral support) have in any way failed.

Some of the girders, as those numbered 8, 9 and 10, in the northern room showed signs and sounds of decay, when I inspected the building on the 15th; upon further examination by boring, these were found to be quite decayed with dry rot, other girders as—No. 5 has deflected ... ... 1 1/3"
,, 6 do. 1 1/4
,, 7 do. 1/2
Also ,, 8 above mentioned has deflected 3/4
,, 9 do. do. do. 1/2
,, 10 do. do. do. 3/8

From all which, taken in connection with cracks in the cement distributed over the whole roof (confirmed by a statement I have received that this roof did not leak at all six years ago), I am of opinion that there is a great deal of decayed wood now in the roof; that they are the cause of the few leaks in it now, and were the cause of the leaks of November 1879 and November 1880.

The following have been the repairs recently executed :—

In October and November 1879, owing to most extensive leaks all over the roof, the old chunam was stripped off the terracing, and the terrace was re-covered with two coats of lime mortar—this work was finished in March 1880 at the cost of Rs. 2,044.

In October and November 1880 the roof was again found to leak very badly, and much injury was done thereby to Government property, especially to stationery.

The parts which leaked most at this time were the saddle and harness room and the office. On an examination there were found to be extensive cracks in the plaster, but the lime plaster itself was said to be very good: the leaks consequently were said to be due to the timber sagging.

Major Vibart and Lieutenant Plummer, who then saw the state of the roof, after considering what should be done, determined to replaster the terracing a second time no longer with lime plaster, but with a plaster of Morgan's cement.

This was commenced immediately after the cessation of the rains and completed in January 1881. The cement plaster was thus applied: the lime plaster (of March 1880) having been completely removed, a first coat of cement plaster of one part of cement and two parts sand was applied half an inch thick, after this had partially set a second coat of neat cement was applied one-eighth inch thick, rubbed smooth with a soap stone and covered with wetted straw for fourteen days.

This work cost Rs. 2,555.

The roof was carefully examined about April 1881 and found free from cracks and apparently in good order.

At the date of my own examination (viz., 14th November 1881,) the roof was covered with cracks, and although it did not leak except in saddle and harness room, and at the girders 8, 9, and 10, yet the cracks are such as would lead one to expect leaks all over the roof as in 1879 and as in 1880.

The remedy to be applied should, I think, take the following direction as funds permit in the years 1882, 1883, 1884. Commencing in order of—

1. Saddle and harness room.
2. North armoury.
3. East armoury.
4. Office.

(1.) To take up, examine, and relay or renew all the wood-work, giving it 2 feet fall from over the central pillars to the side-walls or about 12 inches in 10 feet.

(2.) To reform the terracing as before with a covering of $\frac{3}{4}$-inch Morgan's cement.

(3.) To provide wider and more numerous outlets through the low parapet walls over the side-walls.

No. 295.

Endorsement on the above.

One Report by Lieutenant Falvey.
" rough Plan.

Forwarded to the Chief, Engineer, Public Works Department.

CHEPAUK,
3rd December 1881. (Signed) H. L. PRENDERGAST, Col., R.E.,
Suptg. Engineer, Fifth Circle.

No. 188-A.

From Colonel H. L. PRENDERGAST, R.E., Superintending Engineer, Fifth Circle, to the Chief Engineer, Public Works Department, dated Madras, 14th July 1882, No. 1417.

With reference to your letter No. 3013 of the 13th December 1881, I have the honor to inform you that, in my opinion, there is at present no necessity for any general restoration of the roof of the armoury of the Grand Arsenal in Fort St. George.

1 Letter No. 1535 of 11th July, from Executive Engineer.
1 Plan.
1 Detailed and Abstract Estimate.
1 Specification.

2. The whole roof has been examined and the four bays shown on the plan require to be stripped and reroofed. I enclose an estimate of Rs. 4,940 with the plan for your approval.

3. The scantlings are made to agree with the standard specification, but it is not proposed to alter the usual description of terracing.

4. Where the leaks have taken place, the four longitudinal beams, VI to IX, have sagged and require to be removed; and some of the joists are also slightly bent. They are 20 feet in length. But by placing beams transversely a large proportion of the old joists will be brought into use again and the element of weakness, *i.e.*, in the great length of the joists between supports will, be removed.

5. Provision will be made for the rain water to run off the roof by numerous outlets. The slope to be given to the roof will prevent water lodging in pools.

6. The Ordnance Officers do not intend to suspend heavy objects from the roof in future.

7. From my own inspection of the building, I think the roof generally (of the large area of upwards of forty thousand square feet) will last for a good many years; and therefore no special provision of funds for restoration need be made.

ENCLOSURE.

From Lieutenant-Colonel W. H. BURTON, R.E., Executive Engineer, Presidency, to the Superintending Engineer, Fifth Circle, dated Chepauk, 11th July 1882, No. 1535.

In reply to your No. 1252, dated 4th July 1882, I have the honor to state that I had already reported to Chief Engineer that it was only deemed necessary to repair a small portion of this large roof this year, in view of the absolute present necessities of the case as well as of the impossibility of obtaining funds for the remodelling of the whole.

The part selected for repair, therefore, is that in which the beams were reported to be rotten in November 1881; this portion was that where most leaks occurred last year, and where also leaks have again been reported by the Ordnance Store Office during the recent heavy rains.

As the area of the whole roof where smaller joists have a 20 feet bearing is 43,607 feet superficial, the approximate cost of remodelling the remainder will be Rs. 21,500.

I did not propose to provide any very different description of roof for two reasons, viz.:—

(1) that it seems impossible to obtain funds to reroof the whole building at once;
(2) that very nearly all the smaller joists will be available for re-use, if the present roof is modified as proposed in the present estimate.

Enquiries had been made concerning hanging of articles of store to ceiling—at present the Ordnance Department does not now propose to hang any in this way again.

No. 453 E.

Submitted for the approval of Government in the Military Department.

(By Order.)

(Signed) ROSS THOMPSON, Lieut.-Col., R.E.,
20th July 1882. Acting Deputy Chief Engineer, P.W.D.

No. 4434. MILITARY DEPARTMENT.

Approved.

OOTACAMUND,
19th August 1882. (Signed) E. L. HANKIN, Colonel, R.E.,
Acting Secy. to Government.

To the Public Works Department.

No. 189

ORDER—dated 30th August 1882, No. 2222 W., Public Works.

The estimate, amounting to Rs. 4,940, for renewing a portion of the terrace roof of the armoury of the Grand Arsenal, Fort St. George, is sanctioned for execution on funds becoming available. Should no funds be assigned during the current official year the work may be brought forward for entry in the Budget of 1883-84, preliminary arrangements meanwhile being made for execution of the work immediately on funds being allotted.

2. This sanction has been registered as Imperial No. 18-W of 1882-83 and classified as Military, Original Works.

(True Extract.)

Under Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Superintending Engineer, Fifth Circle, with six enclosures.
" Examiner of Public Works Accounts, with Abstract Estimate.
" Military Department.

Exd. S. T. Austin.
Spare Copies

3/2222

No. 189

ORDER—dated 30th August 1882, No. 2222 W., Public Works.

The estimate, amounting to Rs. 4,940, for renewing a portion of the terrace roof of the armoury of the Grand Arsenal, Fort St. George, is sanctioned for execution on funds becoming available. Should no funds be assigned during the current official year the work may be brought forward for entry in the Budget of 1883-84, preliminary arrangements meanwhile being made for execution of the work immediately on funds being allotted.

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" Examiner of Public Works Accounts, with Abstract Estimate.
" Military Department.

Exd. S. T. Austin.
pare Copies

3/2222

BUILDINGS AND ROADS.
MILITARY WORKS.

Govt. of {1882} Madras.

PUBLIC WORKS.

Dated August, 30th.

Recd. *Encl.*

G.O., 30th Aug. 1882, No. 2222 W.

AUGUST.

Nos. 188-189.

Grand Arsenal.

Estimate amounting to Rs. 4,940 *for renewing a portion of the terrace roof of the armoury of the* —, Fort St. George, sanctioned for execution on funds becoming available.

Public Works Department, 1882-83.

4/2224

Current No. 4694

Letter No. 1417

Dated the 14th July 1882

From the Supt. Engr. Fifth Circle

NOTE OF REMARKS.

The Estimate with plan and report for renewing a portion of terrace roof of the Armoury of the Grand Arsenal in Fort St. George Amounts to Rs 4940-0-0

The Estimate provides for Stripping and reroofing the roof of the 4 Bays shown on the plan submitted for approval

The rates more or less agree with the Distt Schedule

The contingencies viz are entered in the estimate at the rate of 5 percent in addition to petty Supervision + Scaffolding at Rs 118 + 25 respectively.

The Estimate has been approved of + Countersigned by the Military Authorities.

17/7/82

C. No. 4694

E/282

P. W. Secretariat.

Note by Budget Section.

Work

Remewing a portion of terrace roof of the Armoury of the Grand Arsenal Fort St. George

Remarks and References.

Fund Imperial-Military

Service Head Military ... ... Rs.

Departmental Head Engl Works "

Amount of estimate ... ... Rs 4940

Expenditure in previous year ... ... "

Allotment in current year ... ... "

Balance required to complete ... ... " 4940

Total Rs... 4940

Note of available funds.

No funds are available at present. If approved, the work may be sanctioned for entry in the Budget of 1883/84

17/7/82

R. S.

Budget Clerk.

2222 W

No 3105 Madras
2221 P 1 the 24th November 1831.

From The Executive Engineer
Presidency.

To
The Superintending Engineer
5th Circle.

Sir

On the 13th Instant the Chief Engineer Verbally ordered me to examine & report upon the Success or otherwise of the Repairs to the Roof of the Ground Manual in the Fort.

This building is built in 2 Storeys the Basement Rooms being Casemates, the upper Rooms have a flat Terraced Roof: except the South end where the Office is (which is 19'2" wide); all the rooms are 41' wide and the larger teak girders of the Roof Rest on brick pillars Spaced 20' apart from centre to centre, and centrally placed in the upper Storey.

The area of the Roof contains 41340 Superficial feet; the larger teak girders are 15"x18" in section, the smaller teak joists 12"x10" & 18" apart.

The

There is no suspicion that either the sidewalls of this building (long & high as they are without any lateral support) have in any way failed.

Some of the girders as those numbered 8. 9 and 10, in the northern room shewed signs & sounds of decay, when I first looked the building on the 15th. upon further examination by boring these were found to be quite decayed, with dry rot, other girders as No. 5 has deflected 1 1/8"

" 6 " 1 1/4

" 7 " 1/2

Also " 8 above mentioned has deflected 3/4

" 9 " " 1/2

" 10 " " 3/8

From all which, taken in connection with cracks in the cement distributed over the whole roof (confirmed by a statement I have received that this roof did not leak at all 6 years ago) I am of opinion that there is a great deal of decayed wood now in the roof, that they are the cause of the few leaks in it now, & were the cause of the leaks of November 1879 & Novemb: 1880.

1880.

The following have been the repairs recently executed.

In October & November 1879 owing to most extensive leaks all over the roof, the old cement was stripped off the terracing, and the terrace was re-covered with 2 coats of lime mortar - this work was finished in March 1880, at the cost of Rs. 2044.

In October & November 1880 the roof was again found to leak very badly, as is usual of late years to Government properties specially to Stationery. The parts which leaked most at this time were the saddle and harness room and the Office. On an examination, there were found to be extensive cracks in the plaster, but the lime plaster itself was said to be very good: the leaks consequently were said to be due to the timber sagging

Major Gibbs & Lieut. Plummer who

who then saw the State of the roof, after consi-
dering what should be done, determin-
ed to replaster the terracing a 2d time
no longer with lime plaster, but with
a plaster of Morgans cement.

This was commenced immediately
after the cessation of the rains and com-
pleted in January 1881. The cement plaster
was thus applied. the lime plaster (of
March 1880) having been completely
removed; a first coat of cement plast-
er of 1 part of cement 2 parts sand was
applied $\frac{1}{2}$" as well this after this
had partially set, a 2d coat of neat
cement was applied $\frac{1}{8}$" thick rubbed
smooth with a soap stone, and covered
with wetted straw for 14 days.
This work cost Rupees 2555.

The roof was carefully ex-
amined about April 1881 and found
free from cracks, & apparently in good
order.

At the date of my own examination
Oct

(Viz 14 November 1881) the roof was covered
with cracks and although it did not
leak except in saddle & harness room,
and at the girders 8, 9 & 10, yet the cracks
were such as would lead one to expect
leaks all over the roof, as in 1879
as in 1880

The remedy to be applied should
I think take the following direction
as funds permit in the years 1882, 83, 84.
Commencing in order of —

1 Saddle & harness room.
2 North Armoury.
3 East Armoury.
4 Office.

(1) To take up, examine and relay or
renew all the woodwork: giving it 2 falls
from over the central pillars to the side
walls or about 12" in all.

(2) To reform the terracing as before
with a covering of $\frac{3}{4}$" Morgans Cement.

(3) To provide wider and more numerous
outlets through the low parapet walls

over

over the side walls.

I have the honor &c
(Signed) W. St. Burton
Lt. Colt. R.E.
Executive Engineer Presidcy.

No. 295.

Forwarded to the Chief Engineer P.W. Department.

End. 2
Report by Lt. Galway
Rough plan

9/227

Viewed & endorsed at
Colt. R.E.
Superintg. Engineer
5 Circle.

Chepauk
3rd Decr/81.

No. 295

From

The Supt. Engr.
2 5 Circle

To

The Chief Engineer
P.W.D.

Encl: 1.

Dated 3rd December 1881
Rec'd

R. No. 3013 of 13-12-81

Encl: 2. (Plan)

Grand Arsenal
Fort St. Geo.

Forwards copy of a letter from Ex. Engr. Pamy. submitting report upon the Repairs to the Roof of the Gable in Magazine No. 1

No. 1417. 10 Supt. Engr. Office
2225 5 Circle Madras 14th July 1882.

From

Coll. A. L. Prendergast. R.E.
Superintending Engineer
5 Circle

To

The Chief Engineer
P.W.D.

Sir

With reference to your letter No. 3013 of the 13th December 1881 I have the honor to inform you that, in my opinion, there is at present no necessity for any general Restoration of the Roof of the Armoury of the Grand Arsenal in Fort St. George.

2. The whole Roof has been examined, and the four bays shown on the plan require to be stripped and Reroofed. I enclose per Estimate of Rupees 4940 with the plan for your approval

Encl: 4.

1 Letter No. 1535 of 11th July from Executive Engineer
1 Plan
1 Detailed Estimate
1 Specification

approval -

3. The Scantlings are made to agree with the Standard Specifications but it is not proposed to alter the usual description of terracing -

4. Where the Leaks have taken place the 4 Longitudinal beams VI to IX have sagged and require to be removed, and some of the Joists are also slightly bent. They are 20 feet in length. But by placing beams transversely a large proportion of the old joists will be brought into use again; and the element of weakness, ie. the great length of the joists between supports will be removed -

5. Provision will be made for the rain water to run off the Roof by numerous outlets. The slope to be given to the Roof will prevent

prevent water lodging in pools.

6. The Ordnance Officers do not intend to suspend heavy objects from the Roof in future

7. From my own inspection of the building I think the Roof generally (of the large area of upwards of forty thousand Sqre feet) will last for a good many years; and therefore no special provision of funds for restoration need be made

I have the honor to be
Sir
Your Most Obedt Servant
Alex Spencley Lt Colll R.E.
Superintg Engr 2d Circle

Memo Rec 3013-13-12-81.
GOD: 1966-68. 2-8-82.

No 453 Ed/20 July 82.

Submitted for the approval of Govt. in the Military Dept.

(By order)

Ross Thompson

Lt Col RE

Act Dy Ch. Engr 1st Div.

No 4434

Approved.

C Hawkins Colonel

Act Secy to Govt

Dated 19th August 1882

To Supt Works Dept

(Allowed 2 days)

Rs 28-8-0

Rs 43/4 Rs 23/8 Rs 30/8

From

The Supdg Engineer

5th Circle

To The P. W. Dept

No 453-E

The Chief Engineer

P. W. Dept

Madras.

Dated 14th July 1882.

Recd 20th July 1882.

Enclosures 4.

E.S

No 1417.

Grand Arsenal

Fort St George.

Submits for approval an estimate of Rs 4,940 for reterracing a portion of the roof of Armoury —

Referred

with endorsement

1st Copy

Public Works Offices.

MADRAS.

No. 1535

Chepauk, 11th July 1882.

From

THE EXECUTIVE ENGINEER,

PRESIDENCY.

To

THE Superintending Engineer,

5th Circle.

Sir,

Enclosures.

In reply to your No. 1252 of 4 July 1882, I have the honor to state that I had already reported to Chief Engineer that it was only deemed necessary to repair a small portion of this large roof this year, in view of the present absolute necessities of the case as well as of the impossibility of obtaining funds for the re-modelling of the whole.

The part selected for repair, therefore, is that in which the beams were reported to be rotten in November 1881, this portion was that, where most leaks occurred last year, and where also leaks have again been reported by the Ordnance Store Office during the recent heavy rains.

As the area of the whole roof — where

where smaller joists have a 20' bearing is 43,607 feet superficial, the approximate cost of re-modelling the remainder will be Rs. 21,500.

I did not propose to provide any very different description of roof for 2 reasons, viz:-

(1) that it seems impossible to obtain funds to re-roof the whole building at once.

(2) that very nearly all the smaller joists will be available for re-use, if the present roof is modified as proposed in the present Estimate.

Enquiries had been made concerning hanging of articles of store to ceiling - at present the Ordnance Department does not propose to hang any in this way again.

I have the honor to be
Sir,
Your most obedient Servant
W H Burton
Lt Col RE
Executive Engineer
residency

No 2222 W

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 30th August 82

Read the following:-

From the Superintending Engr. Fifth Circle . . . No. 295 of 3rd December 81

From - do - do . . " 1417 of 14th July 1882

Endorsement in the Military Dept. " 4434 of 19th August 82

The estimate amounting to Rs 4940 for renewing a portion of the terrace roof of the Armoury of the Grand Arsenal Fort St George, is sanctioned for execution on funds becoming available. Should no funds be assigned during the Current Official year the work may be brought forward for entry in the Budget of 1883-84 - preliminary arrangements meanwhile being made for execution of the work immediately on funds being allotted.

2. This sanction has been registered as Imperial No

No 18 W of 1882-83 and
classified as Military Origi-
-nal Works-

26.8.82

Attt

27.8.82

CN 5/9

14/222

50/4 des 7/9

7 Superintending Engineer ✓ 5
Left Circle with enclosures
7 Examiner Inquiry to with Abstract rate ✓
15 Military Department ✓
21

R.S.
Fd.S.

5-665-
4694

Govt. of (1882) Madras.

PUBLIC WORKS.

4-5-82

Dated

Read. Encl.

G. O., 3rd Aug/82 1882, No. 222247.

Nos. 186 to 189

Grand Arsenal

Estimate Amt. ~~5-7-0~~ 6940

for removing a portion

of the terrace roof of

the Armoury of the ~~Fort~~ Fort St. George

Sanctioned for expenditure

of funds becoming

available

4871/8.

Rec'd 4-4-82

Sd 3/8