Archives I—10,006—16-8 77.

(1) Number of pages 44
(2) Date of repair 7 - 10 . 86
(3) Initials of the Referencer

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P. W DEPARTMENT

G.O. No. 4345 W
B.P. No.
Press.
Mis.

Dated 13 - 11 — 1878 ~~197~~.

I

V. S. M

Not to be folded or roughly handled

4345 W

1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

13th November 1878, No. 4,345 W.

Buildings and Roads.

Military Works.

Read the following papers :—

No. 168. Endorsement of the Secretary to Government in the Military Department, dated Ootacamund, 21st August 1878, No. 4,299.

From Brigadier-General H. O'CONNELL, Quartermaster-General, to the Secretary to Government, Military Department, dated Ootacamund, 17th August 1878, No. 819.

I HAVE the honor, by order, to forward, for the consideration and orders of Government, the correspondence as per margin which shows that the roofs of some portions of the new Artillery Barracks at St. Thomas' Mount are in such a condition as to render it advisable to dismantle them and re-roof with additional beams.

1. Letter from Superintending Engineer, Chingleput, No. 2,860, dated 9th August 1878.
2. Report on the condition of the roofs of new Artillery Barracks at St. Thomas' Mount.
3. Estimate (Rupees 4,550) for dismantling the roofs of certain rooms, and re-roofing with additional beams.
4. Plan.

2. As immediate attention to the state of these roofs seems desirable, it is requested that the correspondence may, with the sanction of Government, be transferred to the Public Works Department for early attention.

From Colonel P. O'CONNELL, R.E., Superintending Engineer, Chingleput, to the Deputy Assistant Quartermaster-General, Centre District, dated St. Thomas' Mount, 9th August 1878, No. 2,860.

IN reference to your Nos. 3,048 and 2,951, dated the 22nd and the 26th ultimo, respectively, I have the honor to forward a report (to be returned) received from the Executive Officer, on the condition of the beams in the room of the upper storys of the Royal Artillery Barracks at the Mount, from which it will be observed that many of them have bent to such an extent that the roof cannot be considered safe. Hence it is proposed to dismantle and to rebuild it, making use of such of the present beams as may be safely utilised, placing them with their covered sides upwards, and putting additional beams of proper scantlings between the existing ones. The enclosed estimate, amounting to Rupees 4,550, provides for the work required, and I request that the same may be returned approved at an early date, as it is desirable to prevent possible accident that the work should be undertaken and finished before the setting in of the ensuing wet season.

One Plan.
„ Estimate.

2. The condition of the existing beams attracted my notice on my inspection of the buildings on the 8th ultimo, and I then gave orders that one which showed signs of giving way should be supported, and this precautionary measure has been carried out.

No. G/157.

FORWARDED to the Quartermaster-General, Fort St. George, for the approval of His Excellency the Commander-in-Chief.

2. The defects in the condition of the beams were pointed out by the Barrack Master, Fort St. George, at his monthly inspection of barracks, and also brought to notice by the Officer Commanding C Battery, 6th Brigade, Royal Artillery, St. Thomas' Mount.

MADRAS,
14th August 1878.

(Signed) W. A. RIACH, Colonel,
Commanding Centre District.

TRANSFERRED accordingly to the Public Works Department.

(By order,)

(Signed) J. MICHAEL, Colonel,
Secy. to Govt., Mily. D.

No. 168-A. From Colonel P. O'CONNELL, R.E., Superintending Engineer, Chingleput, to the Chief Engineer, Public Works Department, dated St. Thomas' Mount, 17th September 1878, No. 3,399.

One Revised, Detailed and Abstract Estimate.
„ Plan.

WITH reference to your memorandum, No. 3,837, dated 29th August 1878, which commences with instructions to strut all the beams in the upper storys of the Royal Artillery Barracks at St. Thomas' Mount which showed signs of sagging, I have the honor to draw your attention to the fact that in the document to which you refer it was stated that I had given the necessary orders, and that the only beam which showed signs of giving way had already been struted. It is quite unnecessary to strut every beam which is bent, it being a necessary result of the beams supporting weight that they should bend. The latter part of your memorandum would imply that I had taken no personal interest in the matter; whereas I discovered the fact that several beams were bent, and one to a dangerous extent, at a time that the barracks were in the charge of another department. I also gave, as already stated, the necessary orders, and reported that they had been carried out. I did not enter into professional details when reporting to the Military Authorities, who would naturally conclude that I was quite competent to and would deal with the matter properly. Under my orders the building is being frequently examined, and the Range Officer visits it every week. Any additional supports that are required will be put up. Under my instructions the deflection of all the beams was measured, calculations made to ascertain if deficiency in the scantling of the beams was the cause of their bending so much and a simpler formula for making such calculations in future, worked out and circulated to Range Officers.

2. With respect to the question, who is responsible for the failure reported? I would observe that this is one requiring some time to answer, as there have been frequent changes in the officers employed, so that it is not easy to affirm who purchased and had put into the work the particular beams which have bent. It is also not clear whether these beams were not injured to some extent by exposure, owing to a want of funds when the barracks were approaching completion, but I consider it clear that for the weight which they had to support, their scantling was insufficient to prevent such an amount of bending as would cause cracks in a new terraced roof.

3. From the correspondence in this office I find that an abstract estimate, amounting to Rupees 1,64,300, for barracks to accommodate two troops of Horse Artillery in three separate blocks at St. Thomas' Mount is signed by Lieutenant J. F. Dorward, R.E., Assistant Engineer, Mount Range; Colonel D. Fraser, Commanding Centre Division; Lieutenant-Colonel J. Bean, R.E., Acting Superintending Engineer, 4th Division; it is dated 19th June 1867. After three days search among his office records, the Range Officer has failed to discover the detailed estimate to which this corresponds.

4. The abstract estimate after passing through the hands of the Public Works Department, the Military Department, the Commander-in-Chief, appears to have been

---

4345W

returned with the plans with G.O., No. 2,787, Public Works Department, dated 11th September 1867, to the Superintending Engineer, 4th Division, for revision, although no revision was required, but merely an alteration in the heading to the estimate and plans.

5. With his letter, No. 5,053, dated 5th February 1868, Colonel Boileau, Superintending Engineer of the 4th Division, submits the above estimate unaltered, and twelve others, the total amount of which was Rupees 2,05,010, and states that he has directed the Assistant Engineer to collect materials. The sanction of the Government of India to these estimates was communicated to Colonel Boileau in Madras, G.O., No. 3,399, dated 29th October 1868.

6. A revised detailed estimate, amounting to Rs. 1,89,700, dated 14th August 1871, is signed by P. Walsh, Sub-Engineer, in charge of Mount Range and Colonel C. Wilkieson, R.E., including the subsidiary buildings originally estimated for; the total revised estimate amounted to Rupees 2,37,885. This was submitted to Government by Colonel Wilkieson, R.E., Superintending Engineer, 4th Division, on the 4th November 1871.

7. The dimensions of the beams and the horizontal areas of the roofing supported were, as recorded in this detailed estimate and the plan forwarded, as follows:—

Ground Floor.

Number of Beams.	Clear bearing.	Breadth of Beam.		Depth of Beam.		Area of Floor supported by each Beam.	Number of Block.	Altered in construction to
	FEET.	FT.	IN.	FT.	IN.			
7	24	1	0	1	6	241½ to 338 sq. ft.	1	*1'-3" × 1'—†10½"
1	24	*1	6	†1	6	397½		
6	24	1	0	1	6	310½ to 360 sq. ft.	2	
2	24	1	3	1	10½	397½		
6	24	1	0	1	6	312 to 360 sq. ft.	3	
2	24	1	3	1	10½	397½ to 408 sq. ft.		

Upper Floor.

Number of Beams.	Clear bearing.	Breadth of Beam.		Depth of Beam.		Area of Roof supported.	Number of Block.
	FEET.	FT.	IN.	FT.	IN.		
30	24	1	0	1	6	348 to 368¼ sq. ft.	1, 2 and 3.

8. It will be observed that the scantling of the beam in the ground floor of block No. 1 supporting the largest area was increased in such a manner as to give increased stiffness and that the revised dimensions were adopted in the estimates for block No. 2 and No. 3. No alteration was made in the scantlings of the beams supporting the roof. As I have already said these would not be stiff enough in my opinion; but according to the usual calculations they should, if sound and uninjured, have been quite strong enough to resist fracture.

9. According to the following formula taken from the late Professor Moseleys, Mechanics of Engineering:—

$w = \frac{[illegible]}{[illegible]}$ where—
b = the breadth of the beam in inches.
c = depth of do.

l = the clear bearing in inches.
u = the breaking weight in lbs. per inch in length of beam.
s = resistance to rupture per square inch of the material of the beam = 14·772 lbs. for teak

In this case then $u = \frac{14,772 \times 12 \times 18^2}{\cdot 75 \times (24 \times 12)^2} = 923\frac{1}{4}$ lbs. whereas the actual load was $\frac{368\frac{1}{4}}{12 \times 24} \times 125 = 159$ lbs. or about ⅛th of the breaking weight. It is also to be noted that the beams have not yet actually broken. What their real condition is cannot be ascertained with safety until the roof is taken off. In his letter No. 4,906, dated 7th March 1872 Colonel Wilkieson urges that, if funds are not provided fast enough, the work must necessarily be injured from exposure, &c.; but G.O., in the Public Works Department, No. 779, dated 19th March 1872, says that, unless the Government of India provide more funds, there is no help for this state of affairs. The expenditure up to that date is given as Rupees 1,60,176-14-11, so that the buildings must have been very far advanced.

10. The names of the officers in charge, the periods during which they were in charge, and the sums of money expended thereon will be found recorded in paragraph 14 of G.O., 28th February 1872, No. 539.

No. 168-B. From Colonel P. O'CONNELL, R.E., Superintending Engineer, Chingleput, to the Chief Engineer, Public Works Department, dated St. Thomas' Mount, 11th October 1878, No. 3,642.

IN continuation of my No. 3,399, dated 17th September 1878, I have the honor to inform you that I placed myself in communication with the Military Authorities with a view to the barracks of the C/6th Brigade, Royal Artillery, at St. Thomas' Mount being vacated in order that the buildings may be repaired, and have learnt that sufficient accommodation is available for the men to admit of the buildings being vacated, but that it would not be desirable to remove the Battery from the barracks within so short a time of its departure for England. I have therefore requested the Officer Commanding, Royal Artillery, Centre District, to arrange that the barracks shall not be occupied again after the men of the present Battery have vacated them until the necessary repairs to the buildings have been executed.

From Colonel P. O'CONNELL, R.E., Superintending Engineer, Chingleput, to the Deputy Assistant Quartermaster-General, Centre District, dated St. Thomas' Mount, 24th October 1878, No. 3,840.

IN reference to your No. 4,228, dated 19th October 1878, intimating that the C/6th Brigade, Royal Artillery, now located in the new barracks at St. Thomas' Mount will leave on the 24th instant and requesting me to arrange for the buildings being taken charge of by this department for repair, I have the honor to inform you that no orders have been passed on the estimate for the repair of the buildings, and would request that the Barrack Master retain charge of the same for the present. I will apply for the charge of the buildings when the estimate has been sanctioned.

No. 168-C. No. 3,841.

TRUE copy forwarded to the Chief Engineer, Public Works Department, in reference to the Superintending Engineer's letter No. 3,399, dated 17th September 1878.

ST. THOMAS' MOUNT,
24th October 1878.

(Signed) P. O'CONNELL, Colonel, R.E.,
Superintending Engineer, Chingleput.

No. 169, ORDER THEREON, 13th November 1878, No. 4,345 W.

THE estimate, amounting to Rupees 4,550, for dismantling the roofs of certain rooms of the new Artillery Barracks at St. Thomas' Mount, and re-roofing is sanctioned for immediate execution, and funds are provided by appropriation from the Military Reserve at the disposal of Government.

4345

2. It is understood that the rooms have been vacated. The work should therefore be put in hand at once and completed without delay.

3. This sanction has been registered as Imperial No. 101 B of 1878-79.

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Superintending Engineer, Third Circle.
" Examiner of Public Works Accounts.
" Military Department.

Exd. E. C. Shunker
Spare Copies

BUILDINGS AND ROADS.
MILITARY WORKS.

Govt. of (1878) Madras.

PUBLIC WORKS.

To

The SUPERINTENDING ENGINEER,
THIRD CIRCLE,
&c., &c., &c.

Dated November 18

Issued

Recd. Encl.

G. O., 13th November 1878, No. 4,345 W.

NOVEMBER.

Nos. 168-169.

New Artillery Barracks at St. Thomas' Mount.—Sanctions for immediate execution the estimate for dismantling and re-roofing the roofs of certain rooms of the —

New Royal Artillery Barracks, St. Thomas' Mount

Report on the Condition of the beams which support the terrace oof of the upper story in each block of buildings.–

When lately inspecting the buildings it was found that so of the beams had sagged, or bent considerably in the centre & that one had cracked at the bottom and was dangerous. This has been supported by two strong Casarina posts as a temporary measure until better arrangements can be made for the safety of the building.

The state of each beam is given below.–

Position of Room	No. of beam	Amount of deflection at the Centre.	Deflection per foot of length unsupported (Span 24 feet.)	Remarks
No. 1 Block				
Room at East End	1	None	None	
Do.	2	½ inch	1/48th inch	
Do.	3	None	None	
Do.	4	Do.	Do.	
Do.	5	Do.	Do.	
Room at West End	1	Do.	Do.	
Do.	2	½ inch	1/48th inch	
Do.	3	None	None	
Do.	4	1½ inches	1/16th inch	
Do.	5	None	None	
No. 2 Block				
Room at East End	1	None	None	
Do.	2	None	Do.	
Do.	3	¾ inch	1/32nd inch	
Do.	4	None	None	
Do.	5	Do.	Do.	
Room at West End	1	¼ inch	1/96th inch	
Do.	2	1 inch Cracked	1/24th Do.	
Do.	3	1 Do.	1/24th Do.	
Do.	4	2 Do.	1/12th Do.	
Do.	5	1¼ Do.	5/96th Do.	

No. 3 Block

Room at East end	1	None	None
Do	2	Do	Do
Do	3	$\frac{3}{4}$ inch	$\frac{1}{32}$nd inch
Do	4	$1\frac{1}{2}$ inches	$\frac{1}{16}$th Do
Do	5	$\frac{3}{4}$ Do	$\frac{1}{32}$nd Do
Room at West end	1	None	None
Do	2	Do	Do
Do	3	Do	Do
Do	4	Do	Do
Do	5	Do	Do

The safe deflection for timber may be taken at $\frac{1}{40}$th inch to a foot of unsupported length. It will be observed, that some of the beams given above, have bent much more than this

The beams in the room at the East end of No 1 block, appear to be quite safe. In the same block, one beam in the room at the West end has bent $1\frac{1}{2}$ inches, or $\frac{1}{16}$th inch per foot of length,

In No 2 block, one beam in the East end room has bent $\frac{1}{32}$nd inch per foot of length. This may be safe enough, and may be allowed to stand. In the same block, all the beams in the West end rooms, except one have bent considerably beyond the safe limit, and one has cracked.

The beams in the room at the East end of block No 3 have also bent, more than what may be considered safe.

The beams in the West end room of No 3 block are perfectly safe.

The beams are all of the same scantling ($\overset{d}{18''} \times \overset{b}{12''}$) and support the same weight. It is very remarkable, that some have bent considerably while others have shown no sign of deflection. It is probable that this is owing to different qualities of Oakwood, or to flaws in the centre of some of the beams. The beams have been carefully examined but no flaws can be detected.

New Royal Artillery Barracks.

Span of rooms of upper story 24 feet.

Distance apart of beams from Centre to centre, 16 feet.

Average thickness of terrace $10\frac{1}{2}''$ or $\frac{7}{8}$ foot.

Number of joists resting on beam 17. Length 16 feet, breadth 3" depth 5";

Weight of a cubic foot of brickwork 120 lbs.

Find the scantling of beams to support the roof placed 16 feet apart from centre to Centre so that they may not sink more than $\frac{1}{2}$th inch in the Centre.

Weight of terrace $= 16' \times 24' \times \frac{7}{8} \times 120 = 40.320$ lbs.

Weight of joists $= 17' \times 16' \times \frac{1}{4}' \times \frac{5}{12}' \times 50 = 1417$ lbs.

Weight of say 10 men who may be standing on the roof $160 \times 10 = 1600$ lbs.

Hence $W = 40{,}320 + 1417 + 1600$ lbs. $= 43{,}337$ lbs

$L = 24$ feet

$M = 4{,}000$, for teak

Take $d = b\sqrt{2}$

Barlow's formula

$$M = \frac{5Wl^3}{8bd^3\delta}$$

Substituting $b\sqrt{2}$ for d we have

$$b = \sqrt[4]{\frac{5Wl^3}{16\sqrt{2} \times M\delta}}$$

$$b = \sqrt[4]{\frac{5 \times 43{,}340 \times 24^3}{16\sqrt{2} \times 4{,}000 \times \frac{1}{2}}}$$

$$b = \sqrt[4]{66205{\cdot}375}$$

$$\text{Log } 66205{\cdot}375 = 4\overline{)4.82002220}$$

$$1.2050055$$

$$\text{Root} = 16{\cdot}03$$

$$b = 16$$

$$\text{And } d = b \cdot \sqrt{2} \qquad \sqrt{2} = 1.414$$

$$\therefore d = 22{\cdot}6$$

21 is good enough.

for the calculation substitute in the case of [illegible] $d =$ [illegible]

or say $b = 18''$ and $d = 24''$

Hence we observe that the scantling of the beams has not been calculated correctly, and it is probable, that this is owing to the formula for "transverse strain" having been used instead of that for "deflection".

In order to remedy the defects, the following proposal is made;

The terraces of the upper stories of the following rooms will be dismantled, and reterraced, the beams turned so as to have the convex side upwards, and an extra beam of the same scantling placed between each two.

No 1 Block — West end room

No 2 Do — Do — Do

No 3 Do — East — Do

An estimate for this will follow in a few days.

Mount Dn Office
29th July 1878.

D. Mloy Conductor
Executive Officer.

N 1042
1 N 9426
3 1 92

Dy. No 1129
12 August 78

No 2149

[illegible]

No. 1

QUARTERMASTER-GENERAL'S OFFICE,
Hd. Qrs. Ootacamund
17th August 1878.

4345 W
4

No. 819.

From

BRIGADIER-GENERAL H. O'CONNELL,
Quartermaster-General,

To

COLONEL J. MICHAEL, C.S.I.,
Secretary to Government,
Military Department.

SIR,

I have the honor, by order, to forward for the consideration and orders of Government

1. Letter from Supt. Eng. Chingleput. No. 2816 dated 9th August 1878.
2. Report on the condition of the roofs of New Artillery Barracks at St. Thomas's Mount.
3. Estimate (Rs 4,550) for dismantling the roofs of certain Rooms and re-roofing with additional beams.
4. Plan.

the correspondence as per margin which shews that the roofs of some portions of the New Artillery Barracks at Saint Thomas's Mount are in such a condition as to render it advisable to dismantle them and re-roof with additional beams.

2. As immediate attention to the State of these roofs seems desirable, it is requested that the Correspondence may, with the sanction of Government be transferred to the Public Works Department

=ments

=ment for early attention.-

I have the honor to be,
Sir,
Your obedient Servant,
J. T. Connell Brig. General.
Quarter Master General.

4348
5

Mily: 1878 Deptt:
No: 4770

~~From~~
The Q. Mr. General
To
The Secy: to Govt. Mil. D.
d/ 17 August
Recd. 19 —

52 No: 819

Forwarding for the consideration & orders of Govt. correspondence for dismantling the roofs of certain rooms of the new Artillery Bks. at the Mount and repairing them —

Military Department

No 4299 Transferred accordingly to the Public Works Department.—

(By Order)

Colonel,
Secretary to Govt.

Ootacamund
21 August 1878.

5 — 4 Enclos: relg. to S.E. Chingleput

C.E. No 3837 d/ 29th Aug 78

To Coty 26. 8. 78

No. 2860

Chingleput Superintending Engineer's Office,
Saint Thomas' Mount, 9th Augt. 1878.

From
THE SUPERINTENDING ENGINEER,
Chingleput.

345 W
7

To

The Dy. Asstt. Qr. Mr. General
Centre District.

Enc 3
1 Plan
1 Est
× (to be returned.)

Sir,

In reference to your Nos. 3048 and 2951 dated the 22d. and the 26th. ultimo respectively, I have the honor to forward a report× received from the Executive Officer on the condition of the beams in the room of the upper stories of the Royal Artillery Barracks at the Mount from which it will be observed that many of them have bent to such an extent that the roof cannot be considered safe. Hence it is proposed to dismantle and to rebuild it making use of such of the present beams as may be safely utilized placing them with their convex sides upwards and putting additional beams of proper scantlings between the existing ones. The enclosed estimate amounting to Rupees 4550/ provides for the work required and I request that the same may be returned approved at an early date as it is desirable to prevent possible accident that the work should be undertaken and finished before the setting in of the ensuing wet season.

2. The condition of the existing Beams attracted my notice on my inspection of the Buildings on the 8th ultimo and I then gave orders that one which showed signs of giving way should be supported and this precautionary measure has been carried out.

I have the honor to be
Sir
Your most obedient servant

[illegible] Colonel R.E.
Supg Engineer, Chingleput.

Head Quarters Centre Dn
Madras 14th August 78

No. 9/157

Forwarded to the Quarter Master General Fort Saint George for the approval of His Excellency the Commander in Chief.

The defects in the condition of the beams were pointed out by the Barrack Master Fort Saint George at his monthly inspection of Barracks and also brought to notice by the Officer Commg C/16th R.A. Saint Thomas Mount.

[illegible] Colonel
Commanding C. Dn

---

no personal interest in the matter,

No. 9435
19/9/78

Submits plan and estimate for dismantling and rebuilding the upper story of R. A. barracks

No. 4770 – 78

Dy No. 6449

Lr. 8197 17 Sept. 78

D 5

134

No. 3399.

Chingleput Superintending Engineer's Office,
Saint Thomas' Mount, 17th Sept. 1878.

From
THE SUPERINTENDING ENGINEER,
Chingleput.

To
The Chief Engineer
Public Works Department.

Enclosures - 2

1 - Revised Detailed & Abstt. Estimate

1 - Plan.

Sir,

With reference to your Memorandum No. 3837 dated 29th August 1878 which commences with instructions to strut all the beams in the Upper stories of the Royal Artillery Barracks at Saint Thomas' Mount which showed signs of sagging, I have the honor to draw your attention to the fact that in the document to which you refer it was stated that I had given the necessary orders and that the only beam which showed signs of giving way had already been strutted. It is quite unnecessary to strut every beam which is bent, it being a necessary result of the beams supporting weight that they should bend. The latter part of your Memorandum would imply that I had taken no personal interest in the matter, whereas I discovered the fact that several beams were bent and one to a dangerous extent at a time that the barracks were in the charge of another Department. I also gave as already stated the necessary orders & reported that they had been carried out. I did not enter into professional details when reporting to the Military Authorities who would naturally conclude that I was quite competent to, and would deal with the matter properly. Under my orders the building is being frequently examined and the Range Officer visits it every week. Any additional supports that are required will be put up. Under my instructions the deflections of all the beams was measured & calculations made to ascertain if deficiency in the scantling of the beams was the cause of their bending so much and a simpler formula for making such calculations in future worked out and circulated to Range Officers.

2. With respect to the question who is responsible for the failure reported? I would observe that this is one requiring some time to answer as there have been frequent changes in the Officers employed, so that it is not easy to affirm who purchased and had put into the work the particular beams which have bent. It is also not clear whether these beams were not injured to some extent by exposure owing to a want of funds when the barracks were approaching completion but I consider it clear that for the weight which they had to support their scantling was insufficient to prevent such an amount of bending as would cause cracks in a new terraced roof.

4345 W

3. From the correspondence in this office I find that an Abstract Estimate amounting to Rs 164,300 for barracks to accommodate 2 Troops of Horse Artillery in 3 separate blocks at Saint Thomas Mount is signed by

James F. Darward Lt. R.E.
Assistant Engineer Mount Range
David Fraser Colonel
Commanding Centre Division
J. Bean Lt. Colonel R.E.
Acting Supt. Engineer 4th Division

It is dated 19th June 1867 - after

three days search among his office records the Range Officer has failed to discover the detailed estimate to which this corresponds.

4. The abstract estimate after passing through the hands of the D.P.W. the Military Department the Commander-in-Chief, appears to have been returned with the plans with G.O. No. 2787 D.P.W. dated 11th September 1867 to the Supg Engineer 4th Division for revision, although no revision was required, but merely an alteration in the heading to the Estimate and Plans.

5. With his letter No. 5053 dated 5th February 1868 Colonel Boileau Supg Engineer of the 4th Division submits the above estimate unaltered and 12 others the total amount of which was Rs 205,010 and states that he has directed the Assistant Engineer to collect materials. The sanction of the Government of India to these estimates was communicated to Colonel Boileau in Madras G.O. No. 3399 dated 29th October 1868.

6. A revised detailed estimate amounting to Rupees 189,700 dated 14th August 1871 is signed P. Walsh Sub Engineer in charge of Mount Range and C. Wilkeison Colonel R.E. Including the subsidiary buildings originally estimated for, the total revised estimated amounted to Rs 237,885. This was submitted to Government by Colonel Wilkeison R.E. Supg Engineer 4th Division on the 4th November 1871.

7. The dimensions of the beams and the horizontal areas of the roofing supported were, as recorded in this detailed estimate and the plan forwarded, as follows.

Ground Floor.

of beams	clear bearing feet	Breadth of beam	Depth of beam	Area of floor supported by each beam	Number of block	
		ft in	ft in			
7	24	1-0	1-6	{241½ to 338 sqre ft}	1	
1	24	1-6	1-6	397½		
6	24	1-0	1-6	{310½ to 360 sqre ft}	2	
2	24	1-3	1-10½	397½		
6	24	1-0	1-6	{312 to 360 sqre ft}	3	
2	24	1-3	1-10½	{397½ to 408 sqre ft}		

Upper

advanced.

10. The names of the Officers in charge, the periods during which they were in charge and the sums of money expended thereon will be found recorded in para 14 of G. O. 28th February 1872 No 539.

I have the honor to be
Sir
Your most obedient servant

P F Hannell Colonel R.E.
Supg Engineer, Chingleput.
for

G O No 1864 of 11th July/74
" " 779 " 19 March/72
" " 934 " 9 April/72
" " 5399 } " 28 Feby/72
5403 }
" " 3399 " 29 Octr/68
" 820 " 11 March "
" " 1631 " 23d May "
" " 2787 " 11 Septr/67
C.E. 3837. 27-8-78

P.W. 1878

No. 10429

From the Supdg Engr Chingt

No 3399.

dated 17th } Septr/78.
Read 19th }

x Enclosures given for C. Jo 13050 x

Enclosures 2 + 1 Pl.

Upper Story of the Royal Artillery Barrack at St Tho's Mount —

Forwards Plan & Detailed Estimate with explanation on the beams of —

Recir 4-11.78
To acty 20-9-78
Cir 1-11.78 Rtd 4-11.78

No. 3642

CHINGLEPUT SUPERINTENDING ENGINEER'S OFFICE,
SAINT THOMAS' MOUNT, 11th Octr 1878.

From
THE SUPERINTENDING ENGINEER,
CHINGLEPUT.

To
The Chief Engineer
Public Works Department.

Sir,

In continuation of my No 3399 dated 17th September 1878 I have the honor to inform you that I placed myself in communication with the Militar authorities with a view to the Barracks of the C 6th Brigade Royal Artillery at Saint Thomas's Mount bein vacated in order that the Buildin may be repaired and have lear that sufficient accommodation i available for the men to admit o the Buildings being vacated bu that it would not be desirable to remove the Battery from the Barracks within so short a tim of its departure for England. I have therefore requested, th

Officer Commanding Royal Artillery Centre District to arrange that the Barracks shall not be occupied again after the men of the present Battery have vacated them, until the necessary repairs to the Buildings have been executed.

I have the honor to be
Sir
Your most obedient servant

PHomnell Colonel R.E.
Supg Engineer, Chief Deput
Can

4345W
17

W 11504

From the Supdt Engr Chingt.

No 3642

dated 11th } Oct 1878.
Recd 12 }

C/6th Bde R. A. Mount—

Informs that he arranges with the Offr Comdg to have the building occupied by the —— vacated till the necessary repairs have been executed—.

Recir 4-11-78
To Acty 12-10-78

No. 3840.

Chingleput Superintending Engineer's Office,
Saint Thomas' Mount, 24th Octr 1878.

W
437
18

From
THE SUPERINTENDING ENGINEER,
Chingleput.

To
The Dy Asst Quarter Master General
Centre District.

Sir,

In reference to your No 4228 dated 19th October 1878 intimating that the C 6th Brigade Royal Artillery now located in the New Barracks at Saint Thomas Mount will leave on the 24th instant and requesting me to arrange for the Building being taken charge of by this Department for repair. I have the honor to inform you that no orders have been passed on the estimate for the repair of the Buildings and would request that the Barrack Master retain charge of the same for the present. I will apply for the charge of the Building when the estimate has been sanctioned

I have &c
(Signed) F. O'Connell Colonel R.E.
Supdg Engineer Chingleput

No 3841

True copy forwarded to the

Chief Engineer. P.W.D. in reference to the Supg Engineer's letter No 3399 dated 17th September 1878.

R Hornell Colonel R.E.
Supg Engineer Chingleput

Chingleput Supg Engrs office
Saint Thos Mount 24th Oct/78

Ex:

B&R
Mily works

No 4345 W Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 13th Novr 1878

4345

Read the following:—

Endorsement of the Military Department No 4299 of 21 August 1878

Letter from the Supg Engr Chingleput No 3399 dated 17th Sept/78

Do Do No 3642 Do 11th Octr/78

Do Do No 3841 Do 24th Do

The Estimate amounting to Rupees 4550 for dismantling the roofs of certain rooms of the New Artillery Barracks Saint Thomas' Mount, and reroofing is Sanctioned for immediate execution, and funds are provided

R.S.

provided by appropriation from the Military Reserve at the disposal of Government.

It is understood that the rooms have been vacated. The work should therefore be put in hand at once, and completed without delay

GMF 12.11.78.

This sanction has been registered as Imperial No: 1013 of 1878.79.

To Supg Engr 3d Circle
Examiner P.W. Accts
Military Deptt

4345 W
19

[illegible] 1878 Nep

No. 12038

[illegible]

Dated 24 } Febr 78
Recd 25

Recir 4-11-78
Cir 7-11-78. Rtd 4-11-78
Doly 25/10/78

434
2

Despd. 14-11-78

Despd. 28-11-78

434

Endorsement of the Military Dept. No. 4299 d/21st Augt/78
Letter from the Supg. Engr. Chingleput No. 3399 d/17th Septr/78
——— Do ——— Do ——— No. 3642 d/11th Octr/78
——— Do ——— Do ——— No. 3841 d/24th Octr/78

FOR ORDERS.

Note by the Chief Engineer

After receipt of the estimate for re-roofing the new Artillery Barracks at St. Thomas' Mount the Chief Engineer issued some instructions for the security of the buildings and called for a full report, which is furnished in the Superintending Engineer's letter of the 17th Septr No. 3399.

The

I don't understand what orders the Ch. Engr desires. The defect must be cured by the Ex. in the least possible delay & the Estt. must be sanctioned - if approved - in its proper details

The dimensions of the beams that have failed are those commonly adopted but the beams have in some cases been placed too far apart, fifteen feet instead of ten. This was done apparently to avoid placing the beams exactly over openings in the wall but the weight they had to carry was greatly increased.

The re-roofing is now unavoidable.

Ed Appd Col: R.E.
Ch. Engr & Secy to Govt
P.W. Dy.

1st Nov/78

Recd 4-11-78
Cir 4-11-78 Rtd 4-11-78

FOR ORDERS.

Sha. to Sr. Member
Hon. S. S. Carmichael
His Grace the Governor

To Ch. Engr 4345 W-13-
No order needed beyond sanction to immediate repairs

6/11

4345 W
22

Cr 12038a

11504
10429
9436

GOVT. [illegible] (1878) [illegible]

PUBLIC WORKS

To The S.E. 1st Circle

15—
[illegible]
21-11-78

Dated

Issued

Recd. Encl.

G. O. 13 Nov 1878, No. 4345 W

Nos. 168 & 169

New Artillery Barracks at Saint Thomas' Mount

Sanctions for immediate Execution the Estimate for dismantling and re-roofing the roofs of certain rooms of the —

Entd in Regr.