Number of Pages 78
Date of report 29.3.88

P. W. D.

G.O.No. 2586-7-W
Dt 20.10.1887

2806 6

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Military Works.

READ—the following papers :—

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer, Public Works Department, dated Balu Chetty Choultry, 26th November 1886, No. 4349.

In accordance with paragraph 1 in G.O., No. 2928, dated 6th November 1886, I have the honor to report on the points referred to in Government of India Military Department letter No. 1607 M.W., dated 25th October 1886, as to the site selected for the proposed magazine, viz., on the berm outside the ramparts. In May 1884 a committee, composed of Major Brereton, R.A., Deputy Inspector-General of Ordnance, Major Shortland, Commanding Royal Artillery, Eastern District, and myself (then officiating as Superintending Engineer, V Circle) was assembled, under the orders of the Brigadier-General Commanding the Eastern District, to select a site; this committee recommended (I am writing from memory) the interior of St. George's bastion, making use of the existing casemates on the right face as the main chamber of the magazine. But this site was apparently disapproved of, for the same committee was afterwards directed to select the next best site outside the fort, and it recommended as such one somewhere near the St. Andrew's Cemetery on the island. As Executive Engineer, Presidency Division, I was subsequently instructed by the Deputy Assistant Quarter-master-General to prepare a design and estimate for the magazine to be built as shown on the drawings now disapproved of.

2. The Inspector-General, Ordnance, Madras, in March 1885, informed me that this latter site had been approved of by the Director-General of Ordnance in India, sending me a copy of the latter officer's letter, No. 2157, dated 9th March 1885.

3. *As to objection II.*—This is inevitable, and is partly owing to the site and partly to the desire to render the foundations as economical as possible; the height and consequently the exposure (objection III) of the brick-work of the western and southern walls of the magazine could only have been reduced by largely extending in area and consequently by increasing the cost of the foundations, as also by increasing the cost of the whole work.

4. *As regards objection III.*—I would state that, from the land side, it has been held that Fort St. George is not to be considered, and has not in recent years been dealt with, as a fort liable to attack by a force provided with rifled guns, or in fact with artillery other than cast-iron smooth-bore guns.

5. The thickness of the western and southern walls are, I submit, ample to render the powder to be stored perfectly safe from such gun-fire from anywhere west or south of the proposed work. To have protected these two walls in the usual way by a long sloping earth-bank would have led to several disadvantages and obviously to the impossibility of ventilating the main chamber freely through these walls.

6. *Objection IV.*—The lighting of a magazine by means of lamps in recesses in the walls, access to which is obtained by an open passage, is only peculiar in the proposal "to leave the passage open overhead in time of peace," but this passage was intended to be covered in, and provision was made for covering it in efficiently and very readily in time of war as efficiently as if it was permanently covered in. This peculiarity was proposed in view of the damp, hot, close climate of Madras and of the proved unfitness of the numerous old casemates in the fort when closed in on all sides for the storage of powder. If this lighting passage is covered in permanently, the magazine could not be efficiently ventilated through its eastern and northern walls.

7. *Objection V.*—The costliness of the foundations limited in area as they are is inherent to the site, in the selection of which no one in our department had anything to do; the nature and dimensions of the foundations provided for are, I believe, the least costly and the least possible. Every detail connected with them I freely discussed with Colonel Prendergast, and he approved of these details, &c.; the cost of other foundations, as on piles for instance, was fully tested before the brick well foundations were included in the design.

8. *Objection VI.*—As to the probability of the ventilating arrangements proving inefficient, this is foreseen in the specification and description attached to the estimate "as possible" (I attach a copy for ready reference), but I would remark that if ventilating a powder chamber in the authorised and usual way by means of hollow walls and shutters and through all its four walls is likely to be inefficient, how very surely bad would the ventilation be if there were no openings at all through any one wall, and yet the objections raised to the details of the design involve the abandonment of hollow walls and of free access to the interior of the magazine of fresh air from the outside.

9. *Paragraph* 3, *Government of India letter under reference.*—The highest water level in the wet ditch surrounding the proposed site has never been known to exceed 3·60 feet above mean sea level, and the berm selected for the site has never, so far as I can learn or have observed, been known to have been covered with water, nor is it apparent to me how it (the berm) can be submerged, for the height of water in the ditch always, and necessarily highest during the north-east monsoon, can be regulated by means of a sluice provided for the purpose, and any unusual flood can be so let out into the adjacent river Cooum. Lest it should be ascertained that the Cooum rises above this level, I would state with the confidence of 5½ years' intimate knowledge of it that this river cannot be induced to rise to the level 4·20 above mean sea level.

10. It is, as you are aware, very desirable for sanitary purposes connected with the town of Madras that the Cooum should be allowed to rise to this height before the bar is cut, but it wont under any conceivable circumstances. Moreover, it is not absolutely necessary that the river should, nor is it ever the case that it does, remain at the level of even 4·00, for by cutting the bar the river falls to about 1·50 at high water mark and it sinks to a lower level than that immediately the bar is again closed. The plan shows 4·00 as the level of the berm, and the specification reads thus "the footings" (*i.e.*, the portion of brick foundation below the level of the floor) "of the walls will be built . . . . . up to 12 inches above present level of the berm, or 1·50 feet above high water mark in main ditch during north-east monsoon," as before the time of maximum heights of water in the main ditch is during the north-east monsoon and is consequent on the fact that the rainfall within the crest of the glacis (the Madras Harbour has long since closed all access of the sea to the ditch) alone affects the level of the ditch; the sea has nothing to do with it. Of course if ever there occurs at Madras a cyclone in any degree, similar to that which submerged Masulipatam in 1864, the water in main ditch might even exceed the level 7·75; but the water could not otherwise reach the level 7·75 nor exceed 4·20, but as before it never exceeds 3·60, and the floor of the magazine would consequently be free from risk of flooding at 3·60 + 1·50 or at the level 5·10 above mean sea level.

11. Para. 3 of the Government order under reference will be shortly attended to.

Enclosure.

Extract from the Specification to accompany estimate for constructing magazine for accommodation of Ordnance Artillery reserve powder at Fort St. George, dated 2nd April 1886.

* * * * *

On the concrete the footings of the walls will be built in the usual manner up to 12 inches above the present level of the berm, or 1·50 feet above high water mark in main ditch during the north-east monsoon.

* * * * *

Ventilation.—It is believed that reasonably sufficient means have been provided in the drawings and estimates to ensure that the ventilation of the building can be regulated by the Ordnance officer in charge as above described; but as the regulations so referred to were originally drafted to meet the conditions of a magazine built at Halifax in British North America, and as different conditions of atmosphere, temperature, &c., exist in Madras, especially so in any building, situated as this will be, in the angle formed by two high walls where bad ventilation will probably be caused rather by stagnation of air than from any great difference between temperature of outside and inside air; to meet this stagnation of air, should it be not sufficiently provided against by the several hollow walls and outside openings thereto, it is proposed to build in the west wall of the magazine two horizontal circular holes 2½ feet diameter at about 4 feet above floor level, against which can be afterwards fixed a 2 feet Blackman's patent air propeller as in diagram; this air-pumping machine could be worked by manual labor with some simple cogged wheel apparatus made for the purpose; the total capacity in air space of the interior is under 27,175 cubic feet.

* * * *

(True Copy.)

(Signed) W. H. BURTON, Colonel, R.E.
Superintending Engineer, V Circle.

From Brigadier-General E. FAUNCE, Quartermaster-General, to the Secretary to Government, Military Department, dated Ootacamund, 27th June 1887, No. 2267 A.

Referring to G.O., No. 7155, of 15th November 1886, I am desired by the Commander-in-Chief to submit the accompanying proceedings* of a committee assembled at Fort St. George, on the 27th December 1886, under the orders of His Excellency, to report upon the improvements necessary to the Fort magazine for the storage of powder required for the armament.

* With two rough estimates and three plans.

2. His Excellency concurs in the recommendations of the committee for the proposed utilisation of the Saint Thomé casemates and for the improvements thereto, and to Saint George's magazine, at a cost of Rs. 33,000 and Rs. 18,000 respectively, and desires me to submit them for the sanction of Government.

Enclosure.

St. George's Magazine.—Recommendation of the Committee for making the magazine bomb-proof.

Side wall on the east to be thickened to a total of 18 feet 6 inches by means of the best rough stone masonry in lime mortar as shown on plan and section herewith attached.

Ventilation and powder barrel racks and entrances, &c., to remain as now.

Overhead cover: the west side and end walls to be thickened as shown, so as to form foundations for a parapet wall to retain extra covering to the arch and the old lime concrete on top to be notched out; each hundred cubic feet of this extra covering to consist of 15 cubic feet best Portland cement, 87 cubic feet of clean sand and broken granite, and 33 cubic feet of granite blocks as per specification attached; 3 feet thick over the crown, and 4½ and 6½ feet thick over the haunches of the arch.

This again to be covered with well rammed clay out of a tank-bed as per section.

Approximate cost Rs. 18,000.

(Signed) W. H. BURTON, Colonel, R.E.,
Superintending Engineer, V Circle.

Proceedings of a Committee held at Fort St. George on the 27th December 1886 and subsequently, pursuant to His Excellency the Commander-in-Chief's order as conveyed in Quartermaster-General's letter, No. 4537 A., dated 9th December 1886.

President.

Major-General A. C. JOHNSON, C.B., Commanding Eastern District.

Members.

Colonel H. McLEOD, R.A., Inspector-General of Ordnance.
Brevet-Col. and Lieut.-Col. W. H. BURTON, R.E., Suptdg. Engr., V Circle.

The committee having assembled, pursuant to the above order, at the Inspector-General's office in the fort, proceed to inspect several of the casemates which, from their position and

present general state of repair, appeared to be best suited to be converted into reserve powder magazine, and the three existing magazines—Caldwell's, St. George's, and the Grand.

2. The committee also perused the correspondence, &c., relating to the subject of storage of powder in bomb-proof magazines in the fort.

3. In regard to paragraph 4 of the Quartermaster-General's letter, clause I, the quantity of powder required for service at or about the fort will be as follows :—

	BARRELS.
Ordnance reserve for 6-9″ M.L.R. guns now mounted	611
Ordnance reserve for the guns of the armament of Fort St George revised in accordance with Proceedings of Government, No. 6854, dated 29th October 1880	471
Ordnance reserve for 6-10″ R.L.R. guns now being constructed ...	4,500
Total ...	5,582

Clause II.—The accommodation available in existing magazines is, so far as racks (old style) are concerned, as follows :—

	BARRELS.
St. George's Magazine	1,800
Caldwell's do.	1,266
Grand Magazine now racked for small arm ammunition but might be racked for	1,700

Clause III.—The committee do not think it advisable, on account of position as regards both and on account of its condition as regards Caldwell's magazine, to utilise either the Grand or Caldwell's magazine, but would recommend that St. George's magazine be put into a thorough state of repair and made bomb-proof in accordance with memorandum regarding it enclosed.

Clause IV.—The accommodation elsewhere available for reserve ammunition of the revised armament of Fort and Beach batteries is at Veyasarpaudy, The Mount, casemates in St. Thomé curtain in the fort.

4. The committee do not think it advisable to again utilise the Veyasarpandy magazine on account of its isolated and unguarded position and the defective state of the building as per reports received by the Quartermaster-General for several years past.

5. The committee do not think it advisable to utilise the large reserve magazine at the Mount for the following reasons :—

(*a*) It is 9 miles from the fort and over 10 from the Clive's battery.

(*b*) There are but two main roads to it, one crossing two rivers by large bridges and other minor streams, the other crossing three rivers by large bridges and other minor streams.

(*c*) It is only 4 miles from the sea.

6. The committee would point to the directions (in the present necessity of which they fully concur) issued to the Officer Commanding Troops at the Mount when His Excellency Sir Frederick Roberts was Commander-in-Chief at Madras to the effect that, in the event of trouble being imminent, the ordnance powder stored in the Grand magazine at the Mount would have to be destroyed or withdrawn to Madras.

7. The committee think, however, that if the casemates in St. Thomé curtain, east of the St. Thomé gate of the fort, were put into a thorough state of repair and made bomb-proof in accordance with memorandum regarding it enclosed, it could hold 3,782 barrels.

Clause V.—The probable cost of the work described for St. George's magazine will be Rs. 18,000, and Rs. 33,000 for St. Thomé curtain.

8. As regards the necessity or not of building a new magazine, the committee would point out that there is no available site for such other than that on the berm of the Wallajah curtain already condemned.

(Signed) A. C. JOHNSON, Major-General, C.B., Commanding Eastern District, President.
(„) H. McLEOD, Colonel, R.A., Inspector-General of Ordnance. } Members.
(„) W. H. BURTON, Colonel, R.E., Superintending Engineer, V Circle. }

Casemates in St. Thomé Curtain.—Recommendations of the Committee for rendering the casemates, east of St. Thomé gate, fit for reception of the powder barrels.

Floor to be covered with asphalte on a suitable under-surface.

Side walls on north and east to be thickened to a total of 10 feet by means of the best brick-work laid in Portland cement mortar.

Ventilation of the interior to be afforded—first, by means of 12″ wide zigzag openings, one in each of the existing doorways, which are to be built up also with the best Portland cement brickwork ; second, by means of 12″ diameter zigzag air shafts to be driven through the arched roof and made in the overhead concrete during the laying of the latter.

Powder racks to be as shown in the drawing—two rows in each rack ; 3½ feet passages between rack and north wall and the 2 racks ; 4 tiers of barrels to rest on suitable flooring batteries ; and 4 tiers on upper transoms ; all racks to be divided longitudinally so as to contain 5 barrels in each tier.

A light moveable floor in two lengths of 12 feet each to be laid at the level of 4″ tier across the 3′ 6″ passages at any particular section of the racks to facilitate the magazine men handling and lowering stacking to the barrels ; also 5 light ladders to be provided for examination of the upper barrels.

Lighting the powder chambers to be by means of lamp recesses made in the walls of lighting passage, closed on the powder chamber side by the usual brass and plate glass frames, as already provided in the Beach batteries, Agram, &c.

Entrance to the powder chambers to be by means of an entrance lobby to each chamber provided with wood, barrier, seats and other facilities for magazine men shifting their clothes before entering the powder chamber.

Overhead cover : the earth over the arch to be removed and a thickness of 3 feet of Portland cement concrete laid flat thereon in 12 layers ; each hundred cubic feet concrete to be composed of 15 cubic feet best Madras cement, tested in the usual manner to take a breaching strain of 800 lbs. per 2½ square inches, 87 cubic feet of clean broken granite and coarse sand, fresh or sea water, 33 cubic feet of clean rubble stone in large blocks.

The Portland cement concrete, &c., to be covered with ¾″ asphalte properly sloped to keep out damp from overhead and earthwork free from building debris 2½ feet thick to be laid and rammed and covered with gravel over the asphalte.

Lightning-conductors to be by means of two long 1½″ × ⅛″ copper bands running along rear and front parapet walls on top and lead it each end into a wet earth terminating in sheet copper-plates each 12 feet in area.

Upper terminals by means of ½″ diameter copper uprights 5 feet long placed at 24 feet intervals along the two 1½″ bands and brazed, &c., thereto.

Approximate cost Rs. 33,000.

N.B.—All the brass and copper fastenings and wood racks in the Veyasarpaudy powder magazine should be carefully preserved by the Public Works Department for utilisation at the St. George's and St. Thomé powder magazine.

(Signed) W. H. BURTON, Colonel, R.E.,
Superintending Engineer, V Circle.

No. 3934, Military.

Transferred to the Public Works Department; with reference to Proceedings of Government in that department, No. 2928 W., dated 6th November 1886.

2. The Government in the Military Department concur in the views of His Excellency the Commander-in-Chief as expressed in paragraph 2 of the Quartermaster-General's letter.

(By Order.)

OOTACAMUND, 4th July 1887. (Signed) A. KENNEY-HERBERT, Brigdr.-Genl., Secretary to Government.

No. 2288 C., Public Works.

Forwarded, with reference to G.O., No. 2928 W., dated 6th November 1886 to the Superintending Engineer, V Circle, for very early submission of detailed estimates of the cost of carrying out the committee's recommendations.

(Signed) J. O. HASTED, Colonel, R.E.,
Chief Engineer, Public Works Department.

7th July 1887.

From Brigadier-General E. FAUNCE, Quartermaster-General, to the Secretary to Government, Military Department, dated Ootacamund, 3rd August 1887, No. 2718 A.

I have the honor, by order, to forward, for sanction and transfer to the Public Works Department for disposal, the estimates, plans, &c., below mentioned, which have been approved by the Commander-in-Chief. The plans and estimates have been countersigned:—

Abstract and detailed estimates, amounting to Rs. 17,000, for adapting St. George's magazine in Fort St. George for the storage of powder for the fort armament, with report, specification and six plans.

2. An allotment of Rs. 17,000 has been made for this work in the current year's budget—*vide* O.G., No. 1160 W., of 28th April 1887, (M.D., No. 2867, of 16th May 1887).

No. 4746, Military.

Approved and transferred to the Public Works Department for disposal.

(By Order.)

OOTACAMUND, 6th August 1887. (Signed) A. KENNEY-HERBERT, Brigdr.-Genl., Secretary to Government.

From Colonel H. M. VIBART, R.E., Superintending Engineer, V Circle, to the Chief Engineer, Public Works Department, dated Pelandorai, 30th September 1887, No. 2651.

I have the honor to return, as asked for in your telegram of 23rd August, the seven enclosures received with your memorandum, No. 2288 C., dated 7th July 1887, viz.:—

(1) Military Department endorsement, No. 3934, of 4th July 1887, on Quartermaster-General's letter.
(2) Proceedings of Committee on Fort Magazines.
(3) Memorandum of proposed improvements to St. George's Magazine.
(4) Memorandum of proposed improvements to casemates in St. Thomé curtain.
(5) Plan of St. George's Magazine.
(6) Section of do.
(7) Plan and section of casemates in St. Thomé curtain.

ORDER—dated 20th October 1887, No. 2806 W., Public Works.

Ordered that the Government of India be addressed.

(Here enter No. 2807 W., dated 20th October 1887.)

(True Extract.)

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

To the Superintending Engineer, V Circle.
" Military Department.

Exd. J. Moses.
Spare Copies

BUILDINGS AND ROADS.
MILITARY WORKS.

Govt. of {1887} Madras.

PUBLIC WORKS.

Dated October, 20th.

Read.

Encl.

G.O., 20th Oct. 1887, No. 2806 W.

OCTOBER.

Powder Magazine in Fort St. George

The Government of India to be addressed with regard to the measures necessary to improve the existing — and to provide additional accommodation for the storage of powder.

2806

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Military Works.

LETTER—from

COLONEL J. O. HASTED, R.E.,

Secretary to the Government of Madras,

Public Works Department,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

MILITARY DEPARTMENT.

SIR,

In reply to your letter No. 1607 M.W., dated 25th October 1886, returning plans and estimates for a proposed new magazine on the Wallajah berm, Fort St. George, I am directed to forward the undermentioned documents :—

(1) Letter from the Superintending Engineer, V Circle, No. 4349, dated 26th November 1886, stating the circumstances in which the site on the Wallajah berm was selected, and submitting observations in reply to the objections to the design raised in paragraphs 2 and 3 of your letter.

(2) Proceedings of a committee assembled to report on the measures necessary to improve the Fort magazine and to provide additional accommodation for the storage of powder.

(3) Plans and estimate, amounting to Rs. 17,000, for improvements to the Fort magazine.

2. In view of the objections raised by the Government of India to the construction of a new magazine on the Wallajah berm, it has been decided to abandon the proposal and to strengthen the existing St. George's magazine in the Fort. To provide the additional storage accommodation required, the committee recommend that the casemates in the St. Thomé curtain of the Fort be thoroughly repaired and rendered bomb-proof. It will be seen that the committee do not recommend the adoption of the suggestion of the Government of India that the powder which cannot be stored in the Fort magazine should be kept at St. Thomas' Mount.

3. I am now directed to submit the proposals of the committee for the consideration of the Government of India, and to request that, if approved, the plans and estimates for strengthening the Fort magazine may be returned as early as practicable in view to the current year's grant of Rs. 17,000 for the work being fully utilised. Estimates

for improving the casemates in the St. Thomé curtain are under preparation, and will be sanctioned by this Government if the proposals of the committee be approved by the Government of India.

I have the honor to be,
Sir,
Your most obedient servant,

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

CHEPÂK,
20th October 1887.

Exd. J. Moses.
Spare Copies

BUILDINGS AND ROADS.
MILITARY WORKS.

Govt. of {1887} Madras.

PUBLIC WORKS.

Dated October, 20th.

Read. *Encl.*

G.O., 20th Oct. 1887, No. 2807 W.

OCTOBER.

Powder Magazine in Fort St. George

Proposals for the improvement of the existing — and the provision of additional accommodation for the storage of powder, submitted for the consideration of the Government of India.

(10) C806-14

Cus 9825

2-88-87

Note

Proposed to hold this letter over until the Military Dept send in the report called for in para 2 of G.O. No 2928 of 6 Nov 1886.

The G. of I. can then be addressed if necessary.

CA

30.11.86

Re proposal to hold over until the reply from Mily Dept is received.

[illegible]
30.11.86

C/No 9610.
Dft 3/12/86.

C.a W

Please find me the file
about the London Mayfair
re Ford

Lee

13/12/86

Submitted.

Cl

13.12.86

Con

2806

With reference
to pencil instructions
by W on the L.O. file
please see our B.M^o. 3330
3331W
of 17-12-46 now linked
this seems to be the
reply awaited -
Perhaps the file may
continue "L.O." pending
receipt of reply
as Red 'W' in para:
2 of the G.O. N^o 3330W.

SP
21.12.46

(10)

RN

We must have
reply from Mr Ware
Supt Wks Ware 2
Dec 26 28

NWC No 6209.

The amount of the estimate
£17000 is very heavy, and is
due to the cost of Concrete
made with Portland Cement,
for which £725 Bbl are
allowed on the F.A.
I would suggest the following
points for consideration
with regard to the plans &
F.A.

I think the earth filling
should not be pushed on,
until actually required,
when it could be made
up with gravel bags -
Unless the earth is carefully
rammed and kept in good
order, water will get
into it and the retaining
walls will give way -
In the event of any necessity
for completing the covering
of the roof - sand bags
would I think be superior
to earth; they could readily
be filled and packed over
the roof - they would lessen
the pressure against P.T.O.
the gt S walls, as compared
with earth, especially when

II

No letter in the report that the Materials to be procured as at present, but it is note stated how the necessary openings are covered through the concrete on the East side of the magazine - could iron pipes probably -

III I would suggest that time concrete be substituted for portland cement concrete, thus making a saving of Rs 6450 in this item; on the earth filling the omitted there will be a further saving of 972 Rs without in any way prejudicing the safety of the Magazine, as the same may be covered concrete be put on in a couple of days keep holes would have to be provided to receive water pipes

There is cart.

Rs 1000 in the Estimate by Col Rhun for supplies by Cart to the amount of 6 lakh Rupees is submitted by the Executive Engineer

Public Works Department.

Current No. 6209

Letter No. 4746

Dated the 6th August 1867

From the Secy to Govt Military Dept

NOTE OF REMARKS.

1. The accompanying plans and estimate provide for adopting St. George's Magazine in Fort St. George for the storage of powder for the Fort Armament.

The amount of estimate is Rupees 17,000.

2. This estimate has been prepared in accordance with the recommendations made by the Committee appointed for the purpose.

3. This estimate provides for thickening the Eastern wall of the Magazine to a total of 18½ ft. this will be done by filling in the space between the Magazine and its enclosure wall with best rough stone masonry in lime mortar, as shown on the accompanying plan & section.

4.

20-5-67

4. The Ventilation, Powder Racks and Entrance to remain as at present.

5. Overhead Covering. The west side and the two end walls are to be thickened to the extent shown on the plan so as to form foundations for a new parapet wall to retain the extra covering to the roof with Portland Cement Concrete to a thickness of 3 ft over the Crown & 2½ & 6½ feet over the haunches west & east sides respectively. This again will be covered with well rammed clay as per section. The existing roof will be notched before putting on the extra covering as shown on the section.

6. The report is submitted.

7. The rates are fair except the two items i.e. Rough stone in lime mortar and filling earth over the head of magazine with watering & well tamping which rates cannot be checked for want of a proper Schedule. A data list is submitted for the rate of Rs. 54 for 100 cft of Portland Cement Concrete work

8. A lump sum of Rs. 450 is provided in the estimate for removing the existing Lightning Conductors & re-fixing after completion of the work including necessary extensions & new earth connections &c.

9. Petty supervision & contingencies are separately charged at 2½ & 5 percent respectively.

10. The plans & estimate have been countersigned by the Dy Mr General & approved in the Military Department.

17-8-87.

18 JUN 97

ESTIMATE FORM.—Abstract.

Quantity.	Description of Work.	Rate.	Per	Amount.	Total.
		Rs.		Rs.	Rs.
2550 c/ft.	Excavating foundation	1-10-	100 c/ft	12	
2557 c/ft.	Lime Concrete	14-1-	100 c/ft	359	
8890 c/ft.	Brick work in Lime Mortar	15-10-	Do	1389	
16157 c/ft.	Portland Cement Concrete as specified	54-	Do	8726	
17438 c/ft.	Rough stone in Lime Mortar	20-	Do	3488	
6750 s/ft.	Plaster with Portland Cement	6-4-	100 s/ft	422	
31115 c/ft.	Filling earth watering and well Ramming	31-4-	1000 c/ft	972	
	Cutting steps in the head to receive Cement Concrete	"	"	25	
	Removing the Existing Lightning Conductor and refixing after Completion of the above work including necessary extensions and new earth Connections &c			450	
	Petty Supervision	2-8-	per cent	389	
	Contingencies	5-	Do	762	
			Total Rupees	17000	

Sd/ Alexander
16 June 97

Sd/ Robertson Alister
Asst Engr Officer
Military Works
16-6-87.

Sd/ Robertson Alister
Executive Engineer
Supervision D.P.W.

Grand Total of Estimate .. 17,000

Station Bangalore
Dated 25th June 1897.

Sd/ Thompson Col R.E.
Executive Engineer.
Presy Divn

24 JUN 97

Sd/
17-6-97.

Sd/
17-6-97

REFERENCE TO MADRAS P. W. D. CODE.

PARAS. 1074, 1075, 1086, 1087, 1091 TO 1094, 1108, 1111 TO 1114, 1130 AND 1145 TO 1147.

P. W. D. Form No. M 207.

CIRCLE— V.

DIVISION— Presidency

ESTIMATE FORM. Abstract.

(To accompany the Detailed Estimate No. of 188 , 18 for)

Repairing St. George's Magazine Fort St. George & Bomb Proof

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

Item 4457
2/8/87

Item 4395

SUPERINTENDING ENGINEER'S OFFICE,

No. 4349 Bella Chitty Chambers V CIRCLE, ~~MADRAS~~, ~~Chepauk~~, 28th November 1886.

From

THE SUPERINTENDING ENGINEER,

V CIRCLE,

To

THE Chief Engineer
P. W. Depn.

SIR,

Enclosures. / In accordance with para 1 in G.O. No 2928 dated 6th November 1886. I have the honor to report on the points referred to in Government of India Military Department letter No 1607 dated 25th October 1886. as to the site selected for the proposed Magazine viz on the berm outside the ramparts.

The Magazine Committee consisted of Major Bruerton R.A. Deputy Inspector General of Ordnance Major Shortland - Commanding Royal

Royal Artillery Eastern Dist-
rict & myself (then Offici-
ating as Superintending Engineer
5th Circle) was assembled under
the orders of the Brigadier General
Commanding the Eastern District
to select a site - this Committee
recommended (I am writing
from memory) the interior of
St. George's Bastion making
use of the existing casemates on
the right face as the main cham-
ber of the Magazine. But this
site was subsequently disapproved
of, & the same Committee was
afterwards directed to select the
next best site outside the Fort -
and it recommended as such
one somewhere near the St.
Andrew's Cemetery on the
Island - Lt Executive
Engineer & Resident

Divn

Division I was subsequently
instructed by the Deputy Ass.
Assistant Quarter Master General
to prepare a design & Estimate
for the Magazine to be built as
shown on the drawings now
submitted for approval.

The Inspector General
Ordnance Madras in March
1885 informed me that this
latter site had been approv-
ed of by the Director General
of Ordnance in India, sending
me a copy of the both Officers
letter No. 157 dated 9th March 1885.

Situation II - This is in-
evitable and - is partly owing
to the site and partly to the
desire to render the fortifica-
tions as economical as possible by
the height upon segmently the
ex posure (Situation III) of the
breach work of the Western
face -

and Southern walls of the Magazine could only have been reduced, by largely increasing the cost of the foundations - & also by increasing the cost of the whole work.

As regards objection III I would state that from the land side it has been held that Fort St. George is not to be considered, and has not in recent years been dealt with, as a Fort liable to attack by a force provided with Rifled guns: or in fact with Artillery other than cast Iron Smooth bore guns.

The thickness of the Western & Southern walls are, I submit, ample to render the powder to be stored perfectly safe from such gun-fire as from any where West or South of the proposed work. To have protected these two walls in the usual way by a long sloping earth bank would have led to several objectionable disadvantages & obvious by to the impossibility of Ventilating the main chamber freely through these walls.

Objection IV. The lighting of a Magazine by means of lamps in recesses in the walls, access to which is obtained by an open passage is only practical in the proposed "to be used the passage" open overhead in time of peace but this passage was intended to be provision was made for covering it in efficiently & very readily in time of war as efficiently as if it were permanently covered in. This practice was proposed in lieu of the clumsy hot, close chimneys of Madras & of the French enclosed & the numerous old Europe made the

in

in the Fort when closed in on all sides for the Storage of powder. If this Lighting Passage is poured in perma=nently the Magazine could not be efficiently Ventilated thro' its Eastern and Northern walls.

Objection V. The costliness of the foundations limited in area as they are is inherent to the site - in the Selection of which no one in our Department had anything to do - the nature & dimensions of the foundations provided for are I believe the least costly & the least possible. Every detail connected with them I freely discussed with Colonel Pasley & he approved of these details & the cost of other foundations as on files for instance must fully settled before the

the breach walls & foundations were included in the design

Objection VI As to the probability of the Ventilating arrangements proving inefficient. This is foreseen in the Specification and description attached to the Estimate "as possible". (I attach a copy for ready reference) but I would remark that if Ventilating powder chambers in the authorized and usual way by means of hollow walls & shutters & through all its four walls is likely to be inefficient how very surely would the Ventilation be if there were no openings at all through one wall and yet the objections raised to the details of the design involve the abandonment of hollow walls & of fire proofs to the inside of the Magazine of fresh air from the outside.

Pasley

Para 2 Government of India letter under reference. The highest water level in the net plot & surrounding the proposed site has never been known to exceed 3.60 feet above Mean Sea Level & the berm selected for the site had never so far as I can learn or have observed been known to have been covered with water nor is it apparent to one how it (the Berm) can be submerged for the height of water in the plot always & necessarily highest during the North East monsoon can be Regulated by means of a Sluice provided for the purpose and any unusual flood can be let out into the adjacent River Coovum. Lest it should be ascertained that the Coovum rised above this level I would state with the confidence of 5½ years intimate knowledge

knowledge of it that this River can't be induced to rise to the level of 4.20 above Mean Sea Level.

It is, as you are aware, very desirable for sanitary purposes connected with the town of Madras that the Cooum should be relieved to rise to this height before the bar is put, but it won't under any conceivable circumstances. Moreover it is not absolutely necessary that the River should rise to it over the pole, that it should remain at the level of even 4.00 for by cutting the bar the River falls to about 1.50 at high water mark & it sinks to a lower level whereas than that immediately the bar is again closed.

The plan shows 4.00 as the level of the berm & the Specification reads thus "the "footings" (ie the portion of brick foundation below the level of the floor) "of the walls which will be built ..... "up to 12 inches above present "level of the berm, or 1.50 ft above "high water mark on main "ditch during N.E. monsoon" - as before the time of maximum heights of water in the main ditch is during the North East Monsoon & in consequent on the fact that the rain fall within the crest of the glacis [the Madras Harbour has long since closed - all access to the ditch] alone affects the level of the ditch: the sea has nothing to do with it.

Of course if ever there occurs at Madras a Cyclone in any degree similar to that which submerged Masulipatam in 1864. the water in the main ditch might even exceed the level 7.75 - but the water could not otherwise reach the level 7.75 not exceed 4.20: but as before

before it never exceeds ft 3.60 & the floor of the Magazine would consequently be free from risk of flooding at 3.60 + 1.50 or at the level 5.10 above Mean Sea Level.

Para 3 of the Government Order under reference will be short. by petitioner to:

I have the honor to be
Sir
Your most Obedt Servt

W.H. Burton Lieut R.E.
Supt Engr 5th Circle.

Public 932

No. 4349.

From

The Superintending Engr.
5th Circle

To

The Chief Engineer
P.W. Deptt.

SECRETARY TO GOVERNMENT
29 NOV 86
PUBLIC WORKS DEPARTMENT

Dated 26th November 1886.
Recd 29th November 1886.

Magazine on the Berm outside the Ramparts - Fort St. George

Report on the several points referred to in Govt of India D.O. letter No. 1607 of 25-10-86 in connection with the Site selected for the proposed

circ. 17-10-87 R. 20-10-87

Print

Extract from the Specification to accompany Estimate for constructing Magazine for accommodation of Ordnance &c. & Artillery Reserve Powder at Fort Saint George, dated 2nd April 1886.

. . . . . .

On the concrete the footings of the walls will be built in the usual manner, up to 12 inches above the present level of the Berm or 1.50 feet above High water mark in main pitch during the North East Monsoon. . . . . .

. . . . . .

Ventilation. It is believed that reasonably sufficient means have been provided in the drawings & estimates to ensure that the Ventilations of the Inner Casing can be regulated by the Ordnance Officer in charge as above described, but as the Regulations to be referred to were originally drawn to meet the conditions of a Magazine built

built at Halifax, in British North America, and as different conditions of atmosphere, temperature &c. exist in Madras, especially so in any building situated, as this will be, in the angle formed by 2 high walls, where lead Ventilation will probably be caused rather by stagnation of air than from any great difference between temperature of outside & inside air. To meet this stagnation of air, should it be not sufficiently provided against by the Several hollow walls & outside openings there, it is proposed to build in the West wall of the Magazine 2 horizontal circular holes 2½ feet diameter at about 4 feet above floor level, against which can be afterwards fixed M. A. 2' Blackman's Patent air propeller as in diagram. This air pumping Machine could be worked by manual labour with

with some simple pegged wheel apparatus made for the purpose: the total capacity in air Space of the interior is under 27175 Cub. ft.

. . . . . .

True Copy:

W. H. Burton

Lieut. R.E.

Sup.g Engr. 5th Circle

orm No. 20 A.
7 B.

Quarter Master General's Office,
Octacamund,
27th June 1887.

No. 2267A

From

Brigadier-General E. FAUNCE,
~~Secretary~~ Quarter Master General,

To

The SECRETARY to GOVERNMENT,
Military Department.

Sir,

Referring to G.O. No: 7155 of 15th November 1886, I am desired by the Commander-in-Chief to submit the accompanying Proceedings of a Committee assembled at Fort Saint George, on the 27th December 1886, under the orders of His Excellency to report upon the improvements necessary to the Fort Magazine for the storage of powder required for the armament.

with two rough estimates and three plans.

2.

2. His Excellency concurs in the recommendations of the Committee for the proposed utilization of the Saint Thomé casemates, and for the improvements thereto and to Saint George's Magazine, at a cost of Rs: 33000 and 18000 respectively and desires me to submit them for the sanction of Government.

I have the honor to be
Sir
Your obedt. Servant

L. Munk

Brigr. Genl,
Quarter Master Genl,

St. George's Magazine.

Recommendation of the Committee for making the Magazine bomb-proof.

Side walls on the East to be thickened to be total of 18' 6" by means of the best rough stone masonry in lime mortar as shewn on plans & sections herewith attached.

Ventilation & powder & barrel racks and entrances &c to remain as now.

Overhead Covers. The West side & end walls to be thickened as shewn & as to form foundations for a parapet wall to retain extra covering to the arch and the old lime concrete on top to be notched out: each hundred Cub. ft. of this extra covering to consist of 15 Cub feet best Portland Cement 87 Cft. of clean sharp and broken granite and 33 Cub feet of granite blocks as per specifications attached. 3 feet thick over the crown and 4½ & 6½ ft. thick over the haunches of the arch.

This is again to be covered with well rammed clay out of

pa

of Blank to a [illegible] Location
Approximate Cost Rs 18000.

[illegible] Burton
for RE
Fortifications Circle

285/26 8/10

Proceedings of a Committee held at Fort St. George on the 27th December 1886, and subsequently pursuant to His Excellency the Commander-in-Chief's orders as conveyed in Quarter Master General's letter No. 4537 A dated 9th December 1886.

President.

Major General A. C. Johnson, C.B.
Commanding Eastern District.

Members.

Col. N. McLeod, R.A.
Inspector General of Ordnance.

Brevet Colonel & Lieut. Col. H. Burton, R.E.
Superintending Engineer, Circle.

The Committee having assembled pursuant to the above Orders, the Inspector General & Officers in the Fort proceed to inspect [illegible] of the Casemates which from their position and present general state of repairs appeared to be best suited to be

be converted into Reserve Powder Magazine and the three existing Magazines, Caldwells, St. Georges and the Grand.

The Committee also perused the correspondence &c. relating to the subject of storage of powder Bomb proof Magazines in the Fort.

In regard to para 4 of the Quarter Master General's letter Class I the quantity of powder required for Service at or about the Fort will be as follows.

Ordnance Reserve for 6-9" BL & R guns now mounted ..... 611 Barrels.

Do. Do. for the guns of the armament of Fort St. George revised in accordance with Proceedings of Government &c. 6854 dated 29th October 1880. .. 471.

Do. for 6-10" B.L.R guns now being constructed — 4500

5582.

Class II

The accommodation available in existing Magazines is, so far as racks (old style) are concerned as follows —

	Barrels. 1880
St. George's Magazine ...	
Caldwells — " —	1266

Grand Magazine now racked for small arms ammunition but might be racked for ... 1700.

Class III

The Committee do not think it advisable on account of position as regards both, and our account of its condition as regards Caldwells Magazine, to utilize either the Grand or Caldwells Magazines. But would recommend that St. George's Magazine be put into a thorough state of repair and made bomb proof in accordance with Memorandum regarding it enclosed.

IV

The accommodation elsewhere available for Reserve Ammunition of the Revised armament of Fort by Breech Batteries is at

Veyasarpandy
Fort Mount
Estimates in Stone Masonry
for the Fort.

The Committee do not think it advisable to again utilize the Veyasarpandy Magazine on account of its isolated and unguarded position and the placing of the building of part of Reserve received by the Quarter Master General for several years past.

The Committee do not think it advisable to utilize the large Reserve Magazine at the Mount for the following reasons.

(a) it is 9 miles from the Fort and over 10 from the Chine's Battery

(b) there are but two main roads to it, one crossing 2 rivers by large

4/5/1838/87

large bridges & other minor Streams
the other crossing 3 Rivers by large
bridges & other minor Streams

(C) it is only 4 miles from the Sea.
the Committee would point to the
provisions (in the present necessity of
which they fully concur) issued to
the Officer Commanding troops
at the Mount when His Excel-
lency Sir Frederick Roberts
was Commander-in-Chief at
Madras to the effect that in the
event of trouble being imminent
the Ordnance Powder stored in
the Ground Magazine at the
Mount would have to be
destroyed or withdrawn to
Madras.

The Committee think
however that if the casemates
in St. Thome curtain East
of the St. Thome Gate of the Fort
were put into a thorough state of
repair & made bomb proof
in accordance with Memoran-
-dum regarding it enclosed
it could hold 3782 barrels.

The probable cost of the (Clause V
work described for St. George's
Magazine will be Rs. 18000 and Rs
-pees 33,000 for St. Thome Curtain.

As regards the necessity or not
of building a new Magazine
the Committee would point
out that there is no available
site for such other than that
on the berm of the Vallajah
curtain already condemned.

H Olpherson
Major Genl. C.B.
Commanding Eastern District } President

Lt. Col. R.A.
Inspector General of
Ordnance } Members

W H Burton Lt. Col. R.E.
Superintending Engineer
5th Circle

Casemates with St. Thomé Curtain.

Recommendations of the Committee for rendering the Casemates East of St. Thomé Gate fit for reception of powder barrels

Floor - to be covered with asphalte on a suitable mixed surface.

Sidewalls on North & East to be thickened to a total of (10) ten feet by means of the best brick work laid in Portland cement mortar.

Ventilation of the interior to be provided - 1st by means of 12" wide Zig Zag openings one in each of the existing doorways are built up also with the best Portland Cement Brick work.

2nd by means of 12" diam.r Zig Zag air shafts to be driven thro' the arched roof - and made in the overhead concrete during the laying of the latter.

Powder racks to be as shewn in the drawing - two rows in each rack - 3½ feet passage between each rack & North wall

&

the 2 racks - 4 tiers of barrels to rest on suitable flooring battens and 4 tiers on upper transoms - all racks to be provided longitudinally - so as to contain 5 barrels in each tier).

A light moveable floor in two lengths of 12 feet each to be laid at the level of 4" tier across the 3'6" passages at any particular section of the racks to facilitate the Magazine men handling & lowering & stacking the barrels - also 5 light ladders to be provided for examination of the upper barrels.

Lighting the powder Chambers to be by means of lamp recess made in the walls of Lighting Passage - closed on the powder Chambers side by the usual brass & plate glass frames - as already provided in the Breach Battery, Agram &c

Entrance to the powder Chambers to be by means of pair Entrance Lobby to each Chamber provided with wood, barrow, seats & other facilities for Magazine men Shifting their clothes before entering the powder Chambers.

Overhead Cover 2 feet of earth over the arch to be removed and the thickness of 3 feet of Portland Cement Concrete laid flat thereon in 12" layers each hundred

6 cft. Concrete to be composed of 15 cwt. 6 cft. best Mashas Cement tested in the usual manner to take a breaking Strain of 300 lbs per 2½ square inches

87 6 cft. of clean broken granite and Coarse Sand - free of sea water

33 6 cft. of clean pebble stones in large blocks.

The Portland Cement Concrete to be covered with ¾" pavement to be poured with shall be properly sloped to keep out damp from overhead and Earthwork free from building, debris 2½ feet thick to be laid covered with and rammed and gravel over the Asphalte.

Lightning Conductors to be by means of two Copper bands ran 1½" + ⅛" running along rear & front parapet walls on top and lead at each end into a wet earth terminating in Heel

Sheet copper plates each 12 f/s
six — and —
Upper terminals by means of ½"
diam.r Copper uprights 5 feet
long placed at 24 feet inter-
= vals along the two 1½" bands
& brazed to them.

Approximate cost Rs 33,000.

N.B. All the Brass & copper fasten-
= ings and wood — Racks in the
Veyasarpandy Powder Magazine
should be carefully preserved
by the O.O. Department for uti-
= lization at the St George's &
St Thomas Powder Magazine.

Sht 2/
PW 4467/9
8109

Worthington Lt-Col. R.E.
Sup.g Engr & Circle.

Sht 2 Schedule

P. S. 15th Nov. 1886 Nos: 447-48R

P. W. Dept.
To be returned with reply.

5 JUL 87

Military Departt
Ootacamund
4th July 87
No. 3934

Transferred to the Public Works department, with reference to Govt: in that department No. 2928W 3 6th Nov: 86.

2. The Govt: in the Military department concurs in the views of H.E. the Commander-in-Chief, as expressed in para 2 of the Quarter Master Genl's letter.

By order,

A Mennie Herbert Bayfield
Secretary to Government.

No. 1084 W dy 29.4.86.
" 1240 W dy 17.5.86
" 2928 W dy 6.11.86.

2651
circ. 17-10-87

P.W.C. No. 5155 E.
8109 87

Military (1887) Department.

No. 4284

From Exch Rs. 291W

The ~~Offg.~~ Quarter Master General,

To Exch Rs. 556 P.W.

27-9-87

The Secretary to Government,

Military Department.

No. 2267 A.

Dated 27/30 June
Despd
Received 30 June

P.W. 7-7-87

Enclosures. 6 (+311 -)

Forwards Proceedings of Committee upon the improvements to the Fort Magazine for storage of Powder required for Armament.

No. 2288 C dy 7th July 1887

Memo

From the Dy Mr Genl No 2267 A dy 27.6.87
Sent from the Mily. Dept - 3934 dy 4.7.87

No. 228[illegible]

* P.W.C. No. 5155

Forwarding Proceedings of a Committee held on the 27 Dec. 1886 reporting upon the improvements necessary to the Fort magazine for the storage of powder req^d. for the armament.

Forwarded with reference to Govt. No 2928W dy 6th Nov^r 1886. to the S.S. V Circle, for very early submission of detailed estimates of the cost of carrying out the Committee's recommendations.

7th July 87

S.S. V Circle, with Fo 7/7/87
papers in original
(to be returned with reply)

Jo 5/7/87

P. 9. 15th Nov. 1886 Nos: 447-458

P. W. Dept.
To be returned with reply.

5 AUG 87

P15

Military Departt
Ootacamund
4th July '87
No: 3934

Transferred to the Public Works Department, with reference to Pws: of Govt in that department No: 2928/W 3 6th Nov: 86.

2. The Govt: in the Military department concur in the views of H.E. the Commander-in-Chief, as expressed in para 2 of the Quarter Master Genl's letter.

By order,

A Kennedy Herbert Brigr Genl
Secretary to Government.

No: 1084 W d/ 29. 4 86.
" 1240 W d/ 17. 5. 86
" 2928 W d/ 6. 11. 86.

2651
circ. 17-10-87

P.W.C. No: 5155 E.1

Military (1887) Department.

8109/87

No. 4284

From Engr. Rs. 291W

The ~~Offg.~~ Quarter Master General,

To Engr. Rs. 556 P.W.

27-9-87

The Secretary to Government,

Military Department.

No. 2267 A.

Dated 27 June
Dep'tch 30 June
Received 30

R 7.7.87

Enclosures. 6 (+3 Maps)

Forwards Proceedings of Committee upon the improvements to the Fort Magazine for storage of Powder required for Armament.

No: 2288 C d/ 7th July 1887

P.W.

Memo

From the Dr Mr Genl No 2267 A d/ 27. 6. 87
Encl from the Mily. Dept - 3934 d/ 4. 7. 87

No. 2288 C

Forwarded

* P.W.C. No: 5155

Forwarding Proceedings of a Committee held on the 27 Dec. 1886 reporting upon the improvements necessary to the Fort magazine for the storage of powder req'd. for the armament.

with reference to Ex.
No 2928 W d/ 6th Nov 1886. to the S.S. V Circle. for very early submission of detailed estimates of the cost of carrying out the Committee's recommendations.

7th July 87 -

S.S. V Circle, with papers in original (to be returned with reply)

5th 7/7

Jdl 5/7/87

B·N° 3043W 2/17-11-86
S·O - 2928W - 6-11-86
B - 2746W - 18-10-86
S.O. - 2497W - 25-9-86
" - 1240W - 17-5-86
" - 1084W - 29-4-86
" - 2454W - 20-10-85
B - 2052W - 3-9-85
" - 1821W - 5-8-85
" - 1719W - 23-7-85
" - 1663W - 17-7-85
" - 1153W - 15-5-85
S.O. - 2289W - 16-9-84
B - 2009W - 15-8-84
" - 1940W - 9-8-84
" - 1585W - 24-6-84
" - 1734W - 14-7-84
" - 1681W - 5-7-84
N° 319E - 25-6-84
" 305E - 24-6-84
S.O. - 978W - 15-4-84
B - 749W - 10-3-84
S.O. - 850W - 31-3-84
" - 2970W - 19-10-83
B - 2154W - 6-9-83

No 2288 [illegible]

Do 12/7

Estimate No. 109 of 188 -8. 1200/32

Fund
Financial Head— Imperial Ordinary
Service
Budget Head— Military
Departmental Head— Original work
Main Head— Ordnance Depatt
Sub-Head— Magazines.

Project of which the work forms part—

Section—

Name of Work— Rendering St. George's magazine.
Fort St. George - Bomb proof

Amount of Estimate Rs. 17000

To be carried out by— the Ex Engr. Presy Dn

REFERENCES.

Item 9 of Part 1 Class B works of the Imperial Military Budget Estimate for 1887-88 Communicated with G.O. No: 1160 dated 13th May 1887.
dated 28th April 1887. Supdg. Engr. No: 789
Supdg: Engr. D Circle No: 725 dated 11th May 1887.
Do Do No: 847 dated 14th Do
Do Do No: 1236 A dated 13th June 1887.
Do Do No: 1265 dated 15th Do

REFERENCE TO MADRAS P. W. D. CODE.

PARAS. 1074 TO 1076.

P. W. D. FORM. No. M 203.

CIRCLE D

DIVISION— Presidency

TALUK— Madras

ESTIMATE FORM—Wrapper or Outer-sheet.

Estimate for* Rendering St. George's Magazine Fort St. George Bomb Proof.

Amount of Estimate, Rs. 17000

Detailed Estimate, No. of 188 .

Genl 4457 28/7/87

Detl. No 4396 A

*Here enter name and description of work in full.

Barracks and Buildings
Estimates.

QUARTER MASTER GENERAL'S OFFICE,

Ootacamund, 3rd augst 1887.

No. 2718 A. 28/6/37

From

BRIGADIER-GENERAL E. FAUNCE,

QUARTER MASTER GENERAL,

To

THE SECRETARY TO GOVERNMENT,

MILITARY DEPARTMENT.

SIR,

I have the honor, by order, to forward for sanction and transfer to the Public Works Department for disposal, the estimate, plans &c., below-mentioned, which have been approved by the Commander-in-Chief. The plans and estimates have been countersigned.

Abstract and detailed Estimate amounting to Rs: 17000 for adapting Saint George's Magazine in Fort Saint George for the storage of powder for the Fort Armament - with report & specification & 5 plans.

2. An allotment of Rs: 17000 has been made for this work in the current year's budget vide G.O. No: 1160 W of 28th April 1887, M.D. no: 2867 of 16th May 1887.

I have the honor to be,
Sir,
Your obedt. servant,

E. Faunce
Brigr. Genl
Quarter Master Genl

Allowed Vide Pr. Sec. Govt. Mily. Dept. No 2754 A dated 8-8-87.

N.B. 8 Spare copies of the Orders on this will be required.

No 2288C - 7·7·87 — B-No 4194W - 9·6·8·83
B-No 3643W - 17·11·86 — 2·9·7·88
Q·6· 29284 - 6·11·86 — B-No 1163W - 12·7·88
" 11617W - 28·4·87 — Q·6·1153W - 15·5·88
" 3376833W - 17·12·86 — " 2286W - 16·9·86
B-No 2746W - 18·10·86 — B-No 2009W - 15·8·84
Q·6·24978 - 25·9·86 — 1240W - 9·8·84
" 1240W - 17·5·87 — " 1588W - 24·6·86
" 10842 - 29·4·86 — " 1744W - 14·7·87
" 24574W - 20·10·86 — B-No 1687W - 5·7·84
" 2052W - 3·9·83 — B-No 3176 - 25·1·84
B-No 1572W - 5·8·84 — Q·6·3652 - 30·6·84
Q·6·29704 - 19·10·83 — B-No 1649W - 11·6·84
Military Dept — B-No 1649W - 19·9·84
Q·6·29704 - 19·10·87 — B-No 1649W - 31·3·84
Q·6·29704 - 19·10·87
B-No 2158W - 6·8·93
Ostacamund
6th August 87.
No. 4746.

Approved & transferred to the Public Works Department for disposal.

By order

A Kennet Herbert

Keyser

Secretary to Government

Military (1887) Department.

No. 5295

From

THE QUARTER MASTER GENERAL,

To

THE SECRETARY TO GOVERNMENT,

MILITARY DEPARTMENT.

No. 2718 A

Dated 3d August.

Received 4

Ry 10.8.87

ENCLOSURES. 7 (+2 plans)

Forwards for sanction & transfer to the P.W.D. Estimate plans &c. for Rs 17,000 for adapting St George's Magazine in Fort St George for the storage of powder for the Fort armament.

Circ 17-10-87 R. 20-10-87.

Dd 19 VIII 87

Returned WD 90-8-87

SUPERINTENDING ENGINEER'S OFFICE,

No. 2657, V CIRCLE, MADRAS.

Camp Pelandorai 30th August 1887.

From Lt Col H. M. Vibart R.E.
The SUPERINTENDING ENGINEER,
V CIRCLE,

To

THE Chief Engineer & Sec to Govt
P.W. Department.

Sir,

I have the honor to return as asked for in your telegram of 23d August & the same enclosures received with your Memorandum No. 2288C dated 7th July 1887 and

1 Military Dept Endorsement No. 3934 of 4th July 1887 on Quarter Master Genls letter.
2. Proceedings of Committee on Fort & Magazines.
3. Memo of proposed improvements to St. Georges Magazine.
4. Memo of proposed improvements to Casemates in St. Thome Curtain.
5. Plan of St. Georges Magazine.
6. Section of — Do —
7. Plan & Section of Casemates in St. Thome Curtain.

I have the honor to be

Sir

Your Most Obedt Servant

H M Vibart Lt Col R.E.

Superintending Engineer

5 Circle

4748-23-8-87

From

The Superintending Engineer,

V Circle,

To

The Chief Engineer,

Fort St George.

Dated 30 September 1887.
Rcvd. 3 October
Regd 5-+-87

12.12.10.87

Enclosures. 1

(+ 3 plans)

No. 2654.

For C Magazine Improvements.

Re Levies pertaining documents regarding —

Circ. 17-10-87 R. 20-10-87

B^y Mily Works

Public Works Department.

No. 2654

A/Dy

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 6th

Read the following

From the Supty Engineer V Circle A. C. No. 4349 d/26th November 1886
From the Quarter Master General — No. 2267 A. d/27th June 1887.
Endorsement in the Military Department. No. 3934 d/4th July 1887.
Endorsement in the Public Works Department. No. 2288 C d/7th July 1887.
From the Qr. Mr. General — No. 2710 A d/3rd August 1887
Endorsement in the Military Department. No. 4746 d/6th August 1887
From the Superintending Engineer V Circle — No. 2651 d/30th September 1887.

Ordered that the Government of India be addressed.

A. C. No. 2807 dy. 20 Oct 87

To

The Secretary to the Govt of India
Military Department.

Sir,

In reply to your letter No. 1607 Fd. W. dated 25th October 1887, returning plans and estimates for a proposed new magazine on the Wallajah berm Fort St George, I am directed to forward the

RPH 19/11

S.E. V Circle V
Mily Dept — V
3/11/87

the undermentioned documents.

(1) Letter from the Supdg Engineer V Circle no 4349 dated 26th November 1884, stating the circumstances in which the site on the Wallajah berm was selected, and submitting observations in reply to the objections to the design raised in paras 2 and 3 of your letter.

(2) Proceedings of a committee assembled to report on the measures necessary to improve the Fort magazine and to provide additional accommodation for the storage of powder.

(3) Plans and estimate amounting to Rs 17,000 for improvements to the Fort magazine.

2. In view of the objections raised by the Government of India to the construction of a new magazine on the Wallajah berm, it has been decided to abandon the proposal, and to strengthen the existing St. George magazine in the Fort. To provide the additional storage accommodation required, the Committee recommend that the casemates in

No 97

in the St Thomé curtain of the Fort be thoroughly repaired and rendered bomb proof. It will be seen that the Committee do not recommend the adoption of the suggestion of the Government of India that the powder which cannot be stored in the Fort magazine should be kept at St. Thomas mount.

3. I am now directed to submit the proposals of the Committee for the consideration of the Government of India, and to request that, if approved the plans and estimates for strengthening the Fort magazine may be returned as early as practicable in view to the current year's grant of Rs 17,000 for the work being fully utilised. Estimates for improving the casemates in the St Thomé curtain are under preparation and will be sanctioned by this Government, if the proposals

proposals of the Committee
be approved by the Govern
-ment of India

WOS
14.10.07

Jdu
17/10/07.

Desbd with
Go 2w 2806 W
9 blans - 1 Report
1 details & 1
abstract
estimates
8/11/07

Cu

The Hon P.P. Huckabee

2556W

circ. 17-10-87 R 20-10-87

Govt. of 1887

PUBLIC WORKS

Dated

Rec'd

Encl.

G.O. 20th Oct 1887, No 2807

2807

Powder magazine in
Fort at Sarge

Old Govt application to be
addressed with regard
to the measures necessary
to improve the existing
and to provide additional
accommodation for
the storage of powder

Powder magazine in
Fort at Sarge

Proposals for the improvement
of the existing
provision of additional
accommodation for the
storage of powder subject
to the consideration of