GOVERNMENT OF MADRAS.

MILITARY DEPARTMENT.

25th November 1887, No. 7408.

Defences—Forts.

Read the following papers :—

No. 460. *From Lieutenant-Colonel E. COLLEN, Officiating Secretary to the Government of India, Military Department, to Brigadier-General A. KENNEY-HERBERT, Secretary to the Government of Madras, Military Department; dated Simla, the 26th September* 1887, *No.* 2020-*MW.*

Defences—Forts.

I am directed to acknowledge the receipt of the Annual Inspection Report on Fort St. George for 1887 forwarded with your No. 4612-A, dated 1st August 1887.

2. It is observed that among "Works considered necessary" is included the rendering bombproof and proof against horizontal fire of magazines sufficient for about 5,500 barrels. But so far as is known from the information in this office, the present magazine accommodation in the Fort is only capable of containing 2,860 barrels. If this is correct, it would follow that to provide magazine accommodation in the Fort for 5,500 lb. of powder a new magazine would have to be built.

3. But the Government of India consider it would be a mistake to store the whole of this powder in Fort St. George, and I am, therefore, to suggest, for the consideration of the Governor in Council, that it would be advisable to store only 2,860 barrels in the Fort for which magazine accommodation exists, and to keep the balance at St. Thomas' Mount. This arrangement would provide an ample supply on the spot to meet any emergency, and the balance would be within easy reach.

4. The magazine at St. Thomas' Mount will contain 5,760 barrels, and the arsenal proportion to be maintained is 3,160 barrels; accommodation is, therefore, available for 2,600 barrels, which is more than sufficient for the balance of powder for the armament and coast batteries which cannot be stored in Fort St. George.

5. I am to observe that the estimated amount of powder for the armament of the Fort and Coast Defences is 5,336 lb. only.

No. 6151.

Referred to His Excellency the Commander-in-Chief for favor of remarks with advertence to Proceedings of Government, No. 4612, dated 1st August 1887.

(By Order.)

OOTACAMUND, *7th October* 1887. (Signed) A. KENNEY-HERBERT, Brigdr.-Genl., *Secretary to Government.*

To the Quarter Master General.

No. 461. *From Lieutenant-Colonel D. J. S. McLEOD, Deputy Quarter Master General, Madras Army, to Brigadier-General A. KENNEY-HERBERT, Secretary to Government, Military Department; dated Ootacamund, 5th November* 1887, *No.* 4271-*A.*

In returning the letter of the Government of India, Military Department, as per margin referred to the Commander-in-Chief under No. 6151, dated 7th ultimo, I am desired to invite the attention of Government to the proceedings of the Committee forwarded with this office letter No. 2267-A, dated 27th June 1887.

No. 2020-MW of 26th September 1887.

2. From clause III of these proceedings, which apparently had not been before the Government of India at the time its letter under notice was despatched, it will be noted that, as matters at present stand, there is not safe storage accommodation for a single barrel of powder in Fort St. George, and that, even when St. George's Magazine is made suitable for storage of powder, * it will not contain more than 1,800 barrels.

* *Vide* estimate submitted with this office No. 2718-A of 3rd August 1887.

3. The Grand and Caldwell's Magazines have long been condemned as unsuited for the storage of powder, and have never been considered in any recent calculations of available accommodation even by the Government of India.—*Vide* its letter No. 1607-MW, dated 25th October 1886, in Proceedings of Government No. 7155, dated 15th November 1886, in which reference is made to only one existing magazine, St. George's, as being adapted for the storage of powder "if put into thorough order."

4. This magazine, as above mentioned, can hold but 1,800 barrels; so it is not clear on what calculation the Government of India has estimated the capacity of existing magazines in Fort St. George at 2,860 barrels.

5. It may be noted here too that, whereas the Government of India places the quantity required for the Fort armament and Beach batteries at 5,336 lb—doubtless barrels are intended—the Inspector-General of Ordnance (see clause I of the proceedings of the Committee above referred to) gives the quantity as 5,582 barrels.

6. Hitherto St. Thomas' Mount has not been considered as a suitable place for the storage of any part of the powder required for the armament of the Fort and of the Beach batteries, for the reasons mentioned in clause IV of the Committee's proceedings, and in view of the possibility of a hostile force being landed on the coast and making a descent on that station, if these considerations are decided to be unimportant, the portion (3,782 barrels) of the powder in question in excess of the 1,800 barrels to be placed in St. George's Magazine, Fort St. George, might doubtless be accommodated in the Reserve Magazine existing at St. Thomas' Mount; but it would seem to His Excellency the Commander-in-Chief to be a measure of doubtful prudence to store so large a proportion of the required quantity of powder at such a distance from the points at which it would be wanted for use.

No. 462. No. 7408.

Copy of the foregoing letter from the Quarter Master General forwarded to the Secretary to the Government of India, Military Department, with reference to his No. 2020-MW, dated 26th September 1887, for submission to the Right Honorable the Governor-General in Council.

2. The proceedings of the Committee referred to are embodied in Proceedings of Government, No. 6829, dated 5th November 1887 (copy of which is attached), from which it will be seen that the Government of India in the Military Works Department have been addressed on the subject under No. 2807 (Public Works Department), dated 20th October 1887.

(By Order.)

FORT ST. GEORGE, 25*th November* 1887. (Signed) A. KENNEY-HERBERT, Brigdr.-Genl., *Secretary to Government.*

To the Quarter Master General.
" Inspector-General of Ordnance.
" Public Works Department.

Exd. E. C. Shunker.

No. 3401 W dy/13th Decr 1887

Comd to the Supy Engr.
V Circle in contn of Jo No.
2806 W dy 20th Oct 1887.

(D) J.O.K.

Govt. of {1887} Madras.

MILITARY.

To

THE QUARTER MASTER GENERAL,
&c., &c., &c.

Dated November, 25th.

Issued

Recd. *Encl.*

25th November 1887, No. 7408.

No. 3401 W dy/13th Decr 1887

NOVEMBER.
Nos. 460—462.

Defences—Forts.

Fort St. George.—Letter from the Quarter Master General relative to magazine accommodation in —, communicated to the Government of India with remarks.

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″ B.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 Veyasarpaudy 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.)

(Signed) J. O. HASTED, Colonel, R.E., Secretary to Govt., P.W.D.

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

LETTER—to the Secretary to the Government of India, Military Department, dated Chepâk, 20th October 1887, No. 2807 W.

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.

(Signed) J. O. HASTED, Colonel, R.E., Secretary to Govt., P.W.D.

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, Nos. 2806, 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.

GOVERNMENT OF MADRAS.

MILITARY DEPARTMENT.

25th November 1887, No. 7408.

Defences—Forts.

Read the following papers :—

No. 460. *From Lieutenant-Colonel E. COLLEN, Officiating Secretary to the Government of India, Military Department, to Brigadier-General A. KENNEY-HERBERT, Secretary to the Government of Madras, Military Department ; dated Simla, the 26th September* 1887, *No.* 2020-*MW.*

Defences—Forts.

I am directed to acknowledge the receipt of the Annual Inspection Report on Fort St. George for 1887 forwarded with your No. 4612-A, dated 1st August 1887.

2. It is observed that among "Works considered necessary" is included the rendering bombproof and proof against horizontal fire of magazines sufficient for about 5,500 barrels. But so far as is known from the information in this office, the present magazine accommodation in the Fort is only capable of containing 2,860 barrels. If this is correct, it would follow that to provide magazine accommodation in the Fort for 5,500 lb. of powder a new magazine would have to be built.

3. But the Government of India consider it would be a mistake to store the whole of this powder in Fort St. George, and I am, therefore, to suggest, for the consideration of the Governor in Council, that it would be advisable to store only 2,860 barrels in the Fort for which magazine accommodation exists, and to keep the balance at St. Thomas' Mount. This arrangement would provide an ample supply on the spot to meet any emergency, and the balance would be within easy reach.

4. The magazine at St. Thomas' Mount will contain 5,760 barrels, and the arsenal proportion to be maintained is 3,160 barrels ; accommodation is, therefore, available for 2,600 barrels, which is more than sufficient for the balance of powder for the armament and coast batteries which cannot be stored in Fort St. George.

5. I am to observe that the estimated amount of powder for the armament of the Fort and Coast Defences is 5,336 lb. only.

No. 6151.

Referred to His Excellency the Commander-in-Chief for favor of remarks with advertence to Proceedings of Government, No. 4612, dated 1st August 1887.

(By Order.)

OOTACAMUND, *7th October* 1887. (Signed) A. KENNEY-HERBERT, Brigdr.-Genl., *Secretary to Government.*

To the Quarter Master General.

No. 461. *From Lieutenant-Colonel D. J. S. McLEOD, Deputy Quarter Master General, Madras Army, to Brigadier-General A. KENNEY-HERBERT, Secretary to Government, Military Department ; dated Ootacamund, 5th November* 1887, *No.* 4271-*A.*

In returning the letter of the Government of India, Military Department, as per margin referred to the Commander-in-Chief under No. 6151, dated 7th ultimo, I am desired to invite the attention of Government to the proceedings of the Committee forwarded with this office letter No. 2267-A, dated 27th June 1887.

No. 2020-MW of 26th September 1887.

2. From clause III of these proceedings, which apparently had not been before the Government of India at the time its letter under notice was despatched, it will be noted that, as matters at present stand, there is not safe storage accommodation for a single barrel of powder in Fort St. George, and that, even when St. George's Magazine is made suitable for storage of powder, * it will not contain more than 1,800 barrels.

* *Vide* estimate submitted with this office No. 2718-A of 3rd August 1887.

3. The Grand and Caldwell's Magazines have long been condemned as unsuited for the storage of powder, and have never been considered in any recent calculations of available accommodation even by the Government of India.—*Vide* its letter No. 1607-MW, dated 25th October 1886, in Proceedings of Government No. 7155, dated 15th November 1886, in which reference is made to only one existing magazine, St. George's, as being adapted for the storage of powder "if put into thorough order."

4. This magazine, as above mentioned, can hold but 1,800 barrels; so it is not clear on what calculation the Government of India has estimated the capacity of existing magazines in Fort St. George at 2,860 barrels.

5. It may be noted here too that, whereas the Government of India places the quantity required for the Fort armament and Beach batteries at 5,336 lb—doubtless barrels are intended—the Inspector-General of Ordnance (see clause I of the proceedings of the Committee above referred to) gives the quantity as 5,582 barrels.

6. Hitherto St. Thomas' Mount has not been considered as a suitable place for the storage of any part of the powder required for the armament of the Fort and of the Beach batteries, for the reasons mentioned in clause IV of the Committee's proceedings, and in view of the possibility of a hostile force being landed on the coast and making a descent on that station, if these considerations are decided to be unimportant, the portion (3,782 barrels) of the powder in question in excess of the 1,800 barrels to be placed in St. George's Magazine, Fort St. George, might doubtless be accommodated in the Reserve Magazine existing at St. Thomas' Mount; but it would seem to His Excellency the Commander-in-Chief to be a measure of doubtful prudence to store so large a proportion of the required quantity of powder at such a distance from the points at which it would be wanted for use.

No. 462.

No. 7408.

Copy of the foregoing letter from the Quarter Master General forwarded to the Secretary to the Government of India, Military Department, with reference to his No. 2020-MW, dated 26th September 1887, for submission to the Right Honorable the Governor-General in Council.

2. The proceedings of the Committee referred to are embodied in Proceedings of Government, No. 6829, dated 5th November 1887 (copy of which is attached), from which it will be seen that the Government of India in the Military Works Department have been addressed on the subject under No. 2807 (Public Works Department), dated 20th October 1887.

(By Order.)

A. Kennet Herbert Brigdr.-Genl.,
Secretary to Government.

FORT ST. GEORGE,
25th November 1887.

To the Quarter Master General.
" Inspector-General of Ordnance.
" Public Works Department.

Exd. E. C. Shunker.

P.W.C. № 10,099

No 3401 W dt 13th December 87

Communicated to the Supdg Surv. V Circle in continuation of G.O. No 2806 W dt 20. Oct. 1887.

11.12.87

Jdt 12/12/87

Govt. of {1887} Madras.

MILITARY.

To

THE QUARTER MASTER GENERAL,
&c., &c., &c.

10.12.87

Dated November, 25th.

Issued

Recd. 10.12.87 *Encl.*

25th November 1887, No. 7408.

No 3401 W dt 13th December 87

NOVEMBER.
Nos. 460—462.

Defences—Forts.

Fort St. George.—Letter from the Quarter Master General relative to magazine accommodation in —, communicated to the Government of India with remarks.

S. S. V. Circle with 1 S-Copy Desptd. 13-12-87

MM 13/12

2 copies to duty.

Worthington