1. Number of pages.
2. Date of repair.
Initials of Reference

M.R.O. 1—82,400—28-11-80.

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

Cons 25-1-57

G.O. No.	200	Press Mis.
55-56		
Dated	21-1-	1857.

Not to be folded or roughly handled

Fort Saint George, Public Works Consultation of 25th January 1859.

No. 55. Read the following letter from Lieutenant Colonel E. LAWFORD, Officiating Chief Engineer; to W. H. BAYLEY, Esq., Acting Secretary to Government, dated 19th November 1858, No. 5583.

SIR,

With reference to my letter* as per margin, I have the honor to forward for submission to Government a report § by Captain Francis accompanied by Plans and Estimates for the repair of the drains of Fort Saint George, the re-construction of the Privies of the European Barracks, Infantry and Artillery and the construction of Public Privies for the use of the Clerks and others attending the Public Offices.

* No. 4060 dated 27th September 1858.

§ in original.

1 Original letter from Captain P. M. Francis, A. Supg. Engr. Central Circle, dated November 3rd 1858, No. 33.
5 Estimates.
8 Plans.

2. Captain Francis has shewn that the present drains are only adapted to discharge the rain water and some ordinary house drainage, that the drains have the worst possible shape and that they are not suitable for complete sewerage without the addition of glazed earthen-ware pipes, and moreover that they all except one discharge into the Fort Ditch.

3. It is now proposed to arrange for the periodical flushing of all these drains from the new reservoir near the Church which is to be filled by a Steam Engine of 6 Horse power fixed beyond the Ditch. The new drains necessary for completing the system by which the present ones will be flushed will be constructed on an improved section and provided with gates to effect the distribution of the water and the outfall will be into the sea.

4. The Privies of the European Infantry Barracks as now built are as bad as it is possible to conceive and their immediate re-construction on an improved plan seems essential on every consideration. Captain Francis' plan of dividing them into separate compartments and providing the means of flushing appears to be good and suitable in all respects as is also his proposal for flushing the drain from the Barrack Cook-rooms and extending it on piles into the sea.

5. The Public Privies for Clerks are to be constructed on the covered way of the N. E. Blind, and will be divided into compartments and flushed by a small cistern to be filled by Picottahs raising water from the Ditch. The drain from these Privies will join that from the Barracks and discharge into the sea.

6. The Privies of the Parcherry and Artillery Barracks are to be re-constructed on the same plan as those for the Infantry Barracks and the drains from them will be connected with the one from the latter buildings.

7. The expense of each separate portion of these improvements is stated as follows.

	Rs.
Drains...	10,800
Infantry Barrack Privies.	18,400
Artillery Do.	9,400
Parcherry Do.	6,700
Public Privies....	4,700
Total.....	50,000

fifty thousand.

Wooden water [illegible]

8. Having been in frequent communication with Captain Francis during the preparation of his plans, and having also carefully considered them on completion I am fully of opinion that they are such as may be relied on for effecting a thorough change in the existing most defective arrangements for the drainage of the Fort and providing cleanly and proper accommodation for the Troops and the persons attending the Public offices.

9. The Barrack Privies were condemned in the strongest terms by the Military and Medical Committee of 1856, and their improvement appears so urgently necessary that the Government may be disposed to undertake the work before the end of the Current Official year.

10. The contemplated plan for removing the Public offices from the Fort will not I think diminish the necessity of constructing Public Privies as it is proposed to add to the strength of the Garrison and the numerous followers and others will require increased accommodation.

11. The plan it will be seen requires the setting up and working of 3 Steam Engines and some permanent provision will have to be made for tending them which has not yet been estimated, but I have little doubt that the improved means of cleansing the Privies and drains will lead to such reduction of the cost of scavengering as to compensate for the working expenses of the Engines.

12. The erection of a Steam Engine in Saint George's Bastion may be considered somewhat objectionable though I do not think it dangerous, but the necessity of doing so only points out the urgent importance of removing the Powder Magazines to a different locality as already proposed.

13. Before concluding this letter, I must inform the Government with reference to para. 3 of Captain Francis' letter that I have taken steps to ascertain at what time the clearance of the Fort ditch was last executed and what was the former practice in regard to this operation being periodically performed and the result of my enquiry shall be reported.

14. Lastly I consider that Captain Francis has very satisfactorily performed a task which if left to the Garrison Engineer would not now have been accomplished owing to the numerous demands on that Officer's attention.

Letter from Captain P. M. FRANCIS, Acting Superintending Engineer, Central Circle; to Lieutenant-Colonel E. LAWFORD, Officiating Chief Engineer, dated 3rd November 1858, No. 33.

SIR,

In continuation of my letter of the 21th Ultimo to your address, I have now the honor to lay before you, the result of further examination on the subject of the Fort drainage.

2. It has been shown that the existing system of drains is only adapted to carry off the rain water, and some ordinary house drainage, that the drains have the worst possible shape, and that

Existing drains.

they could only be made available for any system of drainage which should involve water closet sewerage, by being filled with interior pipes of glazed earthen-ware, I might have added, that as all these drains with one single

Discharge into Fort ditch.

exception discharge into the Fort ditch, the present system can never be used for other purposes than it now is, because all arrangements for flushing Privies, must provide for discharging direct into the sea, and a thorough system of house sewerage, would therefore involve a separate and complete plan of pipes on suitable levels.

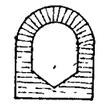
3. In the course of enquiry the state of the Fort ditch has come under notice, and a plan

State of Fort ditch

is herewith forwarded showing the existing depths at all parts, and proving that there has been gradually formed a large amount of deposit over the whole ditch, now as the purity of the water depends in some measure upon its body, it is advisable for the health sake of the Garrison, that the ditch should be cleaned out.

4. In order to arrange for the flushing periodically of all the existing drains, I have had levels taken, and have laid down on the plan, the new drains which will be required to complete the system so as to bring it under the influence of the reservoir near the Church, these drains are shown by yellow lines on the plan and to make the slopes clear at a glance, the heights of the drain floors above the mean level of the sea are marked at each spot. In order to give sufficient flushing power, it is arranged to have doors turning on a centre upright shaft worked by a key, at each junction, so that the stream may be confined to one drain at a time, for any dribbling stream through a drain (such as it would become by sub-division) would only produce the results on a small scale, that we so constantly see in broad and shallow rivers, viz., banks of mud and deposit with a winding current between.

New drains required to complete system.

5. The new drains will have a section of this kind,  as simplest to build and combine with the others, and will cost at the rate of Rupees 5 per running yard, the total cost will therefore be Rupees 5,205; to change the flow of the water 22 gates will be required costing each with fixing Rupees 15: a 6 Horse Engine will fill the cistern in one hour, and will cost with the necessary pipes, &c. Rupees 5,265, working from 8 to 12 hours, the whole of the drains may be flushed daily, thus the total cost of combining the present drains into one system and flushing them daily will be Rupees 10,800. I have not considered it worth while to enter the monthly cost of the establishment which need be scarcely more than the present, for by a proper scale of orders in regard to time, and reliefs of lascars, the junction gates on the drains may be shut off and opened with the utmost regularity, and with little labor, and indeed some of the lascars might soon be taught to tend the Engine.

Shape of new drains.

Cost.

Power required to fill cistern.

6. As under existing orders, Steam Engines cannot be erected in the Fort, I have provided for placing one on the outside of the ditch, to work the pump and to raise the water to such a level that by means of pipes laid through the casemates, and under the road, the cistern or reservoir near the Church, can be kept always supplied from the ditch, and as the spot is in close proximity to the tunnel for supplying the ditch from the sea, the water may always be calculated upon as pure; in some of the retired angles of the Fort ditch, the water has all the impurity of a stagnant pool, and it is worthy of consideration how this can be remedied.

Steam Engines outside Fort for supplying reservoir.

7. The 2nd part of this report, refers to the important subject of providing for the thorough cleaning of the Privies, attached to the European Barracks, Artillery Barracks, and Parcherry, by means of water, and for the Public Privies proposed to be erected for the convenience of Europeans and Natives, attached to the Offices in the Fort.

2nd Part
On the Barrack Privies and mode of sewerage.

Privies, themselves bad.

8. Nothing can be more desirable than to effect an immediate change in the Privies themselves, as well as mode of cleaning, both for the sake of decency, and for sanitary considerations. The Privies to the European Barracks, may be described as long sheds furnished with open tubs, arranged with no regard to order, across which planks perforated with holes are laid, to serve as seats; large open tubs placed in the open air, in the yard between the Privies serve as urinals, these tubs are removed at night, and either emptied into the sea, or the contents carted away by private individuals for manure, but as this is done but once in the 24 hours it is evident that such a mass of uncovered filth, in close proximity to the Barracks where the men live and sleep must be extremely prejudicial.

Open tubs removed at night.

Privies to be remodelled.

9. I propose to remodel the construction of the Privies entirely, to divide them into separate compartments, fit them with pans of a simple construction, provided with syphon traps, and by means of a cistern built at

the western end, to have water always laid on under pressure, so that the pans and pipes can be flushed at all times, this cistern will be connected with the cistern in the Barrack yard by iron pipes; this latter cistern is now connected in like manner by pipes with the cistern outside the Choultry gate, which is filled as required by picottahs, it takes 8 men 12 hours to fill these two last cisterns and costs 2½ Rupees their united capacity is 2,488 cubic feet or 19,972 gallons if a third cistern having a capacity of 4,420 gallons have to be filled by the same means it would take the same men 14½ hours, and it becomes a question then whether it would not be better to employ a small Steam Engine for the purpose of 4 horse Engine would raise the same quantity of water from the ditch in less than ½ an hour.

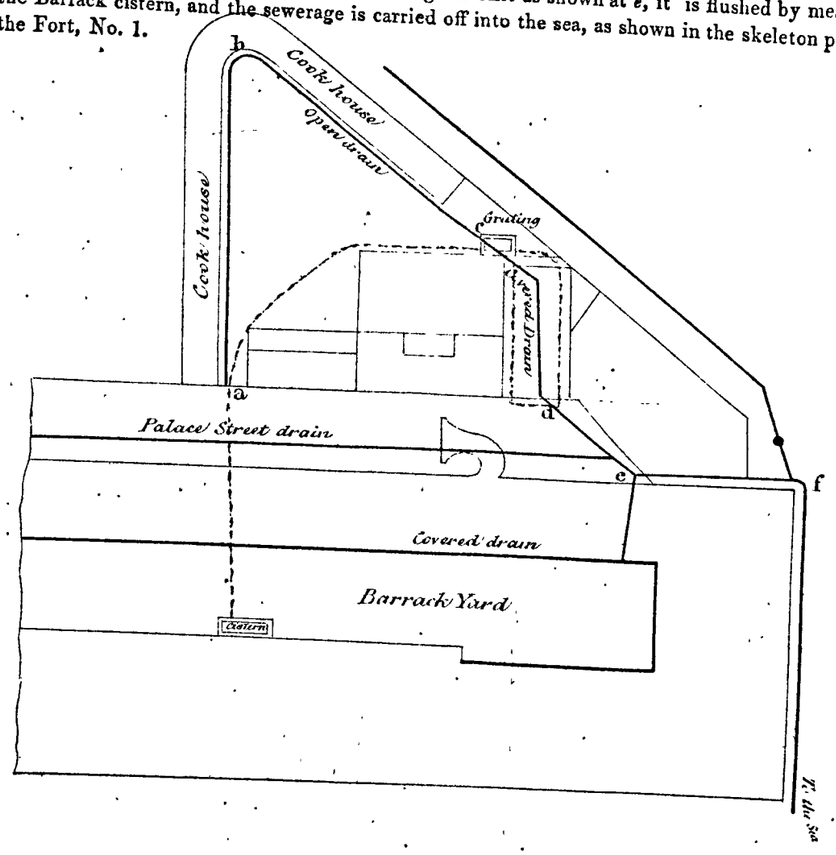
How to be flushed.

Power required to fill cistern.

10. On the skeleton plan of the Fort, a drain is shown in front of the Cook houses, this is an open drain lined and floored with granite, it is now cleaned by the flow of water from the bath rooms, as shown by arrows, but it can scarcely be said ever to be flushed, and at the extremity is a grating, the bars of which are so close together that no refuse matter can get between into the drain, the following sketch shows this drain; from the grating it continues under ground, passing over the Palace street drain near *e*, and joins the Barrack drain at *e*; the Barrack yard is drained on the surface, and connected by traps with an underground drain going all round, and making its exit as shown at *e*, it is flushed by means of the Barrack cistern, and the sewerage is carried off into the sea, as shown in the skeleton plan of the Fort, No. 1.

Cook house drains.

Drainage of Barrack yard.



11. The position of the cistern for the use of the Privies described in para. 9, is shown by dotted lines on the above sketch, and its mode of connection with the Barrack cistern is shown in a similar manner, and when the cistern is full, the valve at *a* can be opened, and so a thorough cleaning be given to the open drain in front of the Cook houses. The existing drain from *c*, to *d*, I propose to remove altogether, for a nine inch glazed pipe will suffice to discharge all the rain water that can possibly fall on the limited space enclosed by the buildings, the open drain will therefore end in a cess pit about the position of the present grating shown in sketch, from which at the proper level the pipes for the privy service will commence; these pipes will thus be flushed by the service *a*, *b*, *c*, from the Barrack cistern independently of, and in addition to, the constant action of water through the pans from the cistern at *c*, which it will suffice to fill once a day. The nine inch pipes from the Privies, will unite at *e*, and still continue of the same dimensions to the sea, and as the existing drain from *f*, has ample fall for the purpose, I propose simply to lay the pipe at the bottom of that drain, only taking care that it is so bedded, as not to be liable to be moved or injured by any flood water passing over it.

Drains how to be flushed.

Glazed pipe to be laid at bottom of existing drain.

12. There is a present difficulty attached to the exit of the drain into the sea, it is brought out into the beach, and a channel cut for it to dribble over, all the possible smell is thoroughly diffused into the air before it reaches the sea, this evil may be obviated, by continuing the pipe by one of metal from the present extremity, and extending it over the sea on piles, giving the mouth an inclination downwards, the discharge will then be instantaneous into the water, and no bad smell will be possible, this arrangement is shown on the section, Plan No. 4 accompanying this report.

Method of terminating drain at the sea.

13. I dislike the arrangement of the Public Privies, submitted to Government, and also their position over the ditch, I consider that a better position would be upon the covered way to the N. E. blind, it is easily approachable by existing passages, with only some slight alterations for convenience sake. I would arrange the interior into compartments as in the Barracks and flush the pans and pipes, from a small cistern built on the edge of the ditch, on the west side, this should be filled daily by picottahs, the sewage pipes should be carried round the face of the N. E. spur, and unite with the other pipe from the Barracks, and so discharge into the sea. The Public Privies are shown on Plan No. 8 attached to this report, and the cost would amount to Rupees 4,700.

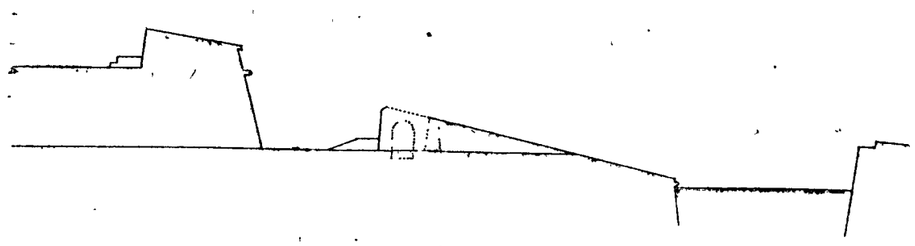
Public Privies former proposed position disapproved.

New site.

Interior arrangements.

How flushed.

The blind has to be rebuilt and the section can be altered in construction as shown below to give more room to receive the privies.



14. The Parcherry Privies are most abominable, dirty, and confined, and so are the Privies of the Artillery in St. George's Bastion, which are under the ramps, the Cook-houses being almost immediately above, and the smell in the neighbourhood overpowering, new baths and wash-houses have been built for the Artillery, to be supplied by a well close to them, the water being raised for the purpose by a rotatory pump, they have not yet been opened for use, I propose to attach Privies to this building, extending on the east side of it in two wings, for males and females, and arranged like those for the European Barracks. See Plan No. 7, the same cistern already built will answer for the supply to the pans and for flushing the soil pipes.

Parcherry Privies.
Artillery Privies.

Cook houses and Privies close together now.

New Privies to be attached to Bath-house.

15. The Artillery cistern will also be connected by pipes, with a cistern to be built at the Parcherry, for the supply of the new Privies to be built there, and the soil pipe from the Artillery Privies, will also be carried under those Privies of the Parcherry, it will be taken somewhat round under the street, to gain the higher ground opposite St. George's Gate, (so that it may

Supply from St. George's Bastion to Parcherry.

Soil pipes how to be carried.

be covered) as shown on the Skeleton Plan No. 1, by dotted lines colored yellow; after crossing the road, it will be carried along the wall, to join the pipe drain at the corner of the Barracks, where it will unite with the Barrack Privy pipe, and one only 9" pipe be continued: as the fall is very slight only two feet altogether, and the pipe is laid so near the surface in places, I propose to have this one of iron.

Interior arrangements of Privies. Wash-house for women.

16. The Plans Nos. 5, 7, 8 and 6 will make clear the interior arrangements of the Privies, &c. and on the latter is shown also a Wash-house for the women, which seems to me very desirable. The floors of the Privies and Wash-houses should be laid with asphalte so that they may be kept constantly washed and cleaned.

17. The following is an abstract of the estimate for the proposed works.

		Rs.
1.	Completing the Fort system of drainage and putting up Steam Engine pipes, &c.	
2.	Taking down and rebuilding Barrack Privies on a new plan with supply cistern, urinals, soil pans and pipes complete; and glazed pipe to the sea including terminal pipe of iron 18" diameter: and supported on piles including also 4 H. P. Steam Engine at Choultry gate to keep 3 cisterns full	10,800
3.	Public Privies	18,400
4.	Building new Privies to Saint George's Bastion with soil pans and pipes and water laid on &c., &c., 4 H. P. Steam Engine to pump	4,700
5.	Taking down and re-building Privies to Parcherry with cistern and pipes of supply from Saint George's Bastion cistern, taking down quarters and building wash-houses to Parcherry with water laid on from 7 Wells cistern, Iron soil pipes from Saint George's Bastion Privies to corner of Barracks	9,400
		6,700
	Total	50,000

Steam Engine would be in Outwork. Steam Engine in St. George's Bastion.

19. I would note here that the steam engine at the Choultry gate would still be within the Fort though among the outworks I don't suppose there would be any objection to this; a Steam engine would also be required in Saint George's Bastion and this would certainly be objected to under existing rules, but I think fenced in as it would be by buildings, that a special exemption might be made in its favor; water could of course be raised from outside by more expensive and complicated arrangements, but the engine placed at the Well, would be so useful in keeping the cistern above the baths &c., always full, and enabling us to use it for flushing purposes also, that I hope permission may be granted for it.

Soil pipes to be flushed twice a day.

20. The Privies being supplied with water always laid on, I consider it sufficient if the soil pipes themselves, are flushed in addition twice a day, for which purpose small sluice doors raised by a chain, or plugs drawn by a lever easily accessible at the cistern may be used.

No. 56. ORDER THEREON, No. 200; dated 21st January 1859.

Referred to the Military Department for consideration with reference to Extract Minutes Consultation, 23rd October 1858. The estimated outlay amounting in the aggregate to half a lac of Rupees is for five different descriptions of work; this will need the sanction of the Government of India for which application will be made, if no objections exist on other grounds in the Military Department, none of the Estimates provide specially for superintendence, and according to the concluding para. of Colonel Lawford's letter, the Garrison Engineer's time and attention would appear to be already too well engaged on works in progress under sanctioned estimates to be devoted to new ones.

(S'gned) J. D. BOURDILLON,
Secretary to Government.

Central Office of Public Works.
Fort Saint George 19th Novemr. 1858

No 5583

From
The Officiating Chief Engineer

To
The Secretary to Government P.W.

Public

Sir

With reference to any letter as
×No 4060 dated 27 September 1858 per margin, I have the honor to forward for submission to Government a report by Captain Francis accompanied by plans and estimates for the repair of the drains of Fort Saint George, the Reconstruction of the privies of the European Barracks, Infantry and Artillery and the construction of public privies for the use of the Clerks and others attending the public Offices

in original

Enclosures 14.
1 Brief letter from Capt P M Francis Asst E. C. C dated Nov 3/58 No 33.
5 Estimates
8 Plans

2

Carried over 835

2 Captain Francis has shewn that the present drains are only adapted to discharge the rain water and some ordinary house drainage, that the drains have the worst possible shape and that they are not suitable for complete sewerage without the addition of glazed earthen ware pipes, and moreover that they all except one discharge into the East ditch

3. It is now proposed to arrange for the periodical flushing of all these drains from the new reservoir near the Church which is to be filled by a Steam Engine of 6 Horse Power fixed beyond the ditch. The new drains necessary for completing the system by which the present ones will

9-

will be flushed will be constructed in an improved section and provided with gates to effect the distribution of the water and the outfall will be into the sea.

4 The privies of the European Infantry Barracks as now built are as bad as it is possible to conceive and their immediate reconstruction on an improved plan seems essential on every consideration. Captain Francis's plan of dividing them into separate compartments and providing the means of flushing appears to be good and suitable in all respects as is also his proposal for flushing the drain from the Barrack Cook rooms and

extending

extending it on piles into the Sea.

5 The public privies for Clerks are to be constructed on the covered way of the N. E. Bland, and will be divided into compartments and flushed by a small cistern to be filled by picottahs raising water from the Ditch. The drain from these privies will join that from the Barracks and discharge into the Sea

6. The privies of the Pareherry and Artillery Barracks are to be reconstructed on the same plan as those for the Infantry Barracks and the drains from them will be connected with the one from the latter buildings

7. The expense of each separate portion

portion of these improvements is stated as follows:

Drains	10800
Infantry Barrack Privies	18400
Artillery Do	9400
Parcherry Do	6,700
Public Privies	4700
Rupees	50,000

Fifty Thousand

8. Having been in frequent communication with Captain Francis during the preparation of his plans, and having also carefully considered them on completion I am fully of opinion that they are such as may be relied on for effecting a thorough change in the existing

wooden water spouts 7 ½ long

Carried over 835

most defective arrangements for the drainage of the Fort and providing cleanly and proper accommodation for the Troops and the persons attending the public offices

9. The Barrack privies were condemned in the strongest terms by the Military & Medical Committee of 1856, and their improvement appears so urgently necessary that the Government may be disposed to undertake the work before the end of the current official year.

10 The contemplated plan for removing the public offices from the Fort will not I think diminish the necessity of constructing public privies as it is proposed to add to the

the strength of the Garrison and the numerous followers and others will require increased accommodation

11. The plan it will be seen requires the setting up and working of 3 Steam Engines and some permanent provision will have to be made for tending them which has not yet been estimated, but I have little doubt that the improved means of cleansing the privies and drains will lead to such reduction of the cost of scavengering as to compensate for the working expenses of the Engines

12 The erection of a Steam Engine in Saint George's Bastion may be considered somewhat objectionable though I do not think

think it dangerous, but the necessity of doing so only points out the urgent importance of removing the powder Magazines to a different locality as already proposed.

13. Before concluding this letter, I must inform the Government with reference to para 3 of Captain Francis's letter that I have taken steps to ascertain at what time the clearance of the Fort Ditch was last executed and what was the former practice in regard to this operation being periodically performed and the result of my enquiry shall be reported

14. Lastly I consider that Captain Francis has very satisfactorily performed a task which if left to the Garrison Engineer would not now have been accomplished owing to the numerous demands on that Officer's attention

I have the honor to be
Sir
Your most obedient Servant

Fort St. George
19 November 1858

Lacoste Lieut. Colonel
Officiating Chief Engineer

To
The Secretary to Government
&c &c &c.

10 Wooden water Spouts of 3 ft. long	12	8	

Buildings ( ) (New Work)

Abstract of Estimate № of 185 /5

District Madras

Work Constructing Privies in St. George Bastion for the Department of Artillery

Quantities	Description of Work	Rates			Amount	Amount of each part.
6 Yds		Rs	as	ps	Rupees.	Rupees.
2688	Cft. Brick work in chunam @ Cft.		1	9½	301	
33	D. Circular arch work in D. D.		3	3	7	
63	D. Flat arch work in D. D.		2	9½	11	
70	D. Cornice work in D. D.		3		13	
368	Sup. Ft. Terracing with brick on edge Jelly 3 Course of flat tiles & plastering with 3 Coats chu: nam @ Sq.	19	2		70	
3700	D. D. Plastering with 2 Coats chunam D.	1	13	9	69	
215	D. Flooring with wall bricks in chunam and a levelling course of wall bricks underneath D.	4	14	6	10	
215	D. Asphaltic plaster over the floor D.	19			41	
	Excavating foundation and levelling the earth				7	
33	Cft. Teakwood @ Cft.	2	4		74	
20	Canvas Screen Shutters with frames & Lintels Complete @	10			200	
8	Attick Windows Complete D.	3			24	
10	Wooden water Spouts of 3 ft. long D.		12		8	
	Carried over				835	

Cant. 29 Octr. 1856

Chief Engr's Office
Recd. 30 Octr. 1856
No. 2789

From
The Offg Chief Engineer
To The Secy Board of Ord:

Dated 29th October 1856

Recd. 20th November 1856

Forwarding a Statement of Estimate for Privies in St. George Bastion for the Department of Artillery

8 Plans sent to the Chief Engr. 1-12-56

Forwarded by Command of the Board for the reason of the drains & soakpits, the construction of the privies & the European Establishment, which will be submitted for the sanction of the Supreme Government

By Order

Lt. Colonel Commg. Engrs.

Chief Engr's Office 20th January 57

Quantities. C. Yds.	Description of Work.	Rates Rs.	As.	P.	Amount Rupees.	Amount of each part Rupees
	Brought Over				835	
	20 Privy Seats complete @	7	"	"	140	
	Wood Oil 3 coats to the Joists	"	"	"	3	
90	Rft. Leaden pipes of 2 in. Dia.					
	: meter @ ¾ Rft.	2	8	"	225	
	20 Brass top of 1 inch & fixing @	6	"	"	120	
	Masonry work to D°	"	"	"	10	
	2 Wooden Plugs with Iron lever	"	"	"	4	1337
180	Rft. Stone Ware pipes 9 in. @ ¾ Rft.	2	4	"	405	
1100	D° Iron pipes 9 in. D°	3	5	4	3667	
	1 Steam Engines 4. H. P.	"	"	"	2186	
	1 Pump complete	"	"	"	650	
174	Rft Iron pipes 9 in. @ ¾ Rft	3	5	4	580	
	1 Engine House Vide de:					
	: tailed Estimate attached					
	to N°. 1. Estimate	"	"	"	396	7884
	Sundry charges & scaffolding &c	"	"	"		179
	Total Company's Rupees					9400

Central Office of P. W.
Fort St. George
19 Nov. 1858

L. Crawford Lieut. Colt.
Offg. Chief Engineer D. P. W.

Enclosure

In a letter

From

The Offg. Chief Engineer
D. P. W.

To

The Secretary to Government
D. P. W.

No
Ltr. dated 6th Oct. 1859

Dated 19th November 1858

Received

335/59

P.W.

No. 5583

Abstract Estimate for Construct-
-ing Privies in Ft. George Bastion
for the Department of Artillery
at Madras.

Amounting to Co's Rs. 9400-0-0

Buildings (.....) (New Work)

Abstract of Estimate No. ... of 1855

District Madras

Work Constructing an additional drains &c. in Fort St. George.

Quantities.	Description of works	Rate. Rs	A.	P.	Amounts Rupees.	Amount of each part. Rupees.
C. Yds.						
1011	Rft. Brick Drain ——— @ Rs.	5	-	-	5205	
	22 Sluice Shutters with frames					
	axles top frames and doors @	15	-	-	330	
					5535	
	One Steam Engine ———	-	-	-	2600	
	One Rotatory Pump ———	-	-	-	650	
174	Rft. of 9 inches diameter Iron					
	pipes ——— @ Rft.	3	5	4	580	
	One Engine House ———	-	-	-	396	
	One Cistern ———	-	-	-	595	
	Sundry charges ———	-	-	-	444	
	Total Company's Rupees					10800

Central Office of P. W.
Fort St. George
19 Nov. 1858

Lt. Colonel
Offg. Chief Engineer P. P. W.

Quantities	Description of work	Rate.			Amount.	Amount of each part.
C. Ft.s		Rs.	A.	P.	Rupees.	Rupees.

Enclosure

In a Letter

From

The Offg Chief Engineer

D. P. W.

To

The Secretary to Government

D. P. W.

Dated 19th Nov 1858

Rcd 335/59

P.D. 27/11/58

No 5583

of

Rc No 406 of 1859

Abstract Estimate for Construct-
ing an additional Drains &c.
in Fort St. George at Madras

Amounting to Co. Rs. 10,800—

Buildings } (New Work)

Abstract of Estimate No of 185 /5

District Madras

Work Taking down and rebuilding the European Barracks Privies

Quantities	Description of Work	Rates Rs	As	P	Amount Rupees	Amount of each part Rupees
C Yds						
11905 Cft	Brickwork in Chunam @ Cft	.	1	9½	1333	
135 Sft	Circular arch work in 2½ Bk	.	3	3	27	
195 Sft	Cornice work in 2½ Bk	.	3	.	37	
1728 Sft	Terracing with brick on edge Jelly 3 Courses of flat tiles and plastering with 3 Coats of Chunam to the Ceiling and to the Top of the Terrace Sft	19	2	.	330	
580 Sft	Flooring with wall bricks in Chunam and levelling Course underneath Sft	4	14	6	29	
580 Sft	Asphaltum plaster over the floor Sft	19	.	.	110	
221 Sft	Casing the Cistern with Cut Granite in Chunam Sft	12	3	.	95	
200 Sft	Flooring with Granite Stone in Chunam to the Step Sft	25	3	.	50	
					Carried over	2011

Quantities C Yds.	Description of Work	Rates Rs.	a.	p.	Amounts Rupees	Amount of each part Rupees
	Brought over				2011	
11800 Sft.	Plastering two Coats of Chunam ——— Sft.	1	13	9	275	
	Excavating foundation and levelling the floor ———	"	"	"	20	
175 Cft.	Teakwood ——— Cft.	2	4	"	395	
12	Canvas Screen Shutters with frames to the Door ways and Linkels Complete ——— E	10	"	"	120	
20	Pine Windows with frames Linkels Complete ——— Do	15	"	"	300	
10	Wooden water Spouts of 3 feet ——— Do		12	"	7	
	Cutting old Masonry and fixing the Irish Gu...				7	
183 Rft.	Leaden pipes of 2" Dr. Rft.	2	8	"	458	
45	Brass Nips of 1 inch Gr. and fixing ——— Do		6	"	270	
	Masonry works for fixing the leaden pipe ———				15	
2	Wooden plugs with iron handle ———				1	
	Carried over				4182	

Quantities C Yds.	Description of work	Rate Rs.	a.	p.	Amount Rupees	Amount of Each part Rupees
	Brought over				4182	
	Altering the Old Drain and Erecting 1 Cesspit ———	"	"	"	30	4212
1181 Rft.	Stone ware pipes & ins ——— Rft.	2	4	"	3332	
200 Do	Iron pipe or 27620 ——— Ton.	160	"	"	1973	
	134 Piles of 30 feet Length ——— E	30	"	"	4020	
	134 Driving ——— Do ——— Do	16	"	"	2144	
	1 Steam Engine 4 HP ———	"	"	"	2186	
	2 Stoppers with lever ———	"	"	"	4	13659
	Demolishing the Old Drain ———					140
	Sundry Charges & Scaffolding ———					389
	Total Company's Rupees ———					18400

Central Office of Works
Fort Saint George
19 November 1858

Lawford Lieut. Colo.
Officiating Chief Engineer
Do Do

Inclosure

In a letter

From

The officiating Chief Engineer

20th

To

The Secretary to Government

20th

M/D

Ent No 406 of 1559

Dated 19th November 1838

Received 335/59

No 5683

Abstract Estimate for

Taking down and rebuilding

the European Barracks &

Privies at Madras.

Amounting to Co's Rs 18,100.

Buildings ( ) (New Work)

Abstract of Estimate No of 183 /5

District Madras

Work Constructing Wash House and Pareherry Privies in the Fort.

Quantities	Description of Work.	Rates			Amount	Amount of each part
		Rs	as	p	Rupees	Rupees
	Wash House and Female Privy					
4154 Cft.	Brick work in Chunam @	"	1	9½	465	
121 Do.	Platarch work in Do @	"	2	9½	22	
82 Do.	Cornice work in Do @	"	3	"	15	
689 Sft.	Terracing with brick on Edge Lying 3 Cases of flatteles and plastering 3 Coats of Chunam to the Ceiling and to the top of the Terrace @ Sqre	19	2		132	
1700 Do.	Plastering with two Coats of Chunam @ Do	1	13	9	87	
825 Do.	Flooring with a ll bricks in Chunam and levelling Course of a ll bricks underneath @	1	11	6	10	
825 Do.	Flooring with asphaltom over the a ll bricks @ Do	19	"		157	
103 Cft.	Teakwood wrought & put up @ Cft	2	1		232	
	Planks and nails over the Beams between the Joists @	"			5	
					Carried over	1155

Quantities	Description of Work	Rates			Amount	Amounts of each part
C Yds.		Rs	As	P	Rupees	Rupees
	Brought Over 2				1155	
	8 Screen Door Shutters with frames &c Complete @	7	8	..	60	
	3 Batten Doors with frames &c Complete ——— Do	18	6	..	55	
	2 Glazed windows Complete Do	8	"	"	32	
	3 ——— Do ——— Do with Sentels ——— Do	7	8	..	22	
	6 Wooden water Spouts of 3 Feet ——— Do	"	12	"	5	
	Excavating foundation and levelling the floor &c	"	"	"	10	
	36 Rft Wooden Shelf with the brackets ——— Rft	1	"	"	36	
	Red paint & wood oil ———	"	"	"	12	1387
	Male Privy					
3335	Cft Brick work in Chunam ——— Cft	"	1	3	373	
91	Do Circular Arch work in Chunam ——— Do	"	3	3	19	
600	Sft Terracing with brick on edge Jelly 3 Courses of flat tiles and plastering 3 Coats of Chunam to the Ceiling and to the tops of the Terrace ——— Sft	19	2	"	115	
	Carried Over				507	1387

Quantities	Description of work	Rate			Amount	Amounts of each part
Cft		Rs	A	P	Rupees	Rupees
	Brought Over				507	1387
3,800	Sft Plastering 2 Coats of Chunam ——— Sft	1	13	9	71	
400	Do Flooring with wall bricks on edge Chunam and a levelling Course of wall bricks ——— Do	4	14	6	20	
200	Do Asphaltum plastering over the floor ——— Do	19	"	"	76	
96	Cft Cornice work in Chunam ——— Cft	"	3	"	18	
51	Do Teakwood ——— Do	2	4	"	115	
	Excavating foundation and levelling the floor ———	"	"	"	7	
	Cutting the old wall and placing Joists &c ———	"	"	"	7	
	Wood oil 3 Coats ———	"	"	"	6	
16	Screen Doors with frames &c @	10	"	"	160	
2	Attick windows ——— Do	7	8	"	30	
6	Wooden Water Spouts of 3 Feet Do	"	12	"	5	1021
	2 Detached Privies					
1798	Cft Brick work in Chunam ——— Cft	"	1	3	201	
63	Do Flat arch work in Do ——— Do	"	2	3	11	
75	Do Cornice work in Do ——— Do	"	3	"	14	
247	Sft Terracing with brick on edge Jelly 3 Courses of flat tiles & plastering 3 Coats of Chunam to the Ceiling and to the tops of the Terrace ——— Sft	19	2	"	47	
	Carried Over				273	2408

Quantities	Description of Work	Rate			Amount	Amount of Each part
Cy.ds		Rt	as	p	Rupees	Rupees
	Brought Over				273	2408
2800	Sq.re Plastering 2 Coats of Chu.-nam Sq.re	1	13	9	52	
200	Sq.re Flooring with wall Bricks on Chunam and a levelling Curse underneath Do.	1	14	6	20	
200	Do. Asphalton plaster over the floor Do.	19	"	"	76	
20	Cft. Teakwood Joists Cft.	2	4	"	15	
	10 Screen Doors with frames &c.re Complete E.	4	8	"	75	
	1 Batten Door Complete E.	13	8	"	111	
	4 Wooden water Spouts of 3 ft.es	"	12	"	3	
	Excavating foundation and levelling the floor "	"	"	"	5	
1331	4 Grated windows with Cunkels Complete E.	4	8	"	30	
	Red paint and wood oil "	"	"	"	3	596
	Converting One of the Quarters into water Cistern					70
	34 Privy Seats Complete E.	4	"	"	238	
1140	Rft. Gladen pipes of 2 ins Diam.r Rft.	2	8	"	350	
	38 Brass stops of Quick & Saving &c.	16	"	"	228	
	Masonry Work &c. to Do. "	"	"	"	10	
	2 Wooden Plugs "	"	"	"	4	830
1332		Carried over				3904

Quantities	Description of Work	Rate			Amount	Amount of Each part
Cy.ds		Rt	as	p	Rupees	Rupees
	Brought Over					3904
130	Rft. Stone ware pipe 9 in. Rft.	2	4	"	293	
600	Do. 9" Iron pipes Do.	3	5	4	2000	
	1 Stop per with lever "	"	"	"	2	2295
	Removing part of the Old buildings "	"	"	"		210
	Sundry Charges and Scaffolding &c.re					291
	Total Company's Rupees					6700

Central Office of Works
Fort Saint George
19 Nov.r 1858

L. Crawford Lieut.t Col.e
Officiating Chief Engineer
P.W.

Enclosure
In a Letter
From
The Officiating Chief Engr
2/11/58
To
The Secretary to Govt
2/11/58

No
Ltr No 206 of 1859

Dated 19th Nov 1858
Recd
335/59
~~2/11/58~~

No 5583

Abstract Estimate of Constructing Wash House and Parchery Privies in the Hospl at Madras. Amounting to Company's Rupees 6,700—

35

Buildings ( ) (New Work)

Abstract of Estimate No of 185 /5

District Madras

Work Constructing Public Privies on the North East Bland of Fort St. George

Quantities	Description of Work	Rates Rs	As	P	Amount Rupees	Amount of each part Rupees
C. Yds						
9619	Qty. Brick work in chunam @ Qty.	"	1	9½	1077	
617	Do. Arch work in — Do. — Do.	"	2	9½	108	
3348	Do. Cornice work in chunam — Do.	"	3	"	65	
2200	Supply Terracing with brick on edge Jelly 3 Course of flat tiles and plastering with 3 coats of chunam to the Ceilings and to the top of the Terrace &c. — Square	19	2	"	121	
11950	Do. Plastering with 2 coats Chunam to the Outer and Inner walls &c. — Do.	1	13	9	222	
1175	Do. Plastering with 2 coats chunam to the Cornice &c. — Do.	2	13	9	34	
950	Do. Flooring with wall bricks in chunam & levelling Course underneath — Do.	4	14	6	47	
950	Do. Asphaltic plaster over the floor &c. — Do.	19	"	"	180	
				Carried Over	2154	

Enclosure

In a letter

From

The Offg Chief Engineer
D. P. W.

To

The Secretary to Government
D. P. W.

Dated 19th Novr 1858
Received 1st Novr 1858

335/59.

No 6583

Abstract Estimate for Constructing Public Privies on the North East Blind of Fort Saint George at Madras

Amounting to Co Rs 4700—

Public Works Department

No 200.

Extract from the Minutes of Consultation
Under date the 21st ~~December~~ January 59.

Read the following letter from the Officiating Chief Engineer.

Fort St George 19th Novr 1858 (No 6583)

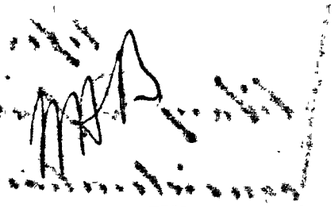
Referred to the Military Department for consideration with reference to Govt Mins Nos 23 & Oct 1858. The Estimated outlay amounting in the aggregate to half a lac of Rupees is for five different descriptions of work, this will need the sanction of the Government of India for which application will be made, if no objections exist on other grounds on the Military Department.

Sent a plan of the proposed buildings for the Public Offices

Plans submitted

None

Copies of the Estimates prior
specially for superintendence,
and according to the con-
cluding para of Colonel
Lowford's letter, the Garrison
Engineer's time and attention
would appear to be already
too well engaged on works
in progress under sanctioned
estimates, to be devoted
to new ones.



Copies to the Secretary Public Works 22
Secretary Finance 18 March
Chief Engineer

Cons 29th October/58 — N453-57

Public Works 1859 Depart.t
Dy. to Cons: 25th January

No. 200.
Extract Minute of Council
Dated 21st January 1859.

Ex from Military Depatt of 6th July 59
Ex 335 in Cons 1st Aug.t 1859 Nos
12 & 125
From do — do of 20 July 60
Ext. 1931

Referring to the Military Department for consideration with reference to Extract Minutes Consultations 23rd October 1858 and desiring that an application be made to the Government of India for the sanction of the estimated outlay of 50,000 Rupees for the description of work in the Extract if no objections exist on other grounds in that Department.

to the Govt of India
Copy with the Asst Engineers
Plans — 30 Parcels &c.
No 7944 —

No 53.456.

Cy Dup 23 Feby/59