

(1) Number of pages 62.

(2) Date of repair _____

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No.	392	Press ~~Mis.~~
Dated	9. 7.	1877.

Not to be folded or roughly handled

GOVERNMENT OF MADRAS
PUBLIC WORKS DEPARTMENT

9th July 1877, No 392.W.

Buildings and Roads
Civil Works

Read the following papers —

No 123. From Major P. MONTGOMERIE, R E, Officiating District Engineer, Presidency, to the Chief Engineer and Secretary to Government, Public Works Department, dated Fort St George, 7th October 1876, No 3,733

In accordance with your memorandum No 629, dated 4th April 1876, I have

Two Plans
One Estimate
„ Report
„ Specification
Two Original letters

the honor to submit, for the orders of Government, a report and specification with two plans and an estimate, amounting to Rupees 2,600, for completing the water service of the General Hospital, Madras, by utilizing the Red Hills

water to supplement the present inadequate supply of water from the Seven Wells.

No 7,110, dated 23th September 1876
„ 0-94 „ 2nd October 1876

And I also enclose the original letters marginally noted from the present Surgeon General, Indian Medical Department, and the Principal Medical Officer, British Forces, on the subject.

2 The arrangements which it is now proposed to carry out are in accordance with the wishes and suggestions of Dr Balfour, the late Surgeon-General, Indian Medical Department, and Dr Furnell, the Senior Medical Officer of the Hospital; and it was considered by these officers quite sufficient to supply drinking water by the two taps on the ground floor only, as the labor of carrying the drinking water to the filters on the upper storey would be but little.

3. To continue the supply of Seven Wells water to the kitchen and to the dispensary as now required by Dr. Smith would cost about 430 Rupees, and the amount of the estimate would be increased to Rupees 2,600.

4. The stability or otherwise of the two cisterns on the first floor of the reservoir house is a matter to be decided by the Chief Engineer, and not by the Medical Department. This building is quite detached from the main building, and to enable you to form an opinion on the matter I have submitted the original plan of the reservoir building.

5. The small cistern to be placed on the second floor occupied by the nurses will be constructed of iron, it would be a useless expense to distribute the water by piping from this cistern which will be conveniently placed in the lavatory of the uppermost storey

From Surgeon-General G SMITH, M D, Surgeon-General, Indian Medical Department, to Major P MONTGOMERIE, R E, District Engineer, Presidency, dated Fort St George, 28th September 1876, No 7,110.

With reference to the documents, &c, marginally noted, which accompanied your letter No 3,426, dated 22nd September, and docket No 3,427, of the 14th idem, I have the honor to submit the following remarks

Two Plans
One Report
„ Specification
„ Estimate

2 The water service of the General Hospital has hitherto provided it with a supply of

Seven Wells' water, the projected plan, however, proposes that, with the same distribution

arrangements, Red Hills water be laid on, the supply from the Seven Wells being reduced to a new single tap fed by a 1½-inch pipe.

Nearly complete substitution of Red Hills' for Seven Wells' water involves a manifest disadvantage to the General Hospital, for in lieu of a water of exceptionally good quality it provides a water precarious as regards quantity and frequently most objectionable as regards quality.

3 I have, therefore, to suggest that the evil be minimised if it cannot be got rid of, and ask if a supply of Seven Wells' water can be provided for the cook-room and for the dispensary? It is just as necessary that cooking water should be pure, as that drinking water should be pure, and, as regards the preparation of prescriptions, pure water is an indispensable requisite. The supply could be laid on in 1½-inch pipes. This arrangement need not interfere with the proposed one of supplying the kitchen also with Red Hills' water.

4 The calculations for the supply of water are based on the proportion of 25 gallons per patient per diem, practically a hospital should have an unlimited supply, but accepting as reasonably sufficient that quantity, it appears, firstly, that the limited capacity (after the proposed strengthening of the cistern) will necessitate the filling of the cisterns twice daily, and, secondly, that their imperfect construction makes it more than probable that a mishap may take place not in the distant but in the near future. The cistern on the second floor you condemn, and of the cistern on the first floor the remark is made—"The two cisterns on the first floor which it is now proposed to use for the general supply of the whole building have been fairly tested, and although the walls became saturated in parts they were found to stand the strain put upon them, and it is hoped that with a lining of well-pressed bricks set in Portland Cement and plastered with the same, they will be made quite water-tight." It is to be hoped that the proposed small cistern at the Nurses' quarters on the roof of the hospital will be built of adequate strength. Pipe service from a sufficient upper reservoir would have been a preferable arrangement.

5 The proposed arrangement for reverting to Seven Wells' water in the event of failure of the Red Hills supply is a good one.

6 The calculations regarding the amount of hand-labor likely to be required in working the pumps are somewhat indefinite, and that service must be specially arranged for. Might not the available steam-power of the punkah-engine be utilized during six months of the year in driving the water pumps?

7 After all, drinking water will have to be carried to the first and second floors of the General Hospital in chatties, as in times gone by, notwithstanding the large expenditure on reservoirs and distribution arrangements. That, and the other fact, that the water-supply of the hospital is to be obtained from the Red Hills instead of from the Seven Wells, are hardly matters of congratulation to the Medical authorities of the General Hospital.

8 Copy of this letter with plans, &c, has been forwarded to the Surgeon-General, British Medical Service.

From Surgeon-General C A GORDON, Surgeon-General, British Forces, to Major ROSS THOMPSON, R E, District Engineer, Presidency—through the Surgeon-General, Indian Medical Department,—dated Ootacamund, 2nd October 1876, No 0-94.

ADVERTING to your letter to the Surgeon-General, Indian Medical Department, No 3,426, dated 22nd September, I have the honor to return to you the plans and documents received therewith.

2 Surgeon-General Smith, Medical Department, having been so good as to favor me with a copy of his letter to you on the subject of the proposed system of water-supply for the General Hospital, I beg to express my concurrence in the views expressed by him on this subject.

3 I consider that they are equally applicable in respect to the Military portion of that establishment as they are to the Civil.

No. 7,310.

MEMORANDUM.

FORWARDED.

(By order,)

FORT ST GEORGE,
5th October 1876

To the District Engineer, Presidency

(Signed) G. BIDIE, M.D., Surgeon-Major,
Secy. Surgeon-General, I M.D.

- ✓ No. 123-A From District Engineer, Presidency, dated 1st March 1877, No. 6,202
119 No. 123-B. Memorandum from Chief Engineer, dated 14th May 1877.

No. 124 ORDER THEREON, 9th July 1877, No 392 W.

HIS EXCELLENCY the Governor in Council desires that no action be taken in the matter of completing the water service of the General Hospital until such time as the Red Hills water shall, after being properly filtered, be supplied under pressure for distribution to the town of Madras which, when accomplished, will necessitate considerable modifications of the plans and estimates for completing the General Hospital water service now submitted, and it will be advisable to cover in and case with brick-work the small iron cistern proposed to be placed on the roof of the buildings for supplying water to the Nurses' quarters.

2. The District Engineer will have the condemned and unsightly masonry cisterns on the third storey of the cistern house removed as early as possible.

(True Extract)

Colonel, R E.,
Secretary to Government, P.W.D.

To the District Engineer, Presidency
„ Public Department

Exd S T. Austin.
Spare Copies

47

Specification to accompany a plan and
estimate for improving the water service of the
General Hospital and the Medical College.

Amount of Estimate Rupees 1940--

I There are to be laid from the lowest
cisterns to the middle of the military portion
of the hospital and to the middle of the
civil portion $1\frac{1}{2}$ " inch galvanized iron piping
for supplying. Seven wells water for drink-
ing. with Cast iron stand pipes & =

II There are to be laid from the branch
at the cook house to the dead house a $1\frac{1}{2}$ "
wrought iron pipe and from the dead house
to the contagious disease ward a 1" inch
wrought iron pipe; both these places are
to be supplied with Red Hills water.

III From the back east corner of the hospital
there is to be laid to the dissecting room that is
being built a two inch cast iron pipe to
supply Red Hills water.

IV The pumps are to be put in working
order and are to be connected directly with
the Red Hills supply pipe by means of 3
inch cast iron piping. Two new 3 inch
stop cocks are to be placed immediately
above

450 *Soft footed* (2 in.) 18. 3378
1 *band* 2. 3378
2 *parted* (2 in.) 18. 3378
Carried Over 3428. 667-11

Quantity	Description of work	Rate	Per	Amount	Total
Brought Over					
1	1/2 foot iron ore sight bend (2 inch)	1 8	Cent	1 8	
1	Braze stop fork (2 inch)	29		29	
1	Discharge fork (2 inch)	26		26	
160	Yard Laying & fixing 2 inch piping incl. dig excavating	8	Sp	80	
	Masonry and four for iron stop fork	5	Cent	5	
	~~Cast iron stand paid~~				
	Putting in gas to new workmen order and 200 feet hard pipe moved from one end	45		45	190
					529
52	Off. foot iron piping (3 inch) for connection the Red Hills supply pipe to the pumps	1 4	Off	65	
2	foot iron 1/4 bend (3 inch)	2 8	Cent	5	
3	foot iron T bend (3 inch)	3 12		11 4	
2	Braze stop forks (3 inch) one to low place at E and the other at S	35		70	
	Removing the pipes along the two pumps & refixing them at a low level & providing 2 new brass stop forks (3 inch)			70	
60	Off. Brick in mortar for coverings for 2 turn forks	2 6	Off	9 6	
12	Supp. 2 Ballow doors for covering stop forks cost of putting the pumps in working order & fixing the inch iron piping including bolts & washers	13 9	Off	10 5	
				50	
					320 15
220	Off. First class table moulded bricks set in Portland cement	8	Off	110	
7 1/4	Sp. Plastering with Portland cement	5 1/2	Sp	44 1 3	
				154 1 3	
	Brought Over				1857 11 5
					1632 11 8

Quantity	Description of work	Rate	Per	Amount	Total
Brought Over					
	Putting in gas to new workmen order and 200 feet hard pipe moved from one end				1632 11
1	Brought iron water fixture 5' x 5' x 3' made of 1/2 inch plate weighing 510 lbs	4	Off	127 8	
3 1/8	Off. Cast wrought & put up for sleepers for fixture	3 1	Off	9 9 1	
25	Off. 2 inch wrought iron piping	1 4	Off	31 4	
1	2 inch Discharge fork			26	
3	2 inch quarter bends	1 8	Cent	4 8	
	Cost of fixing the two inch piping under the asphalted flooring and putting up the fixture			10	
					208 13
					109 7
	Sundry Charges per				98 7
					2173
	Total Repairs				1940

Extra for carrying out 8-inch pipes - 430

Steel Pipes 2,600-

A. Miller Supervisor D. D. F.

In charge of Northern Range

R. M. G. Meier

Offg. District Engineer Maj. R. E. Residency

Central Office
22 September 1876

Wm. H. Conner

Comptroller

409: July 11, 1884

the theoretical full supply = $\frac{73.50}{\sqrt{25.5}} = \frac{73.50}{5.05} = 14.55$ ft. per min.
 = 2.9 Cub: feet per min.
 = 17 1/2 Cub: feet per Hour.
 Plus

This quantity would be ample for all purposes, but the Ordnance Lines and the Fort have to be supplied before the Seven Wells water reaches the Hospital, and even when the supply to those places has been cut off the actual discharge at the General Hospital is only $\frac{1}{2}$ of the theoretical supply (probably owing to some defect in the piping) &c &c

The following are the quantities of Seven Wells (3) water actually delivered at the General Hospital under different circumstances and which have been deduced from experiment on the spot.

1st The supply pipes of all cisterns (Ordnance Lines, Fort, & General Hosp.) were kept open for 18 hours during the night and the discharge into the Genl Hospital cistern was found to be 43.87 ft. per hour

2nd All supply pipes were now closed with the exception of the General Hospital pipe and the discharge into the General Hosp. cistern was 83.55 ft. per hour.

3rd At the close of the last experiment which extended over 3 hours the other supply pipes were opened and the discharge at the General Hosp. cistern then fell to 24.00 ft. per hour.

From these experiments it will be observed that the average supply of Seven Wells water (which can be reckoned upon) at the General Hospital is only 34.00 ft. per hour. The consequence of this has been that no attempt has been made to utilize the cisterns

87
cisterns on the 1st and 2nd floors of the reservoir building, and which were intended to supply the upper floors of the Hospital. And at present the 1st or lowest cistern is only used and the ground floor of the building is alone supplied with water

(4) The 3rd inch supply pipe from the Seven Wells after supplying the wants of the Hospital was intended to carry the water into the Penitentiary. And the piping is now laid towards the General Hospital Bridge in the direction of line C.D. (see plan) but no Seven Wells water has been supplied to the Penitentiary since March 1875

As the supply of water from the Seven Wells is evidently inadequate for the want of the General Hospital, and as the Red Hills Main (1'-9") runs right along the front of the building and can supply all its general wants it is proposed to use for the general water service of the Hospital Red Hills instead of Seven Wells water and to furnish two new taps at B & C on the ground floor with Seven Wells water to be used solely for drinking purposes

(1) In carrying out these arrangements, however the possibility of a failure in the Red Hills supply must be kept in view and no alterations to the present system of distribution will be made in order that the use of the Seven Wells water as at present may at any future date be resorted to in case of necessity

(5) With this end in view it is proposed to turn on the Red Hills water to the present supply pipe at A and to disconnect the Seven Wells from the Red Hills water by a turn cock at C

(2) The Seven Wells water will still be allowed to enter the lowermost cistern at D from which it

it will be taken by new piping to the stand pipes at N & S. The Red Hills water will however be led through the lower most cistern (at P. by means of piping) to the force pumps by which it will be pumped to the two cisterns on the first floor of the Reservoir building and from which it will be distributed by the present arrangement throughout the ground and 1st floor of the main building, and extended to the sick house, the dead house, the contagious ward and the dissecting room as shown in the plan.

The 2nd floor of the main building which is inhabited only by the nurses will be supplied direct by one of the force pumps. A small iron cistern being placed in the lavatory and used as a reservoir instead of the present elevated cistern as it is not considered safe to use the latter which is merely constructed of common brickwork and leaks.

The two cisterns on the 1st floor which it is now proposed to use for the general supply of the whole building have been fairly tested, and although the walls became saturated in parts they were found to stand the strain put upon them and it is hoped that with a lining of well pressed bricks set in Portland cement and plastered with the same, they will be made quite water tight.

The present contents of these 2 cisterns (7) is $= 2 \times 16 \times 9 \frac{3}{4} \times 4 = 124.8 \text{ fts.}$ but they will be reduced by the situation of

the lining of Brick work to

$$= 2 \times 15 \frac{1}{4} \times 9 \times 3 \frac{3}{4} = 102.9 \text{ fts.}$$

or just about one half of the ^{existing} maximum quantity of 200 fts. which will at any time be required so it is just possible that they may have to be filled twice in the 24 hours. To do this work there are two force Pumps (having 2 plungers each with diameters of $4 \frac{1}{2}$ inches & a stroke of 8 inches) These pumps can raise about 650 fts. per hour and consequently could do the maximum work required in a little over 3 hours and one of these could do the same in about 7 hours.

(8) It takes 4 men to work the pumps at present. The lift from the pumps to the cisterns being $19 \frac{1}{4}$ feet; but as these will be $12 \frac{1}{2}$ feet head of water from the Red Hills water pipes when it is turned on the lift will be reduced to 5 feet so that two men will be sufficient to fill the cisterns as well as to pump all the water required by the nurses on the 2nd floor. And these two men will doubtless be furnished from the present staff of Hospital water men.

22nd September
1876

Wm. Go. Lane Maj. R.E.
Offg. District Engineer
Frag

P.W.D.
7 OCT 76
N^o 7243

409 July 5 1881

2. Plans
1. Report
1. Specification
1. Estimate.

127110 Office of Surgeon General, U.S.A.
Fort Saint George, 28 Sept 1876
Sir,
I have the honor to acknowledge the receipt of your letter of the 22nd inst. in relation to the District Engineer's report on the water supply of the Fort. The report is being examined by the District Engineer, and will be submitted to the Surgeon General as soon as it is ready.
With reference to the documentals marginally noted, which accompanied your letter of the 22nd inst., dated 22 September, and docketed No. 3427 of the 11th inst., I have the honor to submit the following remarks:
The water service of the General Hospital has hitherto provided it with a supply of water from the wells of the Fort. It is, however, proposed that with the same distribution arrangements, Red Hill water be laid on the supply, from the seven wells being reduced to a near single tap fed by it.

8 1/2 inch pipes

Nearly Complete substitution of
Old Mills for Seven Mills water in the
manifest disadvantage to the
General Hospital, for in lieu of a
water of exceptionally good quality,
it provides a water ^{precarious} as
regards quantity and frequently
most objectionable as regards quality.

3. I have therefore to suggest that
the soil be ⁱⁿ ~~in~~ ^{improved} if it cannot
be got rid of, and ask if a supply
of Seven Mills water can be provided
for the Cook room and for the dispensary.
It is just as necessary that
cooking water should be pure, as that
drinking water should be pure, and
as regards the preparation of prescriptions,
pure water is an indispensable
requisite. The supply could be laid
on in 1/2 inch pipes. This arrangement
need not interfere with the proposed
one of supplying the kitchen also
with Old Mills water.

4. The

The Calculations for the supply of water
are based on the proportion of 25 gallons
per patient per diem practically a
hospital should have an unlimited
supply but accepting as reasonably
sufficient that quantity, it appears first
that the limited capacity of the
proposed strengthening of the Cisterns
will necessitate the filling of the Cisterns
twice daily ^{daily} and that their imperfect
construction makes it more than probable
that a mishap may take place not
in the distant but in the near future.
The Cistern on the second floor of the main
and of the Cistern on the first floor the
lowest in order. The two Cisterns on
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to use for the general supply of the
whole building have been fairly tested
and although the walls became satu-
rated in parts they were found to stand
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and

"and plastered with the same. They will
"be made quite water tight. It is to
be hoped that the proposed small reser-
voir at the Nurses' quarters on the roof
of the Hospital will be built of
a durable material. Pipe service from
the sufficient upper reservoir would
have been a preferable arrangement.
The proposed arrangement for
directing to seven wells water in the
event of failure of the Red Hills supply
is a good one.
The calculations regarding the
consumption of sand labour likely to be
required in working the pumps are
somewhat indefinite and that service
must be specially arranged for. Might
not the available steam power of the
Portable Engine be utilized during
six months of the year in driving the
water pumps? It is done in some
places.
After all, drinking water will
have to be carried to the first and
second floors of the General Hospital
in

in Chatteris, as in times gone by, notwithstanding the large expenditure on
reservoirs and distribution arrangements.
That, and the other fact that the water
supply of the Hospital is to be obtained
from the Red Hills instead of from the
Seven Wells, are highly matters of con-
gratulation to the Medical authorities
of the General Hospital.
Copy of this letter with pleasure
has been forwarded to the Surgeon General
British Medical Service

I have the honor to be
Sir
Your most obedient servant
Per Sir to the
Surgeon General M.D.

CH

Concurrence in the views expressed
by him on this subject.

3. I consider that they are,
Equally applicable in respect to the
military portion of that State as to
the civil as they are to the civil.

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

Miner
Surgeon General
P.M.C., B.C.

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No. 3733

167

From, ...
The District Engineer,
Presidency

To,
The Chief Engineer, and
Secretary to Government D.M.

Sir,
In accordance with your Memo No. 629, dated 4th April 1876, I have the honor to submit for the orders of Government, a report and specification with two plans and an estimate amounting to Rs 2,170 for completing the water service of the General Hospital Madras by utilizing the Black Hills Water to supplement the present inadequate supply of water from the Seven Wells. And I also enclose the original letters marginally noted from the present Surgeon General D.M.D. and the Principal Medical Officer, British Forces on the subject.

2. The arrangements which it is now proposed to carry out are in accordance with the wishes and suggestions of Mr. Balfour, the late Surgeon General D.M.D. and

* 214 Extra

- Encls.
- 2 Plans
- 1 Estimate
- 1 Report
- 1 Specification
- 2 Original Letters

* No 7110 of 28.9.76.
* 94 of 2.10.76

P.W.D.
70076
7243

No 7310.

Enclosed.

To
The District Engineer,
Presidency

By order
District Engineer

Very Large Scale
Map 1876

To
The District Engineer,
Presidency

For Office
5th Dec 1876

To
The District Engineer,
Presidency

Regarding
the District Engineer,
Presidency

9409 July 11 B.L. 123

and Dr. Jamell the Senior Medical Officer of the Hospital; and it was considered by these officers quite sufficient to supply drinking water by the two taps on the ground floor only, as the labor of carrying the drinking water to the filters on the upper story would be but little.

3. To continue the supply of Seven Wells water to the kitchen, and to the Dispensary as now required by Dr. Smith would cost about 430 Rs; and the amount of the estimate would be increased to Rs 2,100.

4. The stability or otherwise of the two cisterns on the first floor of the Reservoir House is a matter to be decided by the Chief Engineer, and not by the Medical Department. This building is quite detached from the main building and to enable you to form an opinion on the matter I have submitted the original plan of the Reservoir Building.

5. The small cistern to be placed on the 2nd floor occupied by the Nurses will be constructed of iron. It would be a useless expense to distribute the water by piping.

piping from this cistern which will be conveniently placed in the Lavatory of the uppermost storey.

I have the honor to be

Sr,

Your most obedient servant

George Henry Meyer

Offg. District Engineer
Presidency

Forb. St. George
7th Oct. 1876

Geo. H. Meyer

85-10-67 No. 3092
 11-12-67 3858
 9-1-68 80.
 25-2-68 644
 12-12-68 3871
 25-1-72 253
 12-3-72 679
 19-11-73 125
 15-6-74 1579
 24-7-74 2006
 25-11-74 3331
 12-12-74 3489
 23-6-75 258

Patent 1/6 Oct. 76
 Receipt 1/5 Oct. 76
 Supply - Towards
 Municipal Water
 for various show etc.
 materials purchased
 with the -

10-8-75 No. 2319
 12-8-75 2329
 7-9-75 2535
 29-11-75 201
 Memo. 8-2-76 No. 282
 4-4-76 629
 29-5-76 877
 23-6-76 440
 11-7-76 No. 1740
 2-8-76 1968

469: July 11 1877

28-7-77
 17-5-77 No. 7-77

P.W.D.
 7 OCT 76
 No. 7243

The Chief Engineer
 Municipal Engineering
 Department

		Brought forward		
4	Indian Rubber washers 4. ft.	2	8	61
18	Bolts nuts and washers 18	17	2	118
2	Covers and Keys.	12	24	
11	Cuts in 5' pipe	1	1	
2 1/3	Laying and fixing 9' pipe	1	3	157
1 1/3	6' 5' 3' 4'	1	129	25 121
	Barling water.		1	
1	6' Meter.		1200	
	Hamling, fixing and adjusting		150	
3	6' Valves for meter with 6' 6' Tail	120	360	
6	India Rubber Washers 6 ft	2	12	
38	Bolts Nuts and Washers 38	17	5	123
3	Covers and Keys.	12	36	
	Fixing 3' 6' Valves.	4	12	
5 1/6	Laying and fixing 6' pipes.	1	139	9 46
	Assembly for 3' 6' Valve House.	40	120	
	1. 5'	30	30	
	1. 4'	20	20	
1	Meter House with platform complete		300	
			2675	142
Sundries and Superintendence at 10 per cent.			234	110
Total Prices			2910	

Municipal Water Works Office
 Madras. 15 September 1873
 Signed/ J. L. V.
 Executive Engineer.
 Signed/ J. Goddard
 District Engineer
 Presidency.
 Signed/ Major R. E.
 District Engineer
 Presidency.

N^o 319 of 1873-74.

Estimate of the probable cost of connecting the Municipal Water supply main with the Seven Wells pipes in Ephraim Ephraim for supplying Fort Saint George.

211977

N^o 2251

Quantity	Particulars	Rate				Amount			
		Price	Amount	Price	Per	Price	Amount	Price	Per
	Excavation for laying pipes								
	16 x 2 x 2		184						
	for meter 8 x 8 x 6		384						
	for branches								
	6 x 2 x 2		16						
	for back of 4 x 2 x 2		16						
	Total left 600	13	10	1000	8	2	10		
	24 ft of 6" Pipe		6	2	16				
	2 ft of 5" "		1	2	21				
	Total	7	0	9	150			53	18
	1 9" 7/16 Bend		2	1	12				
	1 9" x 6" Taper		2	1	14				
	1 6" 1/2 Bend		1	1	14				
	1 5" Double Branch		1	1	10				
	1 4" Single "		2	1	8				
	3 5" Collars		3	3	6				
	2 5" Taper pieces		3	3	8				
	2 4" "		2	2	20				
	2 6" For key Branches		1	1	13				
	2 6" 7/16 Bends		1	1	1				
	Total	12	1	23	180			112	17
	1 5" Valve		90		90				
	1 4" "		80		80				
	Putting 1-4" & 1-5" valves		4		8				

69 July 1873

Carried over

357 61

N^o 320 of 1873/74

197

Estimate of the probable cost of laying down Service pipes to the General Hospital

Quantity	Particulars	Rate				Amount			
		Price	Amount	Price	Per	Price	Amount	Price	Per
	From Municipal water supply main								
	in the General Hospital road to the								
	Seven wells pipes in the General Hospital								
	compound								
	Excavation for laying pipes 36 x 3 x 2		216						
	for meter 8 x 8 x 6		384						
	for Branches 4 x 2 x 2		16						
	from 4 x 2 x 2		16						
	Total left 632	13	10	1000	8	9	9		
	feet of 12" Pipe		4						
	9 10		4						
	8 3 1/2		1	34					
	Total	9	3	24	150			74	118
	1 10 x 6 Taper		2	1	14				
	1 6 x 4 "		3	3	22				
	5 3" Collars		1	1	5				
	2 6" Double Branches		1	1	13				
	2 6" 7/16 Bends		1	1	1				
	Total	7	1	26	180			65	15
	1 3" T piece to be supplied by D.P.W.								
	6 3" Cutts		3	3	12				
	2 4" Laying 12" Pipe		1	14	8	3	13	4	
	3 10		1	11	3	5	1	9	
	Carried Over							158	74

No or Quantity	Particulars	Rate	Per	Amount
	<i>Breakfast Prior 158 7 11</i>			
7 1/3	1/2 Laying 6" Pipe	12 9	per	13 12 5
2 2/3	3			2 10
2	3 Valves	60		120
	Fixing 2.5 Valves	4		8
2	Covers and Keys	12		24
3	6" Valves with 6-6" Sail pieces	120		360
6	India Rubber washers 6" dia	2	th	12
30	Bolts nuts and washers 3/8"	17	wt	5 12
3	Covers and Keys	12		36
	Fixing 3-6" Valves	4		12
1	6" Meters Kennedy's Patent	1200		1200
	Hauling fixing and adjusting — D ^r			150
	Masonry for 3-6" Valve house	40		120
	D ^r 12-3	15		30
1	Water house with flat roof complete			300
				2552 11
	Sundries & Superintendence 10% Cent			227 4
	Total Rupees			2780

Municipal Commission
 Madras
 15 September 1873

(Signed) J. Lee
 Executive Engineer

(Signed) J. Goddard Licutt Coll R E.
 District Engineer Presidency

[True Copy]

Mr Thompson Mayor R E
 District Engineer Presidency

Compt. B. 1/11 409 2 July 1873 3082/123

No 321 of 1873/74 277

Revised Estimate of the probable cost of laying down service pipe to the Lock Hospital

Quantity	Particulars	Rate	Per	Amount
	Execution for tapping 4" 4x4x4 — 64			
	do for laying pipe 15x1 1/2 x 1 1/2 — 33 3/4			
		13 10	64	1 54
	Tapping and Sawing			4
15	ft of 1" Pipe	9 11	ft	9 4 9
3	" of do for upright	9 11	"	1 13 9
1	Discharged cock			6
3	Bends	12		2 4
1	Stop cock	8		8
	Boiling water	3		3
	Boring through wall and rebuilding			6
1	Cover and Key	12		12
	Red lead	1		1
4	Nuts and screws	8		2
	Laying 6 yards of 1 inch pipe	2		10
	Masonry for stop cocks			6
				63 5 10
	Sundries and Superintendence @ 10 per cent			6 10 2 1/2

Total Rupees 70 10 1/2

Madras
 17 June 1873

(Signed) J. Lee
 Executive Engineer

[True Copy] (Signed) J. Goddard Licutt Coll R E
 District Engineer Presidency

Mr Thompson Mayor R E
 District Engineer Presidency

17.6.73

No. 2251

P.V.A.D.

2 MAR 77

2251

Estimate No. 70

Probable cost of laying down service pipes to the

Probable estimate of the

Probable estimate of the

Probable estimate of the

Probable estimate of the

Probable estimate of the

Probable estimate of the

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Probable estimate of the

Probable estimate of the

4.6.97 July 1887

No. 317 of 1873-74

Estimate of the probable cost of laying down Pipes in the compound of Government House, Madras.

Quantity	Particulars	Take against R.S.	Rs.	P.	A.
1550	Excavating for 4" Pipe 1530 x 3 = 4590				
	for 3" 2 1/2 x 2 1/2 Pipes 220 x 2 = 440				
	C. ft. = 14 15 4 = 13 10 10 192 13 7				
1350	Set of 4" pipes from 27" main to stand pipe at				
	stables. &c. 11 5 2 = 15				
180	do from 4" branch to 1 = 10				
190	do of 3" pipe from 4" branch to tank. 10 = 6				
132	do of 2 1/2" to kitchen near 11 = 3 4				
364	do of 2 1/2" from 4" branch to stand pipe at kitchen 12 = 2				
390	do of 2 1/2" from 4" main to Banquet hall 12 15 2 = 27 15 0				
	Total = 18 5 3 = 27 15 0				
1	Socket Pipe				
1	Saddle for 27" Pipe				
4	Tail pieces for 4" Valve				
12	do 3" = 2 3				
1	Single branch 4" x 4" = 3				
1	Double branch 4" x 4" x 4" = 1				
3	4" 1/4 Bend = 5 2 2				
2	4" 1/2 = 1 1 20				
1	3" 1/4 = 7 20				
	Total = 10 = 17 10 0				
2	2 1/2" 1/4 = 6 8				
1	Coupling 3" x 2 1/2 = 2				
1	do 4" x 2 1/2 = 3				
	Total = 340 9 5				

100
200

Brought over		3040 95
100	ft of 2" pipe from 4" branch to kitchen sink	
60	do do to stand pipe between cook house & apothecary's mortar	
4	do do for stand pipe upright	
164	ft of 2" wrought iron pipes	110 1 3/4 267 58
4	2" 1/4 Bend	2 12 8 11
1	Coupling 2" x 1 1/4"	1 2
1	do do 1 1/4 x 1 1/4	15
16	Indian rubber washers	10 2 20
	Bolts and nuts	18 17 211 9
	Fixing 3 - 2 1/2" stop cocks	2 5 8 7 8
	do 2 1/2 - 2 1/2	2 4
2	4" Valves	80 160
1	3" Valve & key	60 60
1	Value key for 4" Valve	3 3
3	2 1/2" Valves with keys	57 150
2	2" Stop Cocks with keys	16 32
2	Brass screwed reducing couplings	9 18
9	Locked covers & keys	12 108
	Iron Cap with bolts screwed	5 5
3	Stand pipes containing drinking water and discharging pipe brass screwed for attachment to house	200 600
	Fixing the above (3)	10 30
3	Cutting 3" pipe	2 6
8	and screwing 2" pipe	1 8
3	Tapping and screwing 2 1/2" & 2" pipe	4 12
2	Fixing 4" Valves	14 8
1	do 3" do	3 3
8	Cutting 4" hole in 27" pipe	4 4
	Boring and screwing 5/8" bolt holes	4 2
	Fixing saddle including 4 bolts &c	5 5
1	4" T piece	4 4
1	3" T piece	3 3
580	yards Laying 4" pipes	112 97 9525
Carried over		5522 14 10

Brought over		5522 14 10
66	yards Laying 3" pipes	1 72 66
295 2/3	do do 2 1/2"	6 110 14
54	do do 2"	4 13 8
	Masonry for 2-4" Valves Houses	20 40
	do do 1-3"	15 15
	do do 3-2 1/2"	15 45
	Masonry for 2-2" Stop Cocks Houses	10 20
1	Randome patent stone filtering fountain with cast iron dome & masonry work &c	730
	Sundries & Super in labour at 10 per cent	646 11 2
Total Rupees		7210 4

Secy. Insp. Office
Madras
5th Sep. 1873.

(Signed) S. Lee.
Exec. Engineer.

(Signed) J. Goudard, Lieut. Col. R.E.
District Engineer - Presidency.

(Signed) E. A. Ford, Col. R.E.
Inspector Engineer

(Approved)

(Signed) A. Andrey.
Private Secretary. (Encl. 1)

(Signed) Major R.E.
District Engineer
Presidency

Comd. R.E.

No. 2251

P.W.D.

2251

2251

Amount of the payable
Capt. P. being from the
in the amount of
with other charges,
amounting to Rs 1210/-

409 July 53 P.D. 123

Roads and
Buildings.

No. 202,

207

From,

The District Engineer,
Presidency.

To,

The Chief Engineer,
Roads and Buildings

For,

Encl^{re} 4

With reference to your Office Note
dated 23rd February 1877, I have the honor
to forward copies of four Abstract Estimates
sanctioned in G.O. No 1579 dt. 15 June 1874.

I have the honor to be

Sr,

Your most obedient servant

W. Thompson Major R.E.

District Engineer
Presidency

For St George &
1st March 1878

Recd.

N^o 2251

from

The District Engineer
Frederickson

20. The Chief Engineer

Roads and Buildings

Dated 1st 3rd March 1877
 Street

Feb 2002

Towards copies of your
Abstracts I have also relating.

to the water supply of

certain buildings at

men suitings at
Madras from the West

the bank.

J

409: July 11, 1934

247

[illegible]

Ward in Room Two Pres.
 Hospital Commission
 12 1/2 1/2 1/2 1/2
 cancelled -

Ward in Room Two Pres.
 Hospital Commission
 12 1/2 1/2 1/2 1/2
 cancelled -

Ward in Room Two Pres.
 Hospital Commission
 12 1/2 1/2 1/2 1/2
 cancelled -
 Ward in Room Two Pres.
 Hospital Commission
 12 1/2 1/2 1/2 1/2
 cancelled -
 Ward in Room Two Pres.
 Hospital Commission
 12 1/2 1/2 1/2 1/2
 cancelled -
 Ward in Room Two Pres.
 Hospital Commission
 12 1/2 1/2 1/2 1/2
 cancelled -

409: July 11 1884 123

Mr. Ward's
 MEMORANDUM

Letter Number 3733
 dated the 7th, 1870

from the District Engineer of

the District Engineer of
 the District Engineer of

the District Engineer of

the District Engineer of

the District Engineer of

the District Engineer of

the District Engineer of

the District Engineer of

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the District Engineer of

the District Engineer of

the District Engineer of

the District Engineer of

his colleagues in Council
sanction the estimate of
Rs 200 for the tank
and deposit it to the pub
in order to immediately
an appropriation of Rs
1500 is made from the
dimp-Ram as grant
in aid on acct of the tank
Satabhushan as a con
tribution to the building
and Rs 1300 from the
Provincial Reserve
1077.70.

The Chief Engineer will
give order in reference
to the account of the
2. Class Cisterns reported
to the Council.

This document is Registered
100

Classification
as usual above
1/2 m. 1/2 inch

10.5.77

C. E. MEMORANDUM.

Letter Number

dated the

from the District Engineer of

It certainly is very desirable that
the Red Water Supply Service
of the General Hospital should
be completed as soon as possible
as now provided for in the
Moderate Estimate submitted
and the admin. of the tank
immediate interruption of
the supply of water
appliances already fitted
up in the building.

The Chief Engineer approves
of details of the project
and that the ~~lower~~ ^{ground} floor
Cistern ground floor Cistern
shall be set apart for
portable water from the
seven holes to be distributed
as proposed by the D.E.
While the District Engineer
has ~~the~~ first floor Cistern
should be connected with
the Red Water Service for
supply of water for the
proposed ~~and~~ ^{function}
of the substitution and
he considers the arrange-
ment by which the
boiler ~~water~~ ^{water}
the Red Water water shall
when ~~the~~ ^{the} decided for
in the proposed ~~the~~ ^{the}

409: July/11 1038/123

10.577.

Unter dem Titel: *Unter dem Titel* 257

Expenditures Reported - civil protest in upper story of bank building
daily, 1912 2850 3d floor.

Co. A 80
Jan 68.

$\frac{1}{2} \times 100 = 50$
 $\frac{1}{2} \times 100 = 50$
 $(1963-1925) = 49$

40.644.
July 60.

30 Gals per
Herd Remains
Regiment.
from Hospital.

Good luck to
the new project!

* 50' x 16' x 4' =
3200 cubic feet
x 6 1/4 gal per cubic ft
= 20,000 gallons
or 20000 ft³ x 6.25 gal/ft³
= 125,000 gal
Control Valve Cuts Control.

40. 3871
12 bun. ~~7~~-60
Saccharin
the 8th -

90. 25-3
25-2000.

Zur Sache des Patents

$$414 \times 30 = 12,420$$

Capacity required 12120
 Cellulose
 = 2070 kcal 1/2 liter in 100 g
 like & took on 10,000 gals
 6000 lbs

3000 cubic feet.
Assuming that the 3" pipe can
supply this amount daily -
and that the boiler, 7 water supply
can be increased daily by working
a piston 24 inches dia, 12 times

Lower Cisterns: In construction
to hold 100,000 gal. but only 75,000
to 80,000 gal. are
presented up from lower Cistern.
Daily - Size of up. Cistern 18x16x20x12
~~Long 700~~ = 7200 gallons or 300 less.

Grh. Submittion in accordance
to above suggestion - for
for Rs 15.380 -

Revised York Submittion. For the
trial Submittion. & Code for 2nd-1

Co. 1579
date 15 June 74
Sanction Section.

II.

267

Sup. to Sup. gives explanation.
Called for our exhibits - Res.
Sth. for Rs 23, 222 and
York Sanctified in Amk.

Letters to the
 Upper Texas Co. Pipe from
 7 miles is reported to be sufficient
 to supply quantity
 required - 300 years? ⁱⁿ 12
 Upper Cister building but water
 has raised to it often arrange
 ment completed but never
 brought into use - Cause
 reported to be insufficient
 in supply from 7 miles - No
 Red Hills water having already
 been filed numerous
 it can be arranged to admit
 it into the Supply Cister.
 The Govt. Court - estimate
 the subscription -

Cal. Food Subsidy - 8th -
Under a long supply limit
Can be proc. from the 7 weeks
is required. Daily supply for
7 weeks for the Ford - 112,614 gallons
and Fuel 10,570 gallons.
These 7 weeks supply should
be the minimum for Hospital
in case of accident -

III.

277

G.O. 63331
daten 25 Nov. 74

+ Print with 20
3331 of 25/11/76

E. O. in 75-4
 5 June 75.
 Evidently this
 letter brings a notice
 the State of Illinois
 minutes such in the
 General letter.
 noted below

Last letter from
Lynch
Genl. from
Dr Furness
28 May 75.

Direct from Berlin
 Supply is now on order
 for the month -
 I want both quantities
 better less 4200 dollars
 22 Oct 74

Letter from Louis Brand
 painted, St. Louis
 dated by Carl B.
 Walter H. G.
 Book order sent
 friends with the proceeds
 in 76-77 - some
 available at present

with Knolls
R. Shinn
no. 100
date
Dec 22/35

This is to certify that
the work done by
the only Committee
for the Red Hills
has been done in
the name of the
Committee for the
water supply of the
Red Hills for
and the Committee
into the same, and
as far as possible -

28/12/75
Red Hills
Committee

Refers to the
present state of the
water supply in the
Red Hills and the
Red Hills Committee
with the Red Hills
Committee has been
in the name of the
Committee for the
water supply of the
Red Hills for and
the Committee into
the same, and as far
as possible -

A minute of the
Committee for the
water supply of the
Red Hills for and
the Committee into
the same, and as far
as possible -
26-2-77

Refers to the
present state of the
water supply in the
Red Hills and the
Red Hills Committee
with the Red Hills
Committee has been
in the name of the
Committee for the
water supply of the
Red Hills for and
the Committee into
the same, and as far
as possible -

As far as I can make out
the junction with the
Red Hills main has
been completed. Pipes
for distribution from
upper section, with
a view to the
distribution of water to
the lower section, as the
medical authorities
refer to it -
27/2/76

II Extending the pipes for supply of Red Hill water to various parts of the building for general purposes - connecting the pumps of the Red Hill water cistern with the main -

III Putting the pumps into working order -

IV Supplying a small iron tank with lift pump for the nurses' quarters -

V Lining the Red Hill water cistern on the first floor with brick in cement &c -

2. His Excellency the Governor in Council sanctions the estimate of Rs 3600 for the work and directs it to be put

The proposed plan is to extend the pipes from the Red Hill water cistern to various parts of the building for general purposes - connecting the pumps of the Red Hill water cistern with the main -

put in hand immediately.

allow the plan to be put in hand immediately.

1. The plan is to extend the pipes from the Red Hill water cistern to various parts of the building for general purposes - connecting the pumps of the Red Hill water cistern with the main -

2. The plan is to extend the pipes from the Red Hill water cistern to various parts of the building for general purposes - connecting the pumps of the Red Hill water cistern with the main -

3. The plan is to extend the pipes from the Red Hill water cistern to various parts of the building for general purposes - connecting the pumps of the Red Hill water cistern with the main -

put in hand immediately. An appropriation of Rs 1300 is made from the Imperial Reserve as grant-in-aid on account of the Military Establishment accommodated in the building and Rs 1300 from the Provincial Reserve of 1877-78 -

3. The Chief Engineer will issue orders in reference to the removal of the 2 story cisterns reported to be useless.

4. This sanction has been registered

as Provincial No.
of 1877-78

Oct 15/77

has returned from
his trip and examined
the paper -

I would suggest that
the small iron column
proposed for the
water tower be used in
place of the one
which is now in use
- which is a
landmark in the
city.

As a result of the
survey of the
water tower, but I would
not expect to see
the present one
removed out of the way.

and the water
tower must be
used for one of
the pillars of the
water tower. It
will be very
difficult to
remove them.

Yours
24/5

No 392 W Public Works Department
PROCEEDINGS OF THE MADRAS GOVERNMENT. 31.7.

UNDER date the 9 July 22 . . .

Read the following

From the Dept: Engr. Presidency (N.E. No 37338 / October / 6)
 " Chief Engineer's Memo (H.R. 6202 D / 1st March / 77)
 (Library 1877)

His Excellency

The Governor in Council desires that no action be taken in the matter of completing the water service of the General Hospital until such time as the Red Hills water shall, after being properly filtered, be supplied under pressure for distribution to the Town of Madras which, when accomplished, will necessarily

1

- pass this as it is apparently
based on the 1st. note
altho. it does not in check
the suggestion made there in
that the small iron cistern
will be a circular brick
but I do not say and I see nothing

469: July 15 L. 3922

Ans 17-5-77

necessitate considerable
modifications of the plans
and estimates for completing
the general Hospital water
service now submitted.

The District Engineer
will have the condemned
and unsightly masonry
Cisterns on the third story
of the Eastern House removed
as early as possible.

W.H.
24.0.77
EAT

Let the supplied & Andrews
under pressure in
my time.

and it will be advisable to
cover in and case with Brick
work, the small Iron Cisterns
proposed to be placed on the roof
of the buildings for supplying
water to the Nurses' Quarters.

EAT

CIV

D. E. Rindley
Sub-Engineer

DISD 18.7.77

7243

Govt. of 1877 Madras

PUBLIC WORKS.

To



Dated

32-T

Issued

1723B 113

Recd.

Encl.

G 09 July — 1877, No 392W

Nos. 123 - 124

General Hospital, Madras
issuing orders on the sub-
ject of completing the
service of the —

Plans con-
ected with S.O.
1549 1715
and 1717

to be sent to
the Registrar
of the
Public Works

15/10/11