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MADRAS RECORD OFFICE.

Government of Madras.

Public DEPARTMENT.

G.O. No.	286	Press Mis.
Dated	2 - 3 - 19	1868

Not to be folded or roughly handled

9/11/86

*Proceedings of the Madras Government, Public Department,
2nd March 1868.*

No. 25. Read the following Proceedings of Government in the Public Works Department, dated 25th February 1868, No. 644.
Approving of the suggestions of the Committee appointed for the purpose of reporting on the water-supply of the General Hospital and Medical College. (Vide Proceedings, Public Works Department, dated 25th February 1868, Nos. 604 & 605).

No. 26. ORDER THEREON, 2nd March 1868, No. 286.

To be recorded.

(Signed) R. S. ELLIS,
Chief Secretary.

No. 604. Read the following letter from Committee for the supply of water to the General Hospital, to the Secretary to Government, Department Public Works, dated Madras, 3rd February 1868, No. 135 :—

In accordance with the instructions conveyed in G. O., No. 3,858, dated 11th December 1867, we have the honor to submit a report on the water supply of the General Hospital and Medical College.

Our opinions are to the following effect :—

I. That a reservoir is required in the vicinity of the Hospital, and that it should be constructed on the north side of the enclosure nearly opposite the centre of the building.

II. That it should be capable of holding a supply equal to one-half more than the ordinary daily consumption, and that this quantity should be obtainable from the Seven Wells reservoir within the twenty-four hours.

III. That there should be a smaller reservoir on a higher level, for the distribution of the water to the upper-story of the Hospital.

IV. That the distribution pipes for the Civil and Military Hospital should be kept separate, and that the reservoirs should be adapted with partition walls and supply cocks to allow of the two sections being supplied independently.

V. That the bath-rooms should be furnished with small boilers for the supply of hot-water.

VI. That a reservoir capable of containing 400 gallons should be constructed for the use of the Medical College, and that it should be connected with the main by a separate pipe.

VII. That the water obtained from the Seven Wells should not be used to flush the Hospital drains.

VIII. That the above arrangements are not likely to require any sensible alteration on the introduction into the town of a supply of water from the Red Hill tank.

1. As regards the necessity for having a reservoir at the General Hospital, we would remark that the same reason holds good for it, as in the parallel case of the supply of water to the Barracks in the Fort. If the water were drawn off by stand-pipes at all, the different buildings which are supplied from the Seven Wells, without intermediate reservoirs, there would evidently be great difficulty in keeping the head of water at the Seven Wells at any fixed standard, since the quantity drawn off for consumption must necessarily be fluctuating. At one time the Seven Wells reservoir would be full, and no water would be drawn off, as for example at night; at another, the demand would be greater than the labor of the whole establishment at the Seven Wells could meet. It is obvious that the establishment there can only be utilized to the full extent by being employed at regular hours, and by rendering the supply of the principal reservoir as independent as possible of any fluctuation in the supply drawn for consumption. This object, in our opinion, can best be accomplished by means of distribution reservoirs in the vicinity of the buildings in which the water is to be consumed.

The site we have selected for a reservoir at the General Hospital has been approved of by the Inspector General, Indian Medical Department, and by the Surgeon of the Hospital. It is immediately opposite the bath-rooms and latrines, and close to the enclosure wall. In that position the reservoir will be as free as any structure of the kind can be, from objections on the score of unsightliness or of its interfering with the ventilation of the Hospital.

2. The quantity of water required for daily consumption cannot be ascertained with very great accuracy. For a Hospital the supply cannot be limited; all that can be insisted on is, that the water shall be used and not wasted. As 20 gallons per head per diem have been computed as the probable requirements of the population of Madras, 30 gallons per head are not likely to be too large an allowance for the Hospital. We compute this as the ordinary consumption, and propose that the reservoir should be capable of holding one and a half day's supply, with a view to meeting any exceptional demand. This quantity would have to be obtained from the Seven Wells reservoir within the twenty-four hours.

Military.		
Lower story.	Upper story.	
74	122	
	Civil.	
90	128	
164	250	
164 at 30 gallons =	4,920	
250 at do. =	7,500	
	12,420	

The number of patients and members of the Hospital establishment to be provided for is shown in the margin, from which it appears that the ordinary daily supply will amount to 12,420 gallons.

The reservoir should, therefore, be capable of containing between 18,000 and 19,000 gallons, and will require a capacity of 3,000 cubic feet. As it is desirable

to have as great a head as possible at the Seven Wells, the depth of the proposed reservoir should not much if at all exceed 4 feet, and if the width in the clear is fixed at 16 feet, the length required will be 47 feet or, allowing for a partition wall, say 50 feet. If the floor be raised 3 to 4 feet above the lower floor of the Hospital, a sufficient head for the supply of the stand-pipes will always be available.

* 12,420 gallons.

We have ascertained that the required ordinary daily supply* can be obtained by about twelve hours run of the present three inch main pipe; and that the existing supply at the Seven Wells reservoir can be increased when required by 14,400 gallons daily, by simply working a set of peccottahs at No. I. well twenty-four hours instead of twelve hours as at present.

3. For the upper-story of the Hospital the probable daily demand is, as above-mentioned in the foregoing marginal statement, 7,500 gallons daily. For this quantity a reservoir 18 feet by 16 feet and 4 feet deep will be required. It should be built as a second story to the lower reservoir, and would have its floor about 4 feet above the upper floor of the Hospital. The difference of level between the two floors is 16 feet 3 inches. A single peccottah worked by two men could fill the upper reservoir in six hours; but as the noise, risk of contamination of the water, and the stopping attendant on the use of this machine, would render it objectionable, we propose to have the water raised by a small force pump, which we learn can be made up at the Government Workshops.

Both upper and lower reservoirs should be covered in, and either constructed of, or surrounded by, some non-conducting material to keep the water both pure and cool.†

The Government will observe that we have allowed for storage in the lower reservoir sufficient for the wants of the whole Hospital.

† Brick and masonry tanks, if arched, may be covered in with sand or fine earth to the depth of 18 inches, which will preserve the water cool.

Iron tanks should not be exposed to the direct action of the sun, but must be enclosed or clothed. An enclosure of boards with felt beneath will form a good protection. Water, especially for drinking, must be kept cool.—(Suggestions in regard to Sanitary works required for improving Indian stations, pages 16 and 17.)

The storage in the upper reservoir will, therefore, be all in excess of that quantity. A margin would, therefore, be left to meet any accidental stoppage of the supply by the mains.

4. As the Civil and Military branches of the Hospital are under separate management, we consider it desirable that each should have its separate source of supply. The reservoirs will be on the line dividing the Civil from the Military Hospital, and all that would appear to be needed to give effect to this arrangement, as regards the lower floor, is to have separate heads for the pipes which at present encircle the building, and a partition wall in the reservoir, together with separate cocks to connect the two divisions with the main pipe. To allow of a similar arrangement being carried out for the supply of the upper story, distribution and stand-pipes will have to be laid down. At present water has to be carried up-stairs by hand.

5. As every Hospital should be furnished with the means of providing warm-baths to the patients, we recommend, as the simplest arrangement that can be made, that small boilers should be fitted up in the bath-rooms, on such a level as to allow of water being supplied to them from the reservoirs, and the hot-water being led from them to the baths by gravitation only.

6. For the supply of the Medical College we recommend the construction of a small reservoir capable of containing 400 gallons, which we are informed will suffice to meet all requirements. An iron tank 5 feet x 3 feet x 4 feet or 4 feet x 4 feet x 4 feet protected by non-conducting material will, in our opinion, be superior to a structure of masonry. It should be connected with the main by a separate supply pipe, and be sufficiently raised to command the lower floor of the building.

The Principal of the College, in consideration of the expense which would have to be incurred in perfecting the arrangements by laying down pipes for the upper-story, and the comparatively small consumption of water in that part of the building, would propose to continue to supply it, as at present, by manual labor.

7. It appears to us that the water obtained from the Seven Wells is too valuable to be used for periodically flushing the Hospital drains. Moreover, the considerable supply which would be required to effect this operation thoroughly is not likely to be available.

8. As regards the effect of the introduction of the water from the Red Hill tank, on the arrangements above proposed, we are of opinion that reservoirs at the Hospital would still be necessary. The water will have to be filtered before distribution to the Hospital, even if conveyed to the precincts of the town in a covered masonry conduit, and a head of water will be required for the operation. The lower floor of the Hospital is 9½ feet above mean sea level, and the probable level of the supply at the Spur tank (supposing the water brought to that site) 15 feet above the same level. The difference would be insufficient to overcome the resistance due to the filtering process, and the conveyance of the supply to the Hospital. Hence we conclude that it would be found necessary to have a similar arrangement to that now in force for the conveyance of the water from the Seven Wells, and that the reservoir we have recommended for construction will be as serviceable after as before the introduction of the Red Hill tank supply to this town.

*Proceedings of the Madras Government, Public Work Department,
25th February 1868.*

No. 605. ORDER THEREON, 25th February 1868, No. 644.

CIVIL WORKS, No. 82.

Lieutenant-Colonel Anderson, Chief Engineer
for Irrigation.

Surgeon-Major Ranking, Sanitary Commis-
sioner.

Surgeon-Major Smith, M. D., Principal of the
Medical College.

1. A difference of opinion having
arisen as to the advisability of con-
structing a reservoir at the General
Hospital for the storage and convenient distribution of water, which it was believed
was wasted to a considerable extent by
the present arrangements of supply, the
Government in their Proceedings of the
11th December 1867, No. 3,858, appoint-
ed a Committee composed of the Officers
marginally named to consider and report
upon the subject.

2. The letter read at the head of these Proceedings contains the result of the
Committee's deliberations. They are of opinion that the proposed reservoir is
necessary, but that instead of being placed in close proximity to the sea front of
the Hospital, as was originally intended, it should be constructed at the side of
the north enclosure wall, and be made capable of holding a supply equal to one-
half more than the ordinary daily consumption, the required quantity being
obtained from the Seven Wells within the twenty-four hours. This reservoir should
be on a level to command the ground floor of the Hospital, throughout all parts of
which water would then be delivered from stand-pipes by gravitation. The Com-
mittee also consider a smaller reservoir, on a higher level, to be required for the
distribution of water in the same way to the upper-story, and that a third reser-
voir should be built to meet the requirements of the Medical College. They further
suggest that the arrangements for supplying the Civil and Military Hospitals
should be distinct so that each section may have a separate and independent source
of supply, and that the water to be stored should not be diverted to the flushing of
the Hospital drains as seems to have been contemplated.

3. The Committee explain the grounds upon which they base their recom-
mendations, and enter into details of the proposed capacity of the reservoirs and
of the arrangements for the distribution of water, and they add that the introduc-
tion of the water from the Red Hill tank under Mr. Fraser's scheme will not
supersede the necessity of the works now proposed.

4. The Government approve of the various proposals submitted by the Com-
mittee, and they request the Superintending Engineer to prepare and submit the
necessary plans and estimates for giving effect to the arrangements as early as
possible.

(True Extract.)

Colonel, R. E.,

Secretary to Government.

To the Superintending Engineer, 4th Division.

„ Public Department.

„ Military do.

„ Inspector General of the Indian Medical Department.

To Lieutenant-Colonel J. C. Anderson, R. E., Chief Engineer for Irrigation.

„ Surgeon-Major J. L. Ranking, Sanitary Commissioner.

„ Do. G. Smith, M. D., Principal of the Medical College.

Exd. S. T. Augustin.

Proc of March
Public 1868. DEPT.

Proceedings of Government in the
Department.

No. 644

Dated 25
Received 25 Feb 1868

No. 367

Approving of the sugges-
tions of the Committee
appointed for the purpose
of reporting on the state supply of
the General Hospital & Medical College
at the General Hospital
2d March 1868
to be recorded

25. 26.