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MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

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Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
22nd March 1876.

No. 340.

Read the following:—

*Report to accompany Plan, Specification and Estimate of Quantities, for constructing a
Latrine for the use of Natives.*

THE latrine has been designed to suit the habits of the Native population of both sexes; it admits of their using the building and washing as is most natural to them out of doors, while the most modern improvements for deodorization and cleanly removal of solid and liquid faecal matter have not been lost sight of.

No arrangements have been made in or near the building for the manufacture of poudrette; however, vats and sheds for the purpose could easily be provided in localities where poudrette is in such demand as to offer any chance of revenue therefrom.

The area covered by the building is 750 square feet; it is calculated to afford accommodation for fourteen persons at one time. The building contains—

One central sweepers' passage 35 feet $\times$ 3 feet; two sets of latrines, each containing seven compartments 3 feet $\times$ 3 feet with passages of approach 3 feet in width.

Each compartment is provided with a raised platform 10 inches in height with central trough 9 inches in width and from 6 inches to 10 inches in depth, with slight inclines, in front to admit of the free flow of urine to a drain leading to tubs placed outside to receive it, and in rear for the easy removal of the earth-covered faeces by the sweepers to the central passage.

Four earth bins, each containing 25 cubic feet, are placed so as to be accessible to the sweepers from their passage, or to persons using the latrine. Each bin to be provided with an earth-scoop to lift about 1 lb. of earth.

Two iron tubs for the reception of urine and two wooden tubs with covers for its removal are provided. The requisite tools are provided for the sweepers.

The entrances are all screened, and at each end an easily accessible cistern to contain 32 gallons of water is provided, while the building, though well sheltered from rain, is thoroughly ventilated.

The mixture of asphalt and tar to be used on the floor, trenches, compartments, and all walls to a height of 3 feet all round inside, soon becomes indurated, and thus can be easily washed when necessary.

The cost of repainting all troughs and drains with this mixture once monthly is included in that named for conservancy.

In the conservancy of the latrine, earth about 1 inch in depth is placed by the sweeper on the rear incline of the trough; when used the faeces is covered with earth by the sweeper, and when necessary removed down the incline with a wooden rake into the sweepers' passage, where, if requisite, more earth is mixed with it, and the whole at certain times during the day carted away. The urine tubs are also removed when necessary by the same carts to the poudrette dépôt.

As it may be useful to state the work required to be done and the establishment necessary to work these latrines successfully, the following note is appended:—

From the data obtainable on the subject published in various Proceedings of Government from time to time since 1868, 3 lbs. of dry earth is deemed sufficient for the perfect deodorization of the daily defecation of an adult which equals 5 ozs. of

solid and 10 ozs. of fluid excreta, or nearly 1 lb. To this, however, has, in the case of natives, to be added about one pint of water used for ablutionary purposes, to absorb which at least 1 or 2 lbs. more of earth are required. To supply so great a quantity of dry earth and remove the poudrette has been one of the chief difficulties in carrying out the dry earth system in latrines constructed for the use of natives; thus with the view of economizing the quantity of earth to be supplied, and reducing the mass to be removed daily, the latrine now designed is so arranged that the solid faeces alone is deodorized in situ, while the less offensive fluid excreta and water are received into receptacles conveniently placed for the purpose, and finally removed separately to the poudrette depôt.

Allowing for waste and the perfect cleanly removal of the solid matter, the quantity of earth used in these calculations is $1\frac{1}{2}$ lbs. per head. The earth bins to be constructed are to contain 100 cubic feet of earth, 7,000 lbs. in weight, or sufficient for say 4,000 persons. Taking the time that the latrines will be mostly used as five hours in the morning and three in the evening, and each person occupying a compartment for from ten to fifteen minutes, the number of persons the latrine of fourteen compartments is capable of accommodating daily is say 500, and the supply of earth would be sufficient for more than a week.

But, practically, take 100 cubic feet of earth as requiring to be supplied once weekly, 64 gallons of water daily, and 500 lbs. of excreta plus 750 lbs. of earth and 600 lbs. of water, or 1,850 lbs. of solid and fluid matter will have to be removed daily to the poudrette depôt, to an average distance of one-and-a-half miles, which would place the depôt outside most cantonments. One cart could easily make four trips a day to this distance, and thus one cart would be sufficient to meet the requirements of two latrines at a moderate distance apart, and once at least daily might supply when returning one load of fresh earth, and keep up the supply of this material without difficulty or extra cost, while two men sweepers would be ample to attend to the latrine. The cost of this establishment would probably be as follows:—

Half cart-hire for one cart at 30 Rupees per mensem	...	...	Rs.
Two men sweepers at 6 Rupees each	...	...	15
Tar mixture for troughs, drains, sweepers, passage-tubs, &c.	...	...	12
	...	...	4
Total	...	...	31

or about 1 Anna per head per mensem for 500 persons.

The plan has been submitted to, and has met with the approval of, the Officiating Sanitary Commissioner.

(By Order.)

(Signed) W. T. F. FAREWELL, Colonel,
Officiating Deputy Chief Engineer.

Specification to accompany Estimate for constructing a Latrine for the use of Natives.

The site to be cleared of all grass, bushes, roots, &c., and after centre lines of the walls have been pegged out and breadth of foundations marked on ground, excavate trenches to the full depth shown on the plan, or to such depth as the locality may require.

Site.

Excavation.

To be composed of three parts of coarse gravel or kunker, two parts roughly broken bricks, one part sand, and one part of freshly burnt lime mixed together with sufficient water to allow of its thorough incorporation.

Concrete.

Foundations.

Lay one layer of concrete, 6 inches thick, ram well, and level all round.

Bricks, best well-burnt bricks, 9 inches $\times$ 4 $\frac{1}{2}$ inches $\times$ 2 $\frac{1}{2}$ inches, well shaped with square edges, ringing clear, to be used. The bricks to be well wet with water before being used, and

Brick and Mortar work.

laid in proper courses, joints broken, and bond preserved throughout, care being taken that all the vertical joints are well filled with, and each brick well embedded in, mortar. The walls and honey-comb work between pillars to be bonded with pillars.

To be composed as directed in the instructions given in Dr. Nicholson's report, published with G.O., No. 3,468, dated 10th December 1871.

Mortar.

Put log holes.

Put log holes for scaffolding, not to be placed in pillars.

Open brick or honey-comb work, as per plan, to be built full width above walls between pillars as shown in the drawing; joints to be carefully made with best mortar, and all inter-ties left clear.

Honey-comb work.

All arches, where stone is obtainable, to be made by insertion of a flat stone over openings in rear of latrines, or regular turned brick arches.

Arches.

Pillar caps to be, where stone is cheap and easily obtained, of stone, otherwise of timber not less than 3 inches thick covering the whole area on top of the pillars, care being taken to lay all level.

Pillar caps.

Roof.

Roof timber to be of teak:—

Central bressummer	5 inches $\times$ 8 inches.
Outer do.	1 $\frac{1}{2}$ " $\times$ 7 "
Rafters	2 $\frac{1}{2}$ " $\times$ 4 "

The bressummer to be laid all level, and central bressummer tied by six iron ties with collars, nuts, &c., of the dimensions given in the detail drawing, and nuts well screwed home.

Rafters to be notched at ridge and nailed together, and slightly notched at bearing points on bressummers, and securely nailed to them. Rafters to be 18 inches from centre to centre. Then nail reapers 2 inches $\times$ 1 inch 4 inches apart, and tile dry with the best well-burnt pan-tiles; finish with chunna ridge and borders 9 inches broad, 2 $\frac{1}{2}$ feet apart.

At all entrances build in stone curbing as shown in the plan, fill floor of all passages with concrete as before specified with slope from walls to drain $\frac{1}{2}$ inch to 1 foot; central sweepers' passage, concrete floor, to slope to centre as shown in plan; ram the whole well and finish smooth; when thoroughly dry paint the whole with a composition of coal tar and asphalt in the

Flooring.

Asphalt and tar composition.

proportion of 1 lb. of asphalt to 5 lbs. of tar.

Brick and mortar work of all troughs to be very carefully laid, and slope as delineated in drawing maintained; joints laid as close as possible, ends of bricks on apex of slopes to be ground to fit close.

Troughs.

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Brick and mortar work of platforms to be securely laid and bonded to the trough work, the whole to be well smoothed off. Stone where obtainable at cheap rates might very properly be used for the platform surface.

Platforms.

Lay a V or U drain securely bedded in mortar, sides level with floor as shown in the drawing with a fall to the centre of 3 inches in 10 feet, and to out-fall gutter pipe which is to be of iron 1 foot in length, 3 inches diameter, projecting into the bucket wells 4 inches.

Drain.

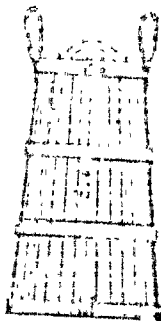
Two cisterns, each to hold 32 gallons of water, to be built of best brick and mortar in the localities and of the dimensions shown on the plan, with stone coping firmly laid and cramped at the angles with iron cramps headed in, the side pieces to be built at least 6 inches into the screen walls; the cisterns to be plastered with best surki cement, well polished, and kept wet and protected from the sun till firmly set.

Water Cisterns.

Bucket Wells.

Supply two iron buckets each to contain 6 gallons, with handles to allow of insertion of bamboo for removal, as per standard plan circulated with G.O., No. 1,911, dated 20th April 1874.

Buckets.



Build in brick and mortar, as per plan; point with mixture of asphalt and tar, cover with wood, and build ledge to exclude rain.

Supply two wooden iron-hooped tubs with covers, iron hoop handles, as per drawing, to contain 18 gallons for the removal of urine to the pondrette depot; point with tar; supply two bamboos.

Painting with Composition.

Three feet up all walls inside all compartments, division walls, earth bins, platforms, troughs, drain, &c., to be painted over with the asphalt and tar mixture with two coats.

All walls and screens inside, above the tar point, all honey-comb work to have two coats of best lime-wash; the lime to be used hot and slaked on the spot.

White-wash.

Color-wash.

Tools.

The following tools to be supplied:—four wooden rake scrapers with blades 7 inches x 5 inches x 1 inch, and handles 4 feet long.

2 Baskets

1 Broom

Gravel.

Remove all rubbish.

(By Order)

Signed W. T. P. FAREWELL, Colonel.
Quitting Deputy Chief Engineer.

*Proceedings of the Madras Government, Public Works Department,
22nd March 1876.*

Abstract Estimate for constructing a Latrine of 3 Seats at

Quantities.	Particulars.	Rate.	Per.	Amount.	Total.
51½	Cubic yards, excavating foundations and filling in	Rs. A. P.	C. yd.	Rs. A. P.	Rs. A. P.
17½	Do. concrete in chunam for floor and foundations	...	C. foot.	...	...
2,334	Cubic feet, brick in chunam	...	Sq. "	...	...
418	Square feet, honey-comb brick work in chunam	...	Sq. "	...	...
1,006	Do. roofing with nails, pantiles, chunam borders, &c.	...	Sq. "	...	...
87	Cubic feet, teakwood wrought and put up for bress-summer and rafters	...	C. foot.	...	...
2,100	Running feet, teak sleepers, 2" x 3"	...	R. "	...	...
116	Lbs. of iron wrought	...	lb.	...	...
2,572	Square feet, tarring composed of 1 lb. of asphalt to 5 lbs. tar	...	Sq. foot	...	...
10	Square yards, of gravelling well rammed	...	Sq. yd.	...	...
974	Square feet, white-washing inside and outside	...	Sq. foot	...	...
119	Do. surki plaster two coats to cisterns	...	"	...	...
18	Running feet, stone slabs 9' x 7'	...	R. foot.	...	...
24	Do. do. 18' x 3'	...	"	...	...
21	Do. do. 9' x 3'	...	"	...	...
4	Iron cramps set in lead, &c.	...	Each.	...	...
2	" buckets for urinary cisterns	...	"	...	...
2	Wooden buckets, large	...	"	...	...
2	Trap doors, including handle and zinc flashing	...	"	...	...
2	Iron gutter pipes 1' long and 3' diameter	...	"	...	...
2	Rake scrapes with blades 7' x 5' x 1'	...	"	...	...
4	Iron earth scoops	...	"	...	...
2	Baskets	...	"	...	...
1	Broom	...	"	...	...
Superintendence and Sundries at 5 per cent.		...	...	...	...
Total Estimate ..		...	...	...	...

No. 340-A.

ORDER THEREON, 22nd March 1876, No. 731.

MILITARY WORKS, No. 11-A.

An improved modification of the design for a latrine for the use of Natives circulated with G.O., No. 1,837, of the 8th of August 1872, has together with a specification and report been prepared under the direction of the Chief Engineer, and approved by the Sanitary Commissioner. His Grace the Governor in Council approves of the design, and directs its circulation and future adoption as a standard plan for latrines for Natives in the Madras Presidency.

(True Extract)

Major-General, R.E.,
Secretary to Government.

To District Engineers.
To the Consulting Architect.
" Judicial Department.
" Revenue "
" Military "

Ed. E. C. Shundaz

50 spare Copies sent to Madras

G.O. No.
B.P. No.

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1880
Revenue Dept
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 PUBLIC WORKS.

DISTRICT ENGINEERS.

AC. CO. CO.

2nd 1st Nov 1876

2nd 1st

2nd 28 April

G. O. No. 1576, N. 74

MADE

No. 319-319A

1st. Files Found of Revenue

*1st. Found of Files for Latching for Author in
 the 11th & 12th Regts. - The 11th & 12th
 a Latching for the use of Natives, directed
 with H.O. No. 1587, of San August. 1876
 as proposed for the direction of the Chief
 Engineer approved and directed to be done
 later for the same purpose as the —.*

*Communicated to the
 1st. Found of Files in continuation
 2nd 17th April 1876 in O.C. file
 Richard Ryle*

DEPARTMENT