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MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No.	<u>1481 B.</u>	Press
	<u>210-211</u>	<u>MIE</u>
Dated	<u>10-6-</u>	<u>18 63.</u>

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
10th June 1863.*

No. 210. Read the following letter from Captain H. L. PRENDERGAST, R. E., Acting Superintendent Engineer 4th Division, to Colonel W. L. BIRDWOOD, R. E., Secretary to Government, Public Works Department, dated Madras, 20th May 1863, No. 255 :—

SIR,

1. Agreeably to the instructions contained in the Proceedings of Government No. 2,547, dated 21th October 1862, I have the honor to submit for

1 Letter No. 2,885, dated 7th March 1863.

1 Abstract Estimate.

2 Plans.

1 Specification.

orders the accompanying papers respecting the relative cost of each of the schemes therein adverted to, for the removal of the sewerage from Fort Saint George.

2. If the plan of flushing the drains by iron pipes into the sea be adopted, the cost will be as follows :—

	RS.
Amount already expended.....	24,000
Do. required to complete the work...	94,400
Cost of Steam Engine, 1 Turbine wheel...	24,000
Do. building a new Powder Magazine in place of one to be converted into a tank...	28,000
	<u>1,70,400</u>

Annual cost of working Engine, repairing buildings, including interest on capital of Rupees 1,70,400...	20,076
Deduct saving that would be annually effected in cost of Printing Establishment if Turbine Wheel is used...	2,602
	<u>17,474</u>

3. In the event, however, of the scheme recommended by Colonel Birdwood being carried into effect, the expense will be :—

	RS.
Cost already incurred in the construction of Regimental and public privies...	10,343
Amount required to complete the wall...	3,000
	<u>13,343</u>

Annual cost of Establishment required to work Picottahs, and remove sewerage, including general repairs and interest on original outlay...	1,917
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4. From this it will be seen that the cost of flushing the drains, will, both as regards original outlay and subsequent maintenance, be considerably in excess of the expense which would attend the carting away every night of the contents of the privies. The adoption of the first plan would, certainly by its introduction of the Turbine wheel, be of advantage in working the Printing Presses, as explained in paragraph 4 of the letter herewith forwarded; but it appears to me far more desirable to carry out the scheme recommended by Colonel Birdwood, a plan and estimate for this purpose are accordingly submitted.

5. The estimate provides for the construction and fitting of close iron tanks intended to hold the soil only, the liquid portion of the sewerage to be drained from them into the Barrack drain at the edge of the Fort ditch. These tanks are to be left during the day to be re-placed by others at night, and the soil pipes leading into them from the privies will be provided with a sliding sluice which may be closed in the short interval of changing the tanks. Cisterns for holding sufficient water to flush the soil pipes of both the Regimental and public privies have already been built.

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6. Government may be disposed to have this subject taken, up in common with, or in part of, the scheme now under consideration by Captain Tulloch and Mr. Fraser, C. E., for improving the drainage of Madras in general; but if it should be considered desirable to carry it out at once, I recommend that the estimated amount Rupees 3,000 may be sanctioned from the Reserve Fund.

From Captain H. L. PRENDERGAST, R. E., Acting District Engineer, Presidency, to the Deputy Chief Engineer, Central Circle, dated Madras, 7th March 1863, No. 2,885.
Sir,

1. I have the honor to furnish Plans and Estimate of Rupees 3,000, for providing iron tanks and earthen pipes for the Regimental and Public Privies in the Fort, as called for on the 3rd November 1862, No. 3,214, and to state with reference to the 2nd paragraph, that there appears to be no objection to the plan adverted to in paragraph 4 of Government Order No. 2,547 of 24th October 1862, for the removal by hand carriage of the contents of the privies.

2. Government have desired to be informed of the cost, original and annual, that would be incurred on this project, and on that for flushing the Fort drains by iron pipes into the sea.

3. For fixing the Turbine in connection with the Printing Presses, and for staging with iron piles to carry pipes into the sea, there was spent and estimated in last November in round numbers—

	Rs.
Already expended	24,000
Estimated for completing the work except screw pile staging	31,400
Estimated for screw pile staging for carrying out soil pipes (See Appendix A)	43,000
Add the contingent expense of building a Grand Magazine to contain 1,500 large barrels of powder... ..	28,000
The cost of the 12 Horse-power Pumping Engine and Turbine wheel... ..	24,000
Total	1,70,400 i

The current expenses that will be incurred after the original outlay will be the expense of working the 12 Horse-power Pumping Engine (Vide Appendix B.) per mensem	650
Expense of working Turbine and Printing Presses. (Vide Appendix C.)	29

Or per annum	8,148
Add interest on capital of Rupees 1,70,400 at 5 per cent. per annum... ..	8,520
And for general repairs on the original outlay 2 per cent. per annum... ..	3,408

Total 20,076 ii

For the proposal of carting away at night the contents of the privies, there has been already incurred on the construction of the Regimental Privies... ..	4,491
Do. Public do.	5,852

Amount of the present Estimate... ..	10,343
	3,000

13,343 iii

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	Rs.
The current expenses consequent on this outlay consist of the Establishment to work the pecottahs and privy arrangements (See Appendix E) at Rupees 62 per mensem or per annum	744
Interest at 5 per cent. per annum on the total outlay Rupees 667	
Do. for general repairs at 2 per cent. per annum on outlay of construction of Rupees 10,343.... ..	206
Do. at 10 per cent. per annum on the present Estimate of Rupees 3,000, for earthen pipes, iron tanks, &c., as liable to deterioration and being knocked about	300
	1,173
Total... ..	1,917 iv

4. With regard to the introduction of the Turbine, to work the Printing Presses, the following advantages may be calculated on :—

(1.) About one-third more work will be done than is now done.

(2.) Each impression will cost about $\frac{1}{10}$ th of the cost as now by manual labour.

(3.) The work will be performed better, and with less damage to the Presses. These results are explained in Appendix C and D; the saving in monthly cost by working the Turbine is (Rupees 245-13-4—29 Rupees) Rupees 216-13-4, or in the year Rupees 2,602.

5. The comparison between the two schemes shows that, that by flushing, will cost twelve times as much as the other, in original outlay; and ten times as much in subsequent maintenance; this comparison however does not include the cost of printing, as that has no connection with the minor scheme, and is an insignificant item in the larger schemes. It should also be observed that the Estimate in the Appendix for screw pile staging, is not obtained from the results of similar work, but is a calculation of the supposed cost.

6. In the Estimate of Rupees 3,000 now submitted it is proposed, with reference to the public privies, to construct in the east scarp wall of the north-east Blind, a vaulted chamber, to contain wrought iron tanks, of the construction shown in the plan, and the soil pipe from the privies to be flushed into these tanks from the cistern, which will be filled as originally intended from the adjacent pecottah erected for that purpose.

The iron tanks are intended to hold the soil only, the liquid portion of the sewerage to be drained from them and conveyed by pipes to join the Barrack drain at the edge of the ditch. To meet the objection likely to be raised, that this liquid will be offensive, it is considered that it will not be more so, than that which now passes through the Barrack drain; also that to remove it in the iron tanks would entail a greater number, difficult to handle from their weight, and requiring more persons to move. Three iron tanks are to be left during the day, to be replaced by three others at night, when the full ones will be taken by the sweepers in a boat and handed to the contractor, who undertakes to remove the soil. The soil pipe in the privies is provided with a sliding sluice, which may be closed in the short interval of changing the tanks.

7. For the Regimental Privies, the same principle is proposed. There are two cisterns already built, and it is intended to convert the one (marked o in Plan) into a chamber for the iron tank, and to retain the other (marked p) for flushing the soil pipe. The liquid drained through the tanks, will be conveyed in earthenware pipes, lined with pitch and tar, round the Mint Bastion and along the North fausse brayo road, to join the Barrack drain, and be discharged into the sea.

8. Earthen ware pipes have been adopted, as glazed pipes are not to be had, the only available expedient being to give a carefully prepared coating of pitch and tar.

9. The Establishment required is estimated at four Picottah men, four Sweepers and two watching Peons; but in order that the water from the cistern may not be wasted, measures must be taken by the controlling authority when the work of construction is completed and out of the hands of this Department. If the water were to be carelessly turned on and allowed to flow, Picottah men would have to work the whole day long.

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APPENDIX A

Estimate of expense of a Screw pile Staging to carry out the main soil pipe 600 feet upwards.
Piles being ten feet apart.

No.	Dimensions.	
61	5 In. diameter, Rolled Iron Piles, 1½ running foot to 1 cwt., making 39½ tons at Rupees 250 per ton	7,625
183	3 Feet diameter, Cast iron Screws for ditto, 4½ lbs. a screw, making 24½ tons, at Rupees 250 per ton	8,625
61	24 Feet long, One inch Chain Cable, for tying the heads of the piles to screw moorings, at 2½ Rupees a running foot	3,924
120	14 Feet long, Four inch L iron, at 4½ lbs. per running foot, making 10½ tons, at Rupees 200 per ton	2,100
61	5 In. diameter, Wrought iron Collars, 100 lbs. each, making 3½ tons, say at Rupees 350 per ton	840
61	5 In. diameter, Cast iron Pile caps, with shoes, for soil pipe, say 4 tons, at Rupees 150 per ton	600
450	Feet 18 In. diameter, Wrought iron revetted soil Pipe, at Rupees 30 per running foot	9,000
600	Feet 4 In. L Side iron 14 lbs. a foot, for suffering the soil pipe, at Rupees 300 a ton	750
	Revetting the L irons to the soil pipe say	500
	Driving or screwing down 183 piles, at 25 Rupees a pile	4,575
	Temporary staging, sundry charges, use of portable engine to, &c., at about 1½ per cent	4,661
	Total	43,090

APPENDIX B

Cost of working 12 Horse-power Engine for one month.

20 Tons coal at 30 Rupees per ton	600
1 Engineer	15
2 Firemen	16
Sundries, such as grease, rags, &c.	19
Total	650

N. B.—The Mechanical Engineer attached to the Fort is supposed to inspect the Engine daily.

APPENDIX C

Approximate cost of working Turbine for one month.

One man	10
One man	8
Oil, rags, sundries, &c.	5
Total	23

N. B.—The Mechanical Engineer attached to the Fort is supposed to inspect the Machine daily.

Cost of petty repairs to the Turbine, shafting, and straps, is difficult to calculate; but may be taken to be about 6 Rupees a month, which will raise the cost of working the Presses by this means to Rupees 29 per month, and as the Superintendent expects to turn out about 32,000 copie per diem, we find the price of each impression to be—

$$\frac{29 \times 12 \times 16}{30 \times 32,000} = .0058 \text{ Pie (a)}$$

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APPENDIX D.

	RS.	A.	P.
Cost of working the Printing Presses by manual labour for one month, according to Superintendent Government Printing Press	240	0	0
Petty repairs to ditto	5	13	4
Total	245	13	4

Number of copies turned out daily 24,000. Price of each copy will be—
 $\frac{245 \text{ Rs. } 13 \text{ A. } 4 \text{ P.}}{30 \times 24,000} = .166 \text{ Pie (b)}$

These results a and b give the comparative values of each copy, not the positive value of a single copy in each case. It is considered more accurate to show them as they are, because it would be difficult to estimate the exact number of working days per mensem.

APPENDIX E.

Detail of the monthly expenditure for Establishment for Public and Regimental Privies:—

	RS.
Four Pecottah men at 7 Rupees each	28
Four Sweepers at 4½ „ do.	18
Two Watching Peons at 8 „ do.	16
Total	62

Presidency District Engr's Office (Signed) H. L. PRENDERGAST, Captain, R. E.,
Madras, Acting District Engineer, Presidency.
7th March 1863.

No. 211. ORDER THEREON, 10th June 1863, No. 1,481B.

1. The Governor in Council does not think that the scheme is likely to answer. The iron tanks are small, only 16 inches square and a large quantity of offensive matter will escape from them.

2. His Excellency, however, will not object to the experiment being made in one set of privies. The Superintending Engineer 4th Division will be good enough therefore to submit an Estimate accordingly.

3. If the general drainage scheme is carried out the Fort can partake of the advantage.

(Signed) W. I. BIRDWOOD, Colonel, R. E.,
Secretary to Government.

Abstract Estimate No. 67 of 1862/1/3

District President

For laying earthenware pipes at the Monumental and Public Prisons in the North Ward of London. There are two sewerable streets to be laid.

Description of works

Public Prisons

34 3/4 Cubic Yards Earth to work

200 Runners of 4 Earthenware pipes of 3" diameter lined & coated with mixture of pitch and oil

Only five for laying & pointing, the earthenware pipes in asphalt to 10 points

6 Moughat iron bands of 1/2" thick which were riveted with 2" rivets 1/2" centre to centre, pointed with 1/4" parallel angle iron at top & bottom as per accompanying sketch pitched & tarred inside and outside

Only five for cutting the wall of the North Back blind to carry along the sewer pipe to the Barrack Drain & joining the same in brick & chimney

Cutting the earthenware over roof of chimney including marking on the side

12 Sift 3 line dressed granite floor for chambers laid in chimney and pointed with asphalt

1 Granite stone 1 for cube cut and grained to receive the sluice gate & ends of pipes

1 Moughat iron sluice slide & handle complete

1750 Running 1/2 Earthenware pipes 8" diameter lined & coated with mixture of pitch & oil

Only three for laying & pointing, the earthenware pipes in asphalt to 800 points

6 Moughat iron bands of 1/2" thick riveted with 1/2" rivets 1/2" centre to centre, pointed with 1/4" parallel angle iron at top & bottom as per accompanying sketch & pitched & tarred inside & outside

1750 Running 1/2 Earthenware pipes 8" diameter lined & coated with mixture of pitch & oil

Only three for cutting the side wall & constructing the above roof and chamber as per sketch including marking and the ends

12 Sift 3 line dressed granite floor for chambers laid in chimney & pointed with asphalt

123 1/2 Earthenware pipes of 3" diameter to be placed under the wooden seats for washing the pans

20 Branches between pipes of 1/2" long by 3" diameter with 1/2" lip coils

20 Copper plates of 4" long by 1/2" wide to be placed to the pans with screws

20 1/2 iron pans 15" diameter

15 1/2 of leaden pipes 1/2" diameter from bottom to top of pipes

1 Granite stone 1/2 cube cut & grained to receive the sluice gate and ends of pipes

1 Moughat iron sluice slide and handle complete

Date Amount Amount of sub. paid

2 4 15 4

10 115 0

2 13 12 0

30 180 0

10 0

5 0

37 13 4 8 8

3 0

2 0

348 4

Regimental Prisons

1750 Running 1/2 Earthenware pipes 8" diameter lined & coated with mixture of pitch & oil

Only three for laying & pointing, the earthenware pipes in asphalt to 800 points

6 Moughat iron bands of 1/2" thick riveted with 1/2" rivets 1/2" centre to centre, pointed with 1/4" parallel angle iron at top & bottom as per accompanying sketch & pitched & tarred inside & outside

1750 Running 1/2 Earthenware pipes 8" diameter lined & coated with mixture of pitch & oil

Only three for cutting the side wall & constructing the above roof and chamber as per sketch including marking and the ends

12 Sift 3 line dressed granite floor for chambers laid in chimney & pointed with asphalt

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20 1/2 iron pans 15" diameter

15 1/2 of leaden pipes 1/2" diameter from bottom to top of pipes

1 Granite stone 1/2 cube cut & grained to receive the sluice gate and ends of pipes

1 Moughat iron sluice slide and handle complete

2 187 12 2

2536 2

Carried forward

Conducting many birds to the pond part
of the pond and from that the birds are
driven to the water part of the pond.

44 kept birds in the pond with in the pond

1 Brown and white 15 long

4 long the distance around the pond

1 Brown and white 15 long including the pond

2 Brown and white 15 long by the pond with

4 Brown and white 15 long

1 Brown and white for the pond and pond

Conducting birds for swimming & following the birds in the pond

2 Brown and white 15 long

4 Brown and white 15 long

5 Brown and white 15 long

4 Brown and white 15 long

2 Brown and white 15 long

1 Brown and white 15 long

4 Brown and white 15 long

1 Brown and white 15 long

10 Brown and white 15 long

1 Brown and white 15 long

1 Brown and white 15 long

12 Brown and white 15 long

8 Brown and white 15 long

10 kept swimming the birds in the pond with 2 birds

10 kept swimming the birds in the pond with 2 birds

502 kept swimming the birds in the pond with 2 birds

61 kept swimming the birds in the pond with 2 birds

Conducting birds in the pond with 2 birds

Other grounds the birds of the pond with 2 birds

of the Madras Government

Submitted for the orders of Govern-
ment. £ 1

A.B.

X287. I do not think this scheme is likely
to answer - the Iron Lungs are small
only 16 inches diam - a large quantity
of foecal and offensive matter will
escape from them - however it may
be as well to make the experiment -
~~but~~ we are setting devices before we
commit ourselves to a larger scheme.
If the general drainage scheme is carried out
the Fort can partake of advantage.

admiral

R. 1 1/2

Handwriting

1107

17. D. C. H. 18. 19.

Quick
Feb. 7. March 1865

1826-27
24/02/27

William H. Hall

Legons D'orthographe

Chassis on the dock and
pulling them up with a crane:
a better view from the bank.

Chandosley to 1833 - 1834

Mr 24th Oct. 1862 at
3980 400.

75 1862 Depart
of Dr. of Govt. for Am
from No. 1515.

Captain H. L. Pendergast R.E.
Adj. Sup. of Eng. & S. & G. & S.

To Colonel W. J. Birdwood R.E.
Secy. to Government P.W.D.

Dated 20
Recd 21 May 1863.
8th 1481 13-10 June 1863.
No. 255.

W. Submits for orders
papers regarding the relative
cost of the several schemes
provided for the sewerage of
Fort Saint George; and recom-
mends that the sum of Rs. 3000
for providing iron tanks
&c. for the sewerage, may be
sanctioned from the Reserve
Fund should the Government
deem it desirable to carry out
the scheme at once without
reference to the sanitary &c.

No. 210.

Proceedings of the Madras Government
 11/18/53 P.M. Department
 Under date the 10th June 1853
 Read the following letter

I have the honor to acknowledge the receipt of your letter of the 10th inst. in relation to the annual estimate for the drainage of the District of Madras, and to inform you that the sum of Rs. 5000 for printing more than 1000 for the same purpose may be sanctioned if and when found to be the best and most desirable to carry out the scheme at once without reference to the Sanitary Committee.

Ob. B. 20th May 1853 No. 255/

The proposed canal
 is a small one but
 the scheme is likely to
 succeed. The Sanitary
 Committee are small, only
 16 in number, and are
 not a large quantity of
 special matter with
 respect to the
 the drainage of the
 with an object to the
 of the drainage of the
 is one set of drains, the
 of the drainage of the
 to be put in the
 to be put in the
 accordingly of the
 General Manager
 scheme is carried
 out

The Supt. Engineer
of the Army
J.D.

To The Supt. Engineer 4th Division & Dep't. 10th June 1867
" Military Department " 16th June.

X-87

1777/8103 24th
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