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# MADRAS RECORD OFFICE.

## Government of Madras.

Public Works DEPARTMENT.

G.O. No. 314-18 Press
644-44 Mis.

Dated 31-1- 1843.

***Not to be folded or roughly handled***

Read the following papers :—

No. 644. From the Officiating Deputy Secretary to the Government of India, Public Works Department, (Irrigation,) to the Chief Engineer of Irrigation Works, Madras, dated Simla, 20th September 1871, No. 519-I.

I HAVE the honour to enclose a copy of the papers noted on the margin, and to request your opinion as to the desirability of erecting gauges of the description recommended by the Chief Engineer of Irrigation in the Punjab. I think that in many localities such gauges might be desirable, and if you are of the same opinion, would request you to submit to this office an indent for the number required in the Madras Presidency.

Letter from Government of Punjab, No. 3,980-I, of the 13th September 1871, and accompaniments.

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No. 38.

CIRCULAR MEMORANDUM OF THE ACTING CHIEF ENGINEER FOR IRRIGATION.

From the Chief Engineer, Irrigation Works, Punjaub, to the Inspector-General of Irrigation, Simla, dated Lahore, 13th September 1871, No. 3,980-I.

WATER gauges of some durable material have long been a *desideratum* on the irrigation works and rivers in Upper India. Attempts have been made locally to produce an article better suited than the ordinary painted rods, but only with a partial degree of success. One description made by Mr. Waston, Executive Engineer of the Madhopoor Workshops, consists of an iron bar with raised edges filled in with Plaster-of-Paris, on which glass is fastened down. The width of the rod is about 3 inches; cost from 1 Rupee to 1 Rupee 1 Anna per running foot. The glass, however, is liable to injury, and the Plaster-of-Paris to discoloration if any air gets access to it. Mr. E. C. Palmer, when Executive Engineer of the 2nd Division, Baree Doab Canal, enamelled iron bars for the purpose with some success, but the enamelling is found not to last. The cost per foot run was for bars one-fourth inch thick—

| | | |
|---|---|---|
| 2 | Inches wide ... .. ... ... ... ... | 13 Annas. |
| 3½ | Do. ... ... ... ... ... ... | 1 Rupee 2 Annas. |

2. Enamelled iron, the manufacture of which has lately been brought to great perfection in England, appears to me to be particularly well suited to the purpose. When last in England I made inquiries from the patentees, Messrs. Willing and Co., 70, St. Martin's Lane, and found that water-gauges of this material had long been in use. One set up in the harbour of Amsterdam had been then standing for five years without showing signs of wearing or discoloration. Along the Punjaub Railway line, a number of the mile-marks are of this material, and appear to stand well.

3. Since returning to India I have had more particular inquiries made in England as to cost, the best form of the iron plate, etc.; enclosed are the replies, in original, from the patentees. Their estimate is based on a list of the total number probably required which I sent to England, as I understood that the rate would in part depend on the extent of the order.

4. In this approximate estimate of numbers and lengths the seven rivers with which we have to deal are provided for thus,—

| | |
|---|---|
| Indus ... ... ... ... ... ... ... ... ... ... | 2 |
| Jhelum ... ... ... ... ... ... ... ... ... ... | 2 |
| Chenab ... ... ... ... ... ... ... ... ... ... | 3 |
| Ravee ... ... ... ... ... ... ... ... ... ... | 3 |
| Becâs ... ... ... ... ... ... ... ... ... ... | 1 |
| Sutlej ... ... ... ... ... ... ... ... ... ... | 4 |
| Jumna ... ... ... ... ... ... ... ... ... ... | 2 |

with a few in excess each marked up to 20 feet in length, the remainder are for the canals, inundation as well as permanent.

5. The estimate of cost of the gauges landed, say, at Lahore, is as follows :—

Total weight of enamelled gauges = 3,391·5 lbs., or about 1·51 tons.
Freight from England to Calcutta will not exceed £5 per ton.

| | £. | s. | d. |
|---|---|---|---|
| Transit by rail to Lahore, say, Rupees 200 per ton. | | | |
| Cost in England as per Messrs. Willing and Co.'s estimate ... | 238 | 6 | 6 |
| Packing, etc.... ... ... ... ... ... ... ... | 65 | 0 | 0 |
| | 303 | 6 | 6 |
| Freight to Calcutta 1·75 tons, including weight of package, at £5 | 8 | 15 | 0 |
| | 312 | 1 | 6 |

| | RS. |
|---|---|
| Say ... ... ... ... ... ... ... | 3,200 |
| Rail to Lahore 1·75 tons, at 200 ... ... ... | 350 |
| Grand Total... | 3,550 |

Average cost per running foot of gauge $= \frac{3,550}{3,900}$ = Rs. 0·91 = 14 As. 7 P.

So that the cost of a first rate article from England would, there is little doubt, be less than that of the very inferior ones which can be made here.

6. It was proposed to make the iron plates of "thimble" iron, but this the patentees seem to consider unnecessary. The plates will be screwed or fastened on to wooden posts or masonry walls.

7. If the proposals meet with your approva indents in proper form will be submitted for transmission to the Secretary of State.

8. I have had these details by me for some time, but deferred sending them up until the question of the introduction of the metre system was settled. As this, however, now seems to be put off *sine die*, there is no longer any reason to delay getting gauges marked, as these were intended to be to feet and decimals.

9. Drawings of the three widths of plate proposed, full size, are annexed. All the 10 feet and over gauges the patentees recommend to be in 5 feet lengths.

The lengths and widths are as follow :—

I.—25 Gauges. Marked up to 20 feet, breadth of plate 0·4 feet marking 0·3 feet.
II.—10 Do. do. 15 ,, do. 0·4 ,, do. do.
III.—40 Do. do. 10 ,, do. 0·4 ,, do. do.
IV.—80 Do. do. 7·5 ,, do. 0·375 ,, do. 0·25
V.—450 Do. do. 5 ,, do. 0·20 ,, do. 0·15

10. The return of the original letters is requested with reply.

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*London, W. C., 7th June* 1870.

Sir,—In reply to yours we beg to hand you quotation for tidal gauges and hope the price will be sufficiently low to secure the favour.

Yours very obediently,
(Signed) E. WILSON.

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*7th June* 1870.

Enamelled iron tidal gauge, blue ground white figures, each lot same figures.

| | s. | d. | |
|---|---|---|---|
| 25 — 20′ × 4″ × 14 W. G. | 27 | 6 | each |
| 10 — 15′ × 4″ × 14 W. G. | 10 | 0 | ,, |
| 40 — 10′ × 4″ × 14 W. G. | 15 | 0 | ,, |
| 80 — 7½′ × 3″ × 12 W. G. | 10 | 0 | ,, |
| 450 — 5′ × 2″ × 12 W. G. | 5 | 6 | ,, |



The strips of wood for packing plates, brass or copper screws for fixing, and close packing cases for shipping, £65 complete.

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MEMORANDUM.

London, *June 7th*, 1870.

To
J. DOYLE SMITH, Esq.,
*Alveley Rectory,*
*Bridgenorth.*

Dear Sir,—In reply to your queries, the iron need be neither raised or thimble for strength, as 12 gauge iron for narrow plates and 14 for the broader will be very strong even taking into consideration transit and contingencies. We also propose that the 10 feet plates and all exceeding should be in 5 feet lengths, which will be a great security against bending, and, as a further security, we propose putting three-fourth inch board between each pair to facilitate the carrying about.

Relative to fixing we propose plugging with lead and fixing with brass or copper screws similar to those used by the Dutch Government.

Yours obediently,
(Signed) E. WILSON,
pro. WILLING & Co.

Samples and price lists on application, price enclosed.

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Enamelled Iron Depôt,
70, St. Martin's Lane,
London, W. C., *June 13th*, 1870.

Dear Sir,—The blue enamel we use as a ground is very near a black ; in fact, a few yards away it becomes black, and we should think that is the colour required. We can give you a blue black at same cost. Relative to figures we did make the remark, but it was only to make it definite, namely, that part should not be lettering, but that the whole should be consecutive numbers and same size.

Yours obediently,
(Signed) E. WILSON,
pro. WILLING & Co.

J. D. Smith Esq., Alveley Rectory, Bridgenorth.

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With reference to the papers recorded above, the Acting Chief Engineer for Irrigation observes that the want of water-gauges of some durable material has been felt in this Presidency as elsewhere, and the enamelled iron gauges appear in every way to meet this want, both on account of their durability and their cheapness.

2. Superintending Engineers are requested to be good enough to state the number and length of the gauges they may require in their respective divisions, and to furnish a list of the works to which they propose to attach the gauges.

3. If in any of the divisions as durable, but cheaper gauges have been provided, the Acting Chief Engineer for Irrigation, will feel obliged if the Superintending Engineers will be good enough to furnish a brief descriptive memorandum of such gauges with a statement of their cost.

4. Tracings of portions of the gauges showing the width of plate, full size, are enclosed, and Superintending Engineers are requested to suggest any alterations or improvements which may seem to be desirable.

(Signed) R. F. OAKES, Captain, R. E.,
*Acting Chief Engineer for Irrigation.*

Fort St. George,
19*th October* 1871.

No. 341.

No 645. *Note by the Chief Engineer for Irrigation.*

THE applications for enamelled iron gauges, received from the several divisions, amount collectively to upwards of 6 tons in weight. I think it will be advisable, in the first instance, to obtain a few gauges of this description on trial, and to send them to the principal Irrigation Ranges.

2. It has been suggested that the figures on these gauges are not large enough, and that the tops of the figures should coincide with the complete foot. I think the figures may with advantage be made two tenths of a foot in height, but for water gauges it is better that the centre of the figure, as in the drawings, should be on the dividing line between successive feet.

3. The annexed memorandum shows the gauges proposed to be obtained, and subjoined is an abstract and approximate estimate of cost:—

| | | | |
|---|---|---|---|
| No. | 2 of 35 feet length | 0·4 | feet width |
| ,, | 4 of 30 ,, | ,, | ,, |
| ,, | 2 of 20 ,, | ,, | ,, |
| ,, | 9 of 15 ,, | ,, | ,, |
| ,, | 12 of 10 ,, | ,, | ,, |
| ,, | 14 of 8 ,, | 0·375 | ,, |
| ,, | 5 of 5 ,, | ,, | ,, |

*Estimate.*

| | | | | |
|---|---|---|---|---|
| 485 feet of | 0·4 feet width | at *s.* 1-4 | £ 32 | 6 8 |
| 137 ,, of | 0·375 ,, | at *s.* 1-3 | £ 8 | 11 3 |
| | | | £ 40 | 17 11 |

*Weight.*

| | | | |
|---|---|---|---|
| 485 feet at | 1·1 lbs. per foot. ... | 533 | 5 |
| 137 ,, at | 1·09 ,, ,, ... | 149 | 3 |
| | | 682 | 8 |

Say, with packing case, ½rd of a ton.
Total cost at Madras about £ 45.

FORT ST. GEORGE,
31*st December* 1872.

(Signed) J. MULLINS, Lieut.-Colonel, R.E.,
*Chief Engineer for Irrigation.*

No. 646. ORDER THEREON, 31st January 1873, No. 317.

IRRIGATION, No. 51.

ORDERED that the following letter be sent:—

(Here enter No. 318, dated 31st Janua · 1873.)
(True Extract.)

(Signed) C. J. SMITH, Captain, R.E.,
*Officiating Under Secretary to Government.*

Exd. S. T. Austin.

PUBLIC WORKS DEPARTMENT,
FORT ST. GEORGE, 31*st January* 1873.

No. 647.

No. 318.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

IRRIGATION, No. 52.

SIR,—In reply to the Officiating Deputy Secretary's letter, No. 519-I, dated 20th September 1871, I am directed to state that, as an experimental measure, the Irrigation Department in this Presidency will be glad to receive the following enamelled iron gauges:—

| | | | | |
|---|---|---|---|---|
| 2 of 35 | feet | width | 0·4 | feet. |
| 4 ,, 30 | ,, | ,, | ,, | ,, |
| 9 ,, 15 | ,, | ,, | ,, | ,, |
| 12 ,, 10 | ,, | ,, | ,, | ,, |
| 14 ,, 8 | ,, | ,, | 0·375 | |
| 5 ,, 5 | ,, | ,, | ,, | ,, |

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

Captain, R.E.,
*Officiating Under Secretary to Government.*

Exd. S. T. Austin.

No. 341.

3-4

Note by the Chief Engineer for Irrigation

The applications for manuelled steam gauges received from the Amrah Divisions amount collectively to upwards of 6 tons in weight. I think it will be advisable, in the first instance, to obtain a few gauges of this description on trial, and to send them to the principal irrigation Ranges.

2. It has been suggested that the figures on these gauges are not large enough, and that the tops of the figures should coincide with the complete feet. I think the figures may with advantage be made two tenths of a foot in height, but for meter gauges it is better that the centre of the figure as in the drawing, should be on the dividing line between successive feet.

3. The annexed memorandum shows

P.W.D.

No 317

Proceedings of the Madras Govt

3

Read the following:-

From the Govt of India (— Pr. No 5791 of 20 Sep. 1871)

" The Chief Engineer for Irrigation (H.E. No 3419 of 31st Dec 72)

Ordered that

the following letter &c

sent.

No 318

To

The Secretary to the

Government of India.

Sir,

In reply to His

Officiating Deputy Secretary

Shows the gauges proposed to be obtained, and subjoined is an abstract and approximate Estimate of cost.

No 2 of 35 feet length & 0.4 feet width

4 " 30 " " " " "

2 " 20 " " " " "

9 " 15 " " " " "

12 " 10 " " " " "

14 " 8 " " 0.375 " "

5 " 5 " " " " "

Estimate

485 feet of 0.4 feet width at £-4 £32-6-8

137 " " 0.375 " " at 1-3 £8-11-3

£ 40-17-11

Weight

485 feet at 1.1 lbs per foot. 533.5

137 " 1.09 " " " 149.3

682.8

say with packing Case 3/4 of a ton.

Total cost at Madras about £45

Fort St. George 31st December 1872

H. Wilkinson Lt Col. R.E. Chief Engineer for Irrigation

20th September 1871, Sanc
directed to state that,
as an experimental measure,
the Irrigation Department
in this Presidency will
be glad to receive the
following enamelled iron
gauges.

2 of 35 feet width 0.4 feet
4 " 30 — " — " — do — " —
9 " 15 — " — " — do — " —
12 " 10 — " — " — do — " —
14 " 8 — " — " — 0.375 — —
5.5 — " — " — " — do — —

Ly. 4/1/73

Govt.

Dep. 3/2/73.

Intimating that
the Irrigation Dept. is
to be glad to receive
some of the enamelled
iron gauges recommended
by the Punjaub
Chief Engr.

20th September 1871, Sanc
directed to state that, as
an experimental measu
the Irrigation Departme
in this Presidency will
be glad to receive the
following enamelled iron
gauges.

2 of 35 feet width 0.4 y
4 " 30 — " — " — do —
9 " 15 — " — " — do —
12 " 10 — " — " — do —
14 " 8 — " — " — do —
5 . 5 — " — " — " —

Ly. 4/1/73

Encls

Nos 72 & 4947 A.

Govt. of {1873} Madras.

PUBLIC WORKS.

To The Secretary to the Govt of India

Dated

Recd. Encl. 4-
3 Plans

G. O. 31 "Lang" 1873. No. 317-318.

Nos. 644 & 646 of 47

Enamelled Iron gauges.

Ordered that the Govt of India be addressed in the subject of pro-curing certain iron gauges.