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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Public Works DEPARTMENT

G.O. No. 2294 Press.
B.P. No. Mis.

Dated 27.5.1878 197-.

Not to be folded or roughly handled

2294
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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

27th May 1878, No. 2,294 W.

Buildings and Roads.
Civil Works.

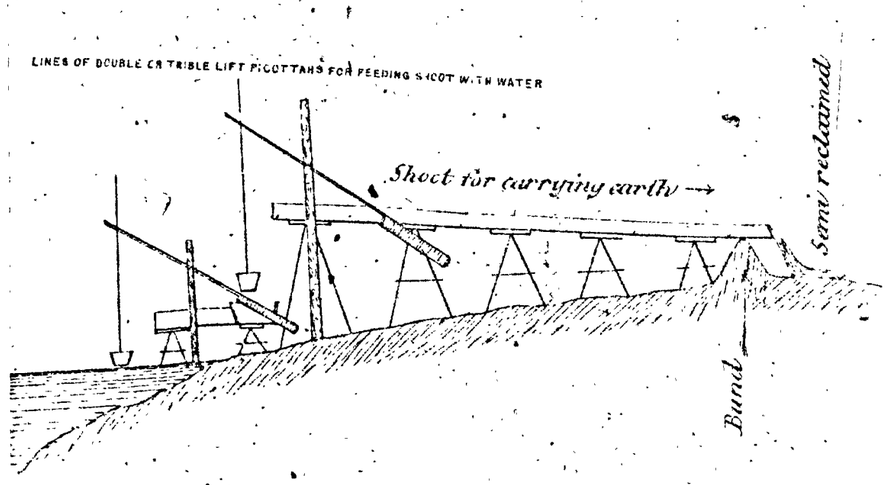
Read the following paper:—

No. 313. From Major H. W. WOOD, R.E., District Engineer, Vizagapatam, to the Chief Engineer, Public Works Department, Buildings and Roads Branch, dated Waltair, 3rd May 1878, No. 243.

With reference to G.O., 17th October 1877, F.R. No. 2,377, I have the honor to submit a plan (sent by a separate packet) with sections of that portion of the Vizagapatam backwater which may be required to be excavated by famine labor.

2. An estimate for the work is also herewith forwarded. Assuming that the excavation is taken to a depth of one foot only below mean low water, or about four inches and a quarter below lowest low water, the cost will be Rupees 1,08,550. If, however, the excavation be made to a depth of one and a half feet below mean low water level, or about ten inches and a quarter below lowest low water level, the cost will be Rupees 31,503 in addition, or in all Rupees 1,40,053.

3. For the shallower excavation the rate is about 5½ cubic yards for a Rupee, while in the deeper excavation it is about 4½ cubic yards for a Rupee. These rates may seem excessively high, but if necessary they can be reduced. The reason of the rates being so high is that the excavated soil is supposed to be carried by women and children. If long wooden troughs or shoots into which the soil could be hoisted and swept inland by a continuous stream of water raised by means of picottahs from the backwater (*vide* sketch) were adopted, the cost of excavating the portion of the backwater in question would no doubt be very considerably reduced. In event,



however; of such labor saving appliances being used there would be no employment for the largo mass of women and children requiring relief.

4. The outer portion of the backwater is proposed to be connected with the piece of ground in which the latrines stand by a channel (*vide* plan C.S.A.) curving round the north of the rocky hill on which the large powder magazine stands and cutting through the road running from thence northwards. The channel has been provided to have a breadth of 34 feet at bottom, and if the inner piece of ground immediately on the north-west of the town of Vizagapatam should be excavated and used as a scouring basin a special culvert will require to be designed for the channel where it crosses the road that has been mentioned, while the sides and bottom may require to be pitched with stone.

5. No connecting channel has been designed to run on the south side of the magazine hill, first, because the ground at this particular point is almost certainly the same rocky ridge as that of the hill, and, second, because I would suggest the desirability of the "fishery tank" being filled up, and some open ground being thus gained near the magazine, which is at present in a rather confined position.

6. A reference to the Sections B, C, D, E, F, across the ground north-west of the town, on which the latrines stand, shows that it will be necessary to fill in the edges of this piece of land up to at least the level of highest high water. At present there are a number of huts on this low land, which is also used as a timber store. It was in this quarter that almost all the loss of life took place in the flood caused by the cyclone of October 1876. I have not calculated the cost of this filling in, but I think it would be desirable that the earth used should be clean and brought from a distance. I would beg the favor of subsidiary orders being issued on this and other points when it has been decided whether the inner piece of ground immediately north-west of the town is to be excavated or not.

No. 314. ORDER THEREON, 27th May 1878, No. 2,294 W.

HIS GRACE the Governor in Council considers the results of the examination to be valuable. But the cost is large considering the amount of improvement which will be effected; and as the work is not now required for the employment of famine labor it cannot be taken up on behalf of Government. The plan will, however, be communicated to the President of the Vizagapatam Municipality for any remarks which he may wish to offer.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the District Engineer, Vizagapatam.
" President, Vizagapatam Municipality, with plan.
" Financial Department.
" Revenue (Famine) Department.

Eyd. C. Howarth.
Spare copies

2254/2

COLLEGE OF ENGINEERING
CIVIL WORKS

Cert. of (1878) Cert.

PUBLIC WORKS.

DISTRICT ENGINEER
VIZAGAPATAM

Estimate for excavation of the Breakwater Swamp at Vizagapatam prepared in accordance with G.O. 17th October 877 F. & P. No 2377.

1. The following formula, have been used in calculating the area of the cross sections:-

When the base has an odd number of equal parts;

$$\text{Area} = \left(\frac{a}{2} + b + c + \ldots + k + \frac{l}{2}\right) \delta$$

When the base has an even number of equal parts;

$$\text{Area} = \left(a + 4b + 2c + \ldots + 2i + 4k + l\right) \frac{\delta}{3}$$

where; a, b, c, ..., i, k, l, are the breadths (or depths) of the several parts into which the section is divided and δ is the common distance between those breadths (or depths).

Area of Cross Section No 1 — 1355 Sft

" " " No 2 — 405 "

" " " No 3 — 1150 "

" " " No 4 — 485 "

" " " No 5 — 915 "

" " " No 6 — 1730 "

" " " No 7 — 930 "

" " " No 8 — 1570 "

Area of cross section 17 = 1650 sqft

" " 18 = 1620 "

" " 19 = 2250 "

" " 20 = 1080 "

" " 21 = 1215 "

" " 22 = 338 "

" " 23 = 240 "

" " 24 = 20 "

" " 25 = 1120 "

" " 26 = 1080 "

Total Area of 18 Sections 29318 sqft

Area of average section 1128.6 sqft

The centre length of the portion to be excavated is 8240 ft

Therefore the content of the excavation will be 8240 × 1128.6 = 9299664 cft

= 344432 cyds.

or say (a) — 344430 cyds.

2. The sum of the bottom lengths of the cross sections is 10180 ft i.e. the average section is about 566 feet long. If it be proposed it should be determined to excavate six inches deeper than is shown on the plan, the further

amount

amount of excavation to be done, will be

566 × 8240 × ½ = 2331920 cft

2299/27 = 86367 cyds.

or say (b) — 86370 cyds.

3. The mean breadth of the cutting to connect the Breakwater with the ground on which the Cabines now stand is 50 feet. The area of the section A taken along the centre length of the cutting is 1370 sqft. Hence the volume of the cutting, will be

50 × 1370 = 68500 cft

= 2537 cyds.

or say (c) — 2540 cyds.

4. Should it be determined to excavate the cutting six inches deeper than is shown in the plan, the further excavation will amount to this extra depth multiplied by the bottom breadth of the cutting multiplied by the length of the cutting, i.e. to ½ × 34 × 1040 = 17680 cft.

= 655 cyds.

or say (d) — 660 cyds.

5. For the excavation of the piece of ground on which the Cabines stand,

Area of cross Section B. — 2500 sqft

" " " " C. — 2360 " "

Area

Area of cross section D — 3570 sqft
" " " C 3370 "
" " " A 3810 "
Total area of these cross sections 15610 sqft
Area of average section 3122 "
And the total length of excavation is 200 feet.
Therefore, the volume of excavation will be, 2000 × 3120 = 624000 cft
= 23111 cyds.
or say (c) — 23100 Cyds.

Should it be determined to excavate this portion five inches deeper than is shown on the plan, the further amount of excavation to be done will be ½ multiplied by 2000, multiplied by the average length of the sections which is ½ × 2000 × 1500 = 1500000 cft.
= 55555 cyds.
or say (f) — 55560 Cyds.

For the quantity of excavation (a) the average lead will be 166 feet or 55½ yards, while the lift is 6 ft. or 2 yds. For this lead and this lift, the rate that is paid for excavating silt in a dry channel of the Elvingapatnam District would be 19 pies or 1 anna 7 pies per cubic yard. Adding 25 per cent to this for work in sticky mud and water

(2)

the price for the quantity (a) or 34430 cft will be 234 pies or say 2 Annas per cubic yard and the excavation will cost Rs. 4305 4 nearly. 234/12

8 For the quantity c, the average lead will be 20 yds. while the lift will be as before viz. 2 yds, the rate (increased as before by 25 per cent) will be 11¼ pies per cyd. The cost therefore of excavating (c) or 2540 Cyds. will be about Rs. 149.

9. For the quantity (e) the average lead will be 1500 feet or 500 yards while the lift will be 2 yds. and the price paid for excavation of soft silt in a channel, would be 40 pies or increasing this rate by 25 per cent for excavation in mud and water as before the price would be 50 pies or 4⅛ Annas per cubic yard. The cost of excavating the quantity (e) or 23100 Cyds. will be therefore be about Rs. 6018 0.

10. Summing the above results we have

Cost of excavating — a — Rs. 4305 4
" " " " c — " — 149
" " " " e — " — 60180
Total Rs. 103383

Brought forward Rs. 103380

Add 5 per cent for contingencies —— 5167

Total cost of excavating to one foot below Mean Low Water Level } Rs. 108550

11. Again, for the quantity of excavation (b) the lead will be 190 yds. as appears and the lift is but six inches more. The rate may therefore be taken as the same, though an addition in this case of 25 per cent may be made, in consequence of the greater depth of water in which the excavation must be made. The rate will therefore be about 2½ annas per cubic yard, and the cost of excavating (b) or 86370 Cyds. will be Rs. 12595.

12. For the quantity of excavation (d) the rate raised 25 per cent in the same manner, will be 13½ pies per cubic yard. Therefore the cost of excavating (d) or 66 Cyds. will be Rs. 46 about.

13. For the quantity of excavation (f) the rate raised 25 per cent in a similar manner, will be 5 annas per cubic yard. The cost of excavating (f) or 55566 Cyds. will be Rs. 17362.

14. Summing these three last results we have,

Cost of excavating (b) — Rs. 12595

— " — " — (d) — " — 46

— " — " — (f) — " — 17362

30003

Adding 5 per Cent for Contingencies 1500

Total for additional excavation to depth of one foot and a half below Mean Low Water Level } Rs. 31503

District Engineer's Office
Waltair 3rd May 1878

Approved
Major R.E.
District Engineer, Vizagapatam

Estimate for excavation of the Backwater Swamp at Vizagapatam, prepared in accordance with O.G. 17th October 1877 F.R. No. 2377.

No 243

District Engineers Office
Waltair 3rd May 1878

From

The District Engineer
Vizagapatam

To

The Chief Engineer F.W.D.
Buildings and Roads Branch
Madras

With reference to O.G. 17th October 1877 F.R. No 2377, I have the honor to submit a plan with sections, of that portion of the Vizagapatam Backwater, which may be required to be excavated by famine labor.

2. An estimate for the work is also herewith forwarded. Assuming that the excavation is taken to a depth of one foot only below Mean Low Water, or about four inches and a quarter below Lowest Low Water, the cost will be Rs. 108,550. If, however, the excavation be made to a depth of one and a half feet below Mean Low Water level, or about ten inches and a quarter below Lowest Low Water level, the cost will be Rs. 31,503, in addition, or in all, Rs. 140,053.

3 For the shallower excavation, the rate

rate is about 5⅓ Cubic yards for a rupee while in the deeper excavation it is about 4½ Cubic yards for a rupee. These rates may seem excessively high, but if necessary they can be reduced. The reason of the rates being so high, is that the excavated soil is supposed to be carried by women and children. If long wooden troughs or sheets, into which the soil could be hoisted and swept inland by a continuous stream of water, raised by means of pickottas from the backwater (vide sketch) were adopted, the cost of excavating the portions of the backwater in question would no doubt be

very considerably reduced. In event however of such labor saving appliances being used, there would be no employment for the large mass of women and children requiring relief.

4. The outer portion of the backwater, is proposed to be connected with the piece of ground in which the Cannon stand, by a channel (vide plan C.S.4) curving round the north of the rocky hill on which the large powder Magazine stands, and cutting through the road running from thence Northwards. The channel has been provided to have a breadth of 34 feet at bottom and as the inner piece of ground immediately on the N. W. of the town of Viragapatam should be excavated and used as a reserving basin, a special culvert will require to be designed for the channel where it crosses that road that has been mentioned, while the sides and bottom, may require to be pitched with stone.

5. No connecting channel has been designed to run on the South side of the Magazine

Magazine hills, / because the ground at this particular point, is almost certainly the same rocky ridge as that of the hills, and I would suggest the desirability of the "fishery tanks" being filled up, and some open ground being thus gained, near the Magazine, which is at present in a rather confined position.

6. / A reference to the sections B, C, D, E, H, across the ground N.W. of the town, on which the latrines stand, shows that it will be necessary to fill in the edges of this piece of land up to at least the level of Highest High Water. At present, there are a number of huts in this low land, which is also used as a timber store. It was in this locality that almost all the loss of life took place in the flood caused by the cyclone of October 1876. I have not calculated the cost of this filling in, but I think it would be desirable that the earth used should be clean and brought from a distance.

2264/87

I would beg the favor of subsidiary orders being issued on this and other points, when it has been decided whether the inner piece of ground immediately N.W. of the town is to be excavated or not.

I have the honor to be
Sir
Your most Obdt Servt

Major RE
District Engineer
Vizagapatam

G. O. Nos. 1193 W - 23.10.77.

Buildings & Roads

From

The District Engineer
Vizagapatam

To

The Chief Engineer P.W.D.
Buildings & Roads Branch
Madras

No. 243

Dated 3rd May 1878

Subject Enclosures Two

Vizagapatam Back-water.

Submits an Estimate for Rs. 140,053, and a plan with sections of that portion of the — to be excavated by famine Labour.

Cir 21.5.78 Dlt 27.5.78
No Cor 15.5.78

PUBLIC WORKS DEPARTMENT.

2284 / 10

Letter from the District Engineer
Vizagapatam No. 243 dy 3rd May 1878.

FOR ORDERS.

The estimate has been checked and found correct.

The rates are high viz 5⅓ cubic yards for a Rupee in the shallow excavation, and 4½ in the deeper. The leads are however long.

If the excavation is taken to one foot below Mean Low Water level the cost amounts to Rs 108,550. If the depth is extended 6 inches

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11

move the cost will be en-
hanced by Rs 31,503, making
the total Rs 140,053. No
doubt if the troughs and
Picottahs are used the cost
will be materially reduced.

E A Inrd Col. R.E.
Chief Engr & Secy to Govt
P.W.D.

21st May 1878.

FOR ORDERS.

Cir 21-5-78 Delt 2-6-78

1876
Public Works Department.

No 2294

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 27th May 1878 2294/12

Read the following :—

From the Dist Engr Vizagapatam (H.E. No 243 dt 3rd May 78)

Memo by Chief Engr Br D (H.E. dated 21st Inst

His Grace the Governor in Council considers the results of the examination to be valuable. But the Govt is disinclined to undertake the work at present, considering the amount of improvement which will be effected, and as the work is not now required for the employment of famine labor it cannot be undertaken on behalf of Govt. The Govt will, however, be glad to be communicated to the President of the Vizagapatam Municipality for

any Remarks which he
may wish to offer.

Cut 24/5

D. L Vryfstaat ✓
Pretoria, Vryfstaat ✓
Winburg, Vryfstaat ✓
Fauk. Dept ✓
Res / Transv Dept ✓

Deff 13-6-78

2294
13

Govt. of (1878) Madras.

PUBLIC WORKS.

To

G. O. 27 May 1878. No. 2264.

Sec.

No.

Vizagapatam Back water

Intimating that Government are not disposed to sanction the estimate for excavating the — as it cannot be undertaken as a famine work, & communicating the Plan to the Municipality.