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MADRAS RECORD OFFICE

Government of Madras

Public works. DEPARTMENT

G.O. No.	2732	Press
B.P. No. 138-139		~~Mis.~~
Dated	10-11-	~~1950~~ 1873

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department, 10th November 1873.

No. 138. Read the following letter from J. W. RUNDALL, Esq., District Engineer, Tinnevelly, to Colonel G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Palamcottah, 10th October 1873, No. 101 :—

I HAVE the honour to forward herewith a revised estimate, amounting to Rupees 13,100, for the lighthouse at Tuticorin, and beg to explain that this estimate is rendered necessary by my having been mistaken in the rates for the cut-stone work, and for the Portland cement concrete and wells.

1 Revised Abstract Estimate of Rupees 13,100.
1 Comparative Statement.

2. When the estimate was prepared by me two years ago, I was led to believe that the stone with which the lighthouse was proposed to be built could be delivered at Tuticorin quarry dressed for Rupees 14 per cubic yard. When I was down at Tuticorin in August 1871, specially to make inquiries regarding the rates, I found that two years previously the same stone had been delivered in Tuticorin at Rupees 13, and men offered to deliver it to me at Rupees 14. It however now costs us Rupees 19-8-0 for smaller and Rupees 21 per cubic yard for special stones. The work in the shaft is now actually being done at Rupees 35 per cubic yard, but the rate entered in the estimate is higher than this, because, at first, some of the stone dressed cost more, and this has brought up the average. The Overseer now in charge and the masons employed have become used to the work, and I doubt not that the work will be finished for the estimate. The work is first-class; one reason why it at first cost more than now was that the stone was *over-dressed.* Each course is now composed of stones a foot in thickness, each stone being a thorough stone.

3. With regard to the wells I should explain that I estimated for the bricks costing Rupees 12 per 1,000, but no contractor could be found to deliever them under Rupees 19, as they had to be carted over 12 miles of loose sand. The Portland cement cost Rupees 15 per cask of $3\frac{1}{2}$ cubic feet, sand and water had both to be brought from the shore (as they have still). Bricklayers received 20 per cent. and coolies 50 more than for work on shore, and we have to keep a canoe to supply water for the work and work-people. There was also considerable difficulty in sinking the wells; when I examined the foundations by digging a pit and putting down an iron rod, I found the latter descend quite easily, the substratum appearing sand and small coral mixed, but after the wells had been sunk a few feet the coral became much larger, till at last it became almost solid; it was very hard to dig out, and the well sinking was necessarily slow and expensive.

4. The concrete was composed of three parts of broken stone to three of sand and one of Portland cement, and although the water was quite salt, it set in a most satisfactory way. With regard to the rate that is accounted for by the cost of Portland cement, about $\frac{1}{3}$ths of a cask of $3\frac{1}{2}$ cubic feet being required per cubic yard.

5. Since starting the work the railway has been commenced at Tuticorin, and this has caused an increase in the cost of labour, Tuticorin always being an expensive place.

6. I have also been obliged to put up scaffolding, as the men could not work on the shaft without some protection during the heavy westerly winds.

7. I regret that I should not have foreseen more clearly the difficulties and extra expenses we should encounter, and allowed sufficient rates in the estimate.

I do not think that the work can, on the whole, be considered dear, taking the difficulties of working on an island away from the mainland into consideration, and bearing in mind the superior character of the work. The stone is a buff colored calcareous sand stone, and when finished the lighthouse will, I believe, be a handsome and durable structure.

8. There is a balance of Rupees 1,495 out of Ragavachary's fine still unspent, and I have obtained Mr. Puckle's consent to this further sum being devoted to the lighthouse. The sum previously obtained from this source was Rupees 3,000, the total cost to Government will therefore be Rupees 8,605.

9 Under the explanation given, I trust the revised estimate may be sanctioned.

10. If the Government approve of the balance of Ragavachary's fine being thus spent, it will be necessary to allot only Rupees 1,605 from Port Funds, and I request that this sum may be placed to my credit.

11. The lighthouse is now 28 feet above ground level, about 8 feet per month is being done, and if this rate of work is maintained the column will be completed about the end of February.

12. Some further time will be occupied in fixing the lantern, light apparatus, etc., which however are ready at Tuticorin.

No. 139. ORDER THEREON, 10th November 1873, No. 2,732.

CIVIL WORKS, No. 13.

IN submitting his demand of Rs. 3,100 in excess of his own original estimate of Rupees 10,000, for construction of a lighthouse at Tuticorin, the District Engineer of Tinnevelly accounts for the chief cause of excess, viz., the increased charge for cut-stone works, by affirming a rise in rates, within two years, of 50 per cent; but he does not enter into any details of the reasons for such rise, unless the general mention of the railway works having caused a rise in the rate of labour, be taken as a partial explanation. Concurring with him however that on the whole Rupees 13,100 cannot be considered an excessive sum to pay for a handsome stone column 70 feet high, in an isolated position, and on a site involving expensive foundations; and presuming that this will be his final application for funds, His Excellency in Council sanctions the increased expenditure anticipated; and authorizes its being incurred, pending adjustment of the charge between Port Funds and other sources, which will be considered in the Financial Department.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the District Engineer, Tinnevelly.
,, Financial Department.
,, Inspecting Engineer for Ports and Communications.
,, Officiating Controller of Public Works Accounts, with Abstract Estimate.

Exd. S. T. Austin.

Spare Copies.

Comparative Statement shewing the difference between the Original and Revised Estimates for constructing a Light House on Hare Island at Tuticorin in the Ottapedaram Taluq of the Tinnevelly [illegible]

Description of works.	Units of Measurement.	Original Estimate Quantities	Original Estimate Rate	Original Estimate Amount	Revised Estimate Quantities	Revised Estimate Rate	Revised Estimate Amount	Revised Estimate In excess of original Quantity	Revised Estimate In excess of original Amount	Revised Estimate Less than original Quantity	Revised Estimate Less than original Amount	Remarks.
Wells complete	Each.	25	54	1350	25	93	2325	"	975	"	"	
Concrete	C yard.	10 16 5/8 / 27	5	53 1 3	14	16 12	234 8	3 10 3/8 / 27	181 6 9	"	"	
Rubble in mortar	Do.	109 6 3/16 / 27	6 8	709 15 10	97	5 4	509 4	"	"	12 6 3/16 / 27	200 11 10	
Cutestone in mortar	Do.	154 23 7/8 / 27	28	4326 1 3	146 1/2	37 12	5530 6	"	1194 4 9	8 9 3/8 / 27	"	
Do. Do.	Do.	32 15 5/8 / 27	30	961 3 7	34	41 8	1411	1 33 5/8 / 27	449 12 5	"	"	
Cornice to Pedement	Ll feet	68	" 4	17	68	" 4	17	"	"	"	"	
Longe wood wrought	C feet	37 31/64	3	112 7 3	37 1/2	3	112 8	1/64	" 9	"	"	
Iron	tbs	449	" 3 4	87 4 8	430	" 3 4	89 9 4	11	2 4 8	"	"	
Do.	tbs	192	" 26	30	197 1/2	" 26	30 13 9	5 1/2	" 13 9	"	"	
Copper	tbs	447	" 9	234 9	447	" 10	260 10	"	26 1	"	"	
Brass Rails	tbs	24	" 12	18	24	" 12	18	"	"	"	"	
Do.	tbs	3	1	3	3	1	3	"	"	"	"	
Fixing Stanchions & running with lead				13 8			13 8	"	"	"	"	
Do. Lightning Conductor				30			30	"	"	"	"	
1. Teakwood framed door including all fittings and 2 coats Varnish							50	"	50	"	"	
Fixing new light & drilling holes				400			400	"	"	"	"	
Repairs to Signaller's quarters and Oil godown &c.				400			400	"	"	"	"	
Extra Establishment				450			500	"	50	"	"	
Excavating foundation scaffolding Contingencies & Sundries				793 13 2			"	"	"	"	793 13 2	
Excavating foundation							50	"	50	"	"	
Scaffolding							200	"	200	"	"	
Contingencies and Sundries							914 12 11	"	914 12 11	"	"	
Total amount of Estimate		10000		13100			4094 9	"	994 9	"		
							994 9					
Net amount to be sanctioned							3100	"				

District Engr's Office, Tinnevelly
Palamcottah 10th October 1873

E W Rundall
District Engineer, Tinnevelly.

No. 101

District Engr's Office, Tinnevelly
Palamcottah 10th October 1873.

From,

J. W. Randall Esquire
District Engineer, Tinnevelly.

To,

Colonel G. W. Wathen R.E.
Chief Engineer & Secretary to Government
P.W.D.

Sir,

I have the honor to forward herewith a revised estimate amounting to Rupees 13,100 for the Light House at Tuticorin, and beg to explain that this estimate is rendered necessary by my having been mistaken in the rates for the Cutstone work, and for the Portland Cement Concrete and walls.

Enclosures 2.
1. Revised Abstract Estimate of 13,100 Rs
1. Comparative statement

2. When the Estimate was prepared by me two years ago, I was led to believe that the Stone with which the Light House was proposed to be built could be delivered at Tuticorin quarry dressed for Rupees 14 per Cubic yard. When I was down at Tuticorin in August 1871, specially to make enquiries regarding the rates, I found that two years previously the same stone had been delivered in Tuticorin at Rupees 13, and now offered to deliver it at the same Rupees 14. It however now costs us Rupees 19-8 for smaller and Rupees 21 per Cubic yard for special stones. The work in the shaft is now actually being done at Rupees 35 per cubic yard, but the rate entered in the Estimate is higher than this because at first some of the stone dressed, cost more, and this has brought up the average. The Overseer now in charge and the masons employed

employed have become used to the work and I doubt not that the work will be finished for the Estimate. The work is first class; one reason why it at first cost more than now was that the stone was overdressed. Each course is now composed of stones a foot in thickness each stone being a through stone.

3. With regard to the wells I should explain that I estimated for the bricks costing Rupees 12 per 1,000, but no Contractor could be found to deliver them under Rupees 19 as they had to be carted over 12 miles of loose sand. The Portland Cement cost Rupees 15 per cask of 3½ cubic feet, sand and water had both to be brought from the shore (as they have still). Brick-layers received 20 per cent and Coolies 50 more than for work on shore, and we have to keep a Lascar to supply water for the work and work-people. There was also considerable difficulty in sinking the wells; when I examined the foundations by digging a pit and putting down an Iron Rod, I found the latter descend quite easily, the substratum appearing sand and small coral mixed, but after the wells had been sunk a few feet the coral became much larger till at last it became almost solid; it was very hard to dig out & the well sinking was necessarily slow and expensive. The Concrete was composed of 3 parts of broken stone to 3 of sand and one of Portland Cement and although the water was quite salt, it set in a most satisfactory way. With regard to the rate that is accounted for by the cost of Portland Cement, about 4/5 of a cask of 3½ cubic feet being required per cubic yard.

5

5. Since starting the work the Railway has been commenced at Tuticorin and this has caused an increase in the cost of labor, Tuticorin always being an expensive place.

6. I have also been obliged to put up scaffolding as the men could not work on the shaft without some protection during the heavy westerly winds.

7. I regret that I should not have foreseen more clearly the difficulties and extra expenses we should encounter and allowed sufficient rates in the Estimate. I do not think that the work can on the whole be considered dear taking the difficulties of working on an Island away from the mainland into consideration, and bearing in mind the superior character of the work. The stone is a buff colored calcareous sand stone and when finished the Light House will I believe be a handsome and durable structure.

8. There is a Balance of Rupees 1,495 out of Ragavachary's fine still unspent, and I have obtained Mr. Puckle's consent to this further sum being devoted to the Light House. The sum previously obtained from this source was Rupees 3,000, the total cost to Government will therefore be Rupees. 8,605.

9. Under the explanation given I trust the Revised Estimate may be sanctioned.

10. If the Government approve of the Balance of Ragavachary's fine being thus spent it will be necessary to allot only Rupees 1,605 from Port funds and

and I request that this sum may be placed to my credit.

11. The Light House is now 28' above ground level, about 8' per month is being done and if this rate of work is maintained the Column will be completed about the end of February.

12th Some further time will be occupied in fitting the Lantern, Light Apparatus &c. which however are ready at Inticorin.

I have the honor to be
Sir
Your most Obdt Servt.

E. W. Rundall

District Engineer

6

and I request that this sum may be placed to my

U. W. 1873 Department
Engineers No. 101.
Received Nov. 1873 No. 5589.

From,

The District Engineer,
Jamestown

To. The Chief Engineer
and Secretary to Govt.
P. W. D.

Dated 10th
Received 14th } October 1873.

Enclosures. 2

Submits for sanction
the revised Estimate for
constructing Light-House
on Hard Island at Tuticorin,
with explanation.

No 138

No. 2732-10 Nov/73.

Recd 16 Oct 73

Tuticorin Light House

The original column had to be raised 24½ feet; and as the Light could not be added to the building as it stood, it was proposed to take off the tower, and build a new one, on the broad octagonal basement this now 21 feet high.

The basement constructed of coral stone, was opposed to be solid, and likely to form a substantial foundation for a new column. The light-house had stood for 80 years; and there was no sign of weakness when the old tower was removed. The interior of the basement was found to be filled in with loose stone and sand; it was therefore considered necessary to make the basement a solid mass, by laying in concrete below, and building over it with stone

details of the masonry

The work went on, and some slight cracks appeared in the old coral stone. The new building ins of sand-stone, to secure the basement then, it appeared advisable to add buttresses, one on each face of the octagon: and as the estimate could not bear this additional work, a Supplemental estimate was sent in. The Master Attendant — Capt. Phipps, inspected the work, and approved of the new estimate made by the Range Officer, Mr Gloystein.

When about 15 feet of the chimney was raised: the weight of the superstructure caused the lower coral stone work to subside unevenly, and open out in cracks. Then the monsoon came on; and for three days the new stone in chimney was exposed to incessant rain and storm. A portion of the upper part then came down: and

90 56
6 Jan 1870

the new mortar which had not set, being washed out of the joints, gave the appearance of bad work.

The failure however was from below, not from any fault in the work. If the upper part had been badly built on a good basement. The upper part having down, would not have affected the basement, but the settlement of the basement necessarily caused the upper work to give way also — a mistake was made in my letter of 24: November 1869. from Mr Gloystein in saying that there was "entire destruction"; but I quoted from the first brief report that reached me; and in reality the condition of the work was as bad, for future use, as if it had been swept away. It has been said, that "the basement bulged, in consequence of stone being rammed down in the interior, and the work then

80 3379
10 Dec 1869.

destroyed

tied round with iron bands to hold it together - This string must have been bored, on the filling in with concrete; and the iron band has been represented as a device to support the stone, while in reality there was a copper strip in connection with the lightning conductor, that had been put round the stone

I am Sir
Your most
obedient
Servant

30 July 1870.

No 2732 P.W.D.

Proceedings of the Madras Govt

Read the following:-

From,

The Dy. Engineer
of Tinnevelly

(P.E. Dec. 1013 10th Oct 70)

In submitting his demand of Rs 3100 in excess of his own original estimate of Rs 10,000 for construction of a Light House at Tuticorin, the District Engineer of Tinnevelly accounts for the chief cause of excess viz the increased charge for cut stone work Rs, by affirming as rates within 2 years, of 50 per cent. but he does not enter into any details of the reasons for

such rise, unless the general mention of the Railway work to having caused a rise in the rate of labour, be taken as a partial explanation. Concurring with him however that on the whole Rs 13,100 cannot be considered an excessive sum to pay for a handsome Stone Column 90 feet high, in an isolated position, and on a site involving expensive foundations: and presuming that this will be his final application for funds, His Excellency in Council sanctions the increased expenditure anticipated: and authorizes its being incurred pending adjustment of the charge between Port Funds and other sources, which will be considered in the Financial Department.

C.W.W.

Dt / Engr Towns
Asst Secy
Judg Supt Pub Cons
Contr with Estimate

S.C. supra 17/4/73.

C/25589

Govt. of {1873} Madras.

PUBLIC WORKS.

To The District Engineer
Tinnevelly

Dated

Recd. Encl. 1

G. O. 10 Nov 1873. No. 2732.

Nos. 1387/89

Light House at Tuticorin

Passing orders on letter from the Supt. Engr., Tinnevelly, submitting, with explanations, a revised Estimate for the Light House.