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MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	243	Press
B.P.—No.		Mis.—
Dated	3-2-	6874-195

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
3rd February 1874.*

No. 21. Read the following letter from Colonel E. A. FOORD, R.E., Inspecting Engineer for Civil and Military Buildings, to Colonel G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Chepauk, 10th January 1874, No. 33 :—

I HAVE the honour to forward, for the sanction of Government, a revised estimate of Rupees 35,700, accompanied by a specification and comparative statement, for the reconstruction of the Bakery at Bangalore.

1 Plan.	
1 Abstract Estimate.	
1 Specification.	
1 Comparative Statement	
1 Original Plan of Bakery.	

2. The estimate sanctioned in G. O., No. 95, dated 11th January 1873, amounted to Rupees 24,150, and this will be exceeded by Rupees 11,550, an unusually large excess. I trust the explanation offered will be considered satisfactory, as showing that a correct estimate could not be made until the entire building had been taken down, and that the increased amount only represents the actual value of the work.

3. The principal cause of the excess is that a great deal of the stone and timber of the old bakery was not found good enough to be used in the new building. There were no bond or through stones, and those in the arches could not be used again for the same purpose. The teak beams supporting the floor of the upper story did not extend from wall to wall, as the contractor had taken advantage of the division walls, between the ovens, to support the beams at one end. The beams themselves were found not to be each one solid piece, but to be made up of several pieces, with, in some instances, planks screwed on to make up the requisite scantling. New doors and windows have had to be supplied. Those that were serviceable were used in the temporary bakery, and not charged in the estimate of that work. In some instances the rates have had to be increased, and an allowance has been made in the revised estimate for V drains, as the ground slopes down towards the front of the building; also for removing the store-sheds and clearing and levelling the ground near the bakery.

4. In the first estimate allowance was made in the rates for the materials it was expected would be available. The estimate has now been prepared as if for an entirely new work, and a deduction has been made at the end for old materials, the value of which can now be ascertained with more certainty than was possible last year.

5. In sanctioning the first estimate Government assumed that the plan and estimate had been approved by the Inspecting Engineer. The estimate was not submitted through me, but being required to be forwarded as quickly as possible was put in hand at the end of October 1872, and despatched by the District Engineer on the 11th of November. The plan had been approved by me, and the only deviations made from it are such slight ones as suggest themselves in the progress of all large buildings. At the request of the Commissariat Officer the ovens have been increased in size, and their number reduced from twelve to ten. The position of a cross wall has been altered, the ridge ventilator is to be omitted, and the back verandah enclosed. The last alteration involves the use of more material, but the proposed wall can be built at a lower rate than the pillars and arches that were at first intended.

6. The first bakery was built by contract at a time when a very large amount of work was in progress at Bangalore, and many large estimates and plans were being prepared. The present bakery is being built departmentally, under good superintendence, and every precaution has been taken to obtain the best materials and workmanship.

No. 22. ORDER THEREON, 3rd February 1874, No. 243.

MILITARY WORKS, No. 1.

In G. O., No. 95, dated 11th January 1873, an estimate, amounting to Rupees 24,150, was sanctioned for the reconstruction of the Government Bakery at Bangalore, and the Inspecting Engineer for Buildings now submits a revised estimate with a comparative statement showing an excess of Rupees 11,550 over that sum. The gross amount of the estimate first sanctioned was Rupees 32,600, subject to a reduction of Rupees 8,450 on account of the value of materials on hand, while the revised estimate has been prepared as for an entirely new work for a gross sum of Rupees 57,025, and a reduction of Rupees 21,325 made for the value of old materials available, which, the Inspecting Engineer explains, has now been ascertained with more certainty than was possible last year. The amount requiring sanction accordingly stands at Rupees 35,700.

2. The comparative statement, it is observed, gives all details clearly; the least satisfactory items being those showing an increase of Rupees 2,450 for dressing and pointing, which appear to have been insufficiently provided for in the first estimate.

3. The revised estimates are sanctioned, but it is remarked that the Inspecting Engineer has failed to state what progress has been made with the work hitherto, and what amounts have further to be provided for outlay in this and ensuing years. The allotment for the current year is Rupees 20,000, and a sum of Rupees 8,000 has been provided in the Budget of 1874-75 for the work.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the Inspecting Engineer for Civil and Military Buildings.
,, District Engineer, Bangalore.
,, Officiating Controller of Public Works Accounts, with Abstract Estimate.
,, Military Department.

Exd. S. T. Austin.
Spare Copies

Specification to accompany
Revised Plan and Estimate for
Constructing Government Bakery
at Bangalore.

Amount of Estimate Rupees ~~33,700.~~ 35,700.

concrete

The lower steps of foundation to be built with concrete: the proportion of the concrete will be as follows: 4 parabs of good gneiss broken into cubes of one to 2" free of quarry sweepings. 1 parab of good unslaked lime, 2 parabs of ground bricks: the lime to be slaked while mixing the concrete.

Foundation

The foundation to be laid with stone in chunam: stones laid closely fitted with good bond and well flushed up with chunam (3 parts of sand to two of fresh and well burnt lime) slaked on the work. Every sixth stone at least to be a through header.

Basement

The basement to be similarly laid with outer joints scraped out and pointed. The top course of the basement

basement to be of flat stones of as great
a length as possible.

The superstructure is to be
of hammer dressed stone in chunam
laid in even courses not less than 6 deep
and level beds closely fitted with

good bond. every sixth stone at least
to be a through header and well
flushed up with chunam (consisting
of two parts of fresh and well burnt
lime to three of sand) opening to be
provided in the walls in the position
shown on the plan. Croft walls in the
End rooms and flue to be built with
best bricks ($9 \times 4\frac{1}{2} \times 2\frac{1}{2}$) in chunam
(3 parts of sand to two of fresh and
well burnt lime), slaked on the work.

The bricks to be soaked in water before
they are used and English bond to be
observed throughout.

The arches to be neatly
turned with well dressed stone in chunam
The joints all to radiate correctly.

according

according to the nature of the arch,
stones to be well dressed to the required
shape and the key stone to be well
driven home. joints not to exceed $\frac{1}{4}$ "
thick: joints to be scraped out before
plastered or pointed.

Cornice
Work

The description of the cornice
should be of the pattern supplied by
the District Engineer. Cornice stones
to have proper bearings as shown
on the plan and set with strong lime.

Dressing
&
Pointing

The arches and piers of
verandah to be well dressed and
the joints scraped out and pointed
with strong lime putty.

Plastering.

The joints of the croft walls
of End rooms and flue to be scraped
out and plastered with two coats of
chunam - 1st coat to consist of one
part of lime to $\frac{1}{2}$ of river sand
well ground together and the second
coat

coat to be of 3 parts of lime to one of white sand & well smoothed off.

The crop walls in the End Whitewash being rooms and flue to be whitewashed with two coats of chunam.

The following proportion to be used in mixing the whitewash:-

For Whitewashing 108 sq. ft. two coats:-

1 Parah of stone chunam.

$7\frac{1}{2}$ Polums of gum.

$\frac{3}{4}$ Measure of raw rice.

Stone slabs for steps to be of one stone of the required dimensions according to the nature and size of the steps having the outer sides and edges dressed square and upper surface smoothly dressed.

The roof of the Centre portion to be pent roof supported on trusses as shown on plan: each truss to bear on stone plates not less than $(2 \times 2 \times \frac{1}{3})$. The

2
The trusses to be 10 feet apart from centre to centre, the common and jack rafters to be $1\frac{1}{2}$ apart and to be well secured with proper nails.

The whole to be nailed with teak reefers ($2\frac{1}{2} \times \frac{3}{4}$) and to be covered with flat and fan tiles with chunam borders.

The gutter to be fixed with cement at the junction of the tiled roofs with the two storeyed buildings arranged so as to have a fall from the centre both ways off.

The various parts of the trusses to be fixed together to the joints by means of iron clamps ($2 \times \frac{1}{4}$) bolts $\frac{3}{4}$ with screw heads and cleats to be sunk and screwed to the principal rafter ^{via} to support purlins ^{via}.

The truss over the End room will consist of eight principals held

held together at the apex which are shod at their feet with stirrups and tied together by iron tie rods sustained at the centre point of junction by a suspending rod held up at the apex of the principals. The principals are still further tied together at their ends with struts in the middle for prevention from deflexure. The rods are two inches diameter over the truss will come purlins (prevented gliding by iron cleats) which will support common rafters, keepers one course of flat and two courses of pan tiles with chumam borders.

The roof of the Office, Machinery and verandahs to be terraced with brick on edge 3" of jelly 3 courses of flat tiles and 3 coats of plastering well rubbed. Teak beams for the Office and Machinery to bear on stone plate not less than $(2 \times 2 \times \frac{1}{3})$. The joints are to be laid $1\frac{1}{2}$ feet apart from centre to centre.

The upper verandahs to be semi-terraced with four courses of flat tiles laid in chumam 3 coats of plaster. Teak keepers $(2\frac{1}{2} \times \frac{3}{4})$ supported on rafters placed $1\frac{1}{2}$ feet apart from centre to centre, resting on braced pinniers placed over the columns as shown on plan.

Wooden flooring. The wooden floor of the Office and Machinery rooms of the Upper Storey to be of teakwood planks 12 wide and 3 thick with screw nail $\frac{1}{2}$ inch and to be coated with two coats of wood oil.

Wrought Iron Sponts. Wrought Iron sponts having 3 inner diameter and $\frac{1}{6}$ thick to be provided and fixed on the inner side verandah walls $\frac{1}{2}$ inch and to be fastened to them by iron clamps at every five feet in the manner directed by the District Engineer.

All

All the wood work of the roof to be properly scraped and cleaned, then coated with two coats of Wood oil.

Wood oiling

The basement to be filled in with earth well watered and rammed till thoroughly consolidated: over this a flooring of 3" concrete well watered and smoothed, on which stone slabs to be laid having a smooth surface not less than 4" thick with the edges dressed square. The joints scraped out and pointed with strong lime putty.

Flooring

The floor under kneading table is to be laid with asphalt over a course of concrete 6" thick and to be well rammed and smoothed. This must be perfectly dry before the asphalt is to be laid over. The asphalt floor mixed in proportion 4 measures of asphalt to 3 of sand is to be laid 1" thick and well rubbed and smoothed off with wooden floats. Wherever blisters appear the places must

3

must be picked and well smoothed with a hot iron and well rubbed.

Doors

Thirty seven doors half framed and half venetian with glazed circular top. 29 of which to be (4 x 8) and the other 8 to be (4 x 7) frames (4 1/2 x 3 1/2) with strong hinges, bolts 9 brass locks & complete are to be provided and fixed in the position shown on the plan.

Windows

Thirty three windows barred with glazed shutters inside and venetian shutters outside with glazed circular top, frames (4 x 3) venetian plank 1/2" thick venetian bar (1 x 1/4) with strong hinges, hooks and eyes, 3/8 brass rings, buttons, brackets, and other fittings complete are to be provided and fixed in the position shown on the plan.

Ventilating

Ventilating swing windows Ventilating
(3x1 1/2) frames (4x3) and other fit-
-tings ~~the~~ complete to be provided
and fixed in the position as shown
on the plan.

The whole of the doors and Paint
windows to be coated with two
coats of barsons anti corrosive paint
Chocolate color.

A stone drain (9 broad Drain
at top and 8 inches deep) v shaped
as shown on the plan to be construct-
ed around the building and the
same extended for 200 feet in a
direction to be pointed out by the
District Engineer for carrying off
of the water. The drain to consist of
having stone not less than 3' thick
with the edges neatly dressed and
set in chunam. The joints scraped
out and pointed with strong lime.

All

All materials used and
work done to be of the best description
and subject to the approval of the
District Engineer of Bangalore who
shall have the entire power of
ordering the removal of any work
with which he is dissatisfied.

Office
Bangalore
November 17/33
H. Wright
Captain R.E.
District Engineer, Bangalore

N^o 33

Office of the Inspecting Engineer
for Civil & Military Buildings
Cochin 10 January 1874

From

Colonel E. A. Ford R.E.
Inspecting Engineer for Civil
& Military Buildings

To

Colonel G. W. Walker R.E.
Secretary to Government S.D.

Sir,

I have the honor to forward
for the sanction of Government a re-
vised estimate of Rs. 35700, accompa-
nied by a specification and comparative
statement, for the reconstruction of the
Bakery at Bangalore.

2. The estimate sanctioned in G.O.
N^o 95, dated 11th January 1873, amounted
to Rs. 24150 and this will be exceeded
by Rs. 11550 - an unusually large excess.
I trust the explanation offered will
be considered satisfactory, as showing
that a correct estimate could not be
made, until the entire building had been
taken

Enclosures 5

- 1 Plan
- 1 Abstract estimate
- 1 Specification
- 1 Comparative statement
- 1 Original Plan of Bakery.

No. 102 of 1873/74

From the District Engineer

Bangalore

To the District Engineer

Bangalore

for the District Engineer

Bangalore

Dated 18th November 1873

Read 18th 154/74

Specification of

the estimate for

reconstruction of

the District Bakery at

Bangalore

for the District Engineer

Estimated at Rs. 35700

taken down, and that the increased amount only represents the actual value of the work.

3. The principal cause of the excess is that a great deal of the stone and timber of the old Bakery was not found good enough to be used in the new building. There were no bond or through stones, and those in the arches could not be used again for the same purpose. The teak beams supporting the floor of the upper story did not extend from wall to wall, as the Contractor had taken advantage of the division walls, between the ovens, to support the beams at one end. The beams themselves were found not to be each one solid piece, but to be made up of several pieces, with, in some instances, planks screwed on to make up the requisite scantling. New doors and windows have had to be supplied. Those that were serviceable were used in the temporary bakery, and not charged in the estimate of that work.

Spends money for the material of the new building. The old building was not used for the same purpose.

In some instances, the rates have had to be increased, and an allowance had been made in the revised estimate for V drains, as the ground slopes down towards the front of the building; also for removing the store sheds and clearing and levelling the ground near the Bakery.

4. In the first estimate, allowance was made in the rates for the materials it was expected would be available. The estimate has now been prepared as if for an entirely new work, and a deduction has been made at the end for old materials, the value of which can now be ascertained with more certainty than was possible last year.

5. In sanctioning the first estimate Government assumed that the plan and estimate had been approved by the Inspecting Engineer. The estimate was not submitted through me, but being required to be forwarded as quickly as possible was put -

put in hand at the end of October 1872 and dispatched by the District Engineer on the 11th of November. The plan had been approved by me, and the only deviations made from it are such slight ones, as suggest themselves in the progress of all large buildings. At the request of the Commandant Officer the ovens have been increased in size, and their number reduced from twelve to ten. The position of a cross wall has been altered; the ridge ventilator is to be omitted and the back verandah enclosed. The last alteration involves the use of more material, but the proposed wall can be built at a lower rate than the pillars and arches that were at first intended.

The first Bakery was built by contract, at a time when a very large amount of work was in progress at Bangalore, and many large estimates and plans were being prepared. The present Bakery is being built departmentally,

under

under good superintendence, and every precaution has been taken to obtain the best materials and workmanship.

I have the honor to be

Sir

Your Most Obedient Servant

E. A. Ford Colonel R.E.

Inspecting Engineer for
Civil & Military Buildings

No 243 P 11 Dept

Proceedings of the Madras Government
Under date the 18th January 1874
Read the following

from the Inspecting Engineer for Buildings No 33 of 10th January 1874

In G.O. No 98 dated the 11th January 1873 an estimate amounting to Rs 24,150 was sanctioned for the reconstruction of the Cook Battery at Bangalore, and the Inspecting Engineer for Buildings now submits a revised estimate with a comparative statement showing an excess of Rs 11,550 over that sum. The gross amount of the estimate is

Mol 16/1

The Inspecting Engineer
for Buildings

The Secretary to
Government B 197
No 33

Forwarded
for sanction to the
Chief Estimate Officer
for the reconstruction
of the Battery at
Bangalore

No 243-3-24/74

first sanctioned was
Rs 32,600 subject to a
reduction of Rs 8,400
on account of the value
of materials on hand
while the revised estimate
has been prepared as for
an entirely new work
for a gross sum of Rs
37,025 and a reduction
of Rs 21,325 made for the
value of old materials
available, while the
inspecting Engineer ex-
plains has now been
ascertained with more
certainty than was
possible last year.
The amount requiring
sanction accordingly
stands at Rs 35,700.
The comparative
statement, it is observed,

gives all details clearly,
the least satisfactory
items being those showing
an increase of Rs 2,454
for dressing and painting
which appear to have been
insufficiently provided
for in the first estimate.

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Rs 35,700 - all
has been fully
provided for
by the
Government.

The imperfections
of the original work
now brought to notice
amply justified the strict-
ures passed by the
No. 1736 of the 22nd July 1892
on the want of efficient
supervision by the
various officers in charge
of the work from time
to time, much as these
were objected to by the
parties concerned.

The

Bangalore

The revised estimates
are sanctioned but it
is remarked that the
Inspecting Engineer
has failed to state what
progress has been made
with the work hitherto
and what amounts have
further been provided
for outlay in this and
ensuing years. The
allotment for the current
year is Rs 20,000 and
a sum of Rs 8,000 has
been provided in the
Budget of 1894-95 for
the work.

See

2

44

C.M.S.

J. C. for Regd
D. S. Bangalore
Contd. R. Acc. for 1894-95
Duly: Depantt

Deposited 5/2/90

Comparative Statement showing the difference between the Sanctioned Estimate and the work actually executed in Constructing the Government Bakery at Bangalore.

Description of work	Per	Sanctioned Estimate			Work actually executed			Increase	Decrease	Remarks
		Estimate			to executed					
		Quantity	Rate	Amount	Quantity	Rate	Amount			
		R	A	P	R	A	P	R	P	
Brought over				14657			22738	8786	505	
Lintel stones over ventilating windows (4 1/2 x 2 x 1/2)	E	24	1	24	24	1	24			
String course to piers 2 1/4 feet wide and 4 inches thick	Pf				187	6	70	70		This was not estimated for.
Cornice work		1740	12	1305	1653	12	1240		65	Owing to an error in calculation.
Stone slabs for steps		276	4	69	366	4	92	23		Additional steps were required for the inside of the machinery room
Ornamental parapets		216	1	216	216	1	216			
Plastering with two coats of Chunam	Sq	28253	28	706	3933	28	98		608	Owing to pointing being substituted for plastering in some parts.
Whitewashing two coats		28252	3	53	3933	26	6		47	Do. Do.
Dressing	Sq	1963	4	491	14077	3	2639	2148	489	A very insufficient amount was allowed under this head in the previous Estimate.
Pointing with lime putty	Sq	22686	18	340	50963	14	637	297		substituted for plastering
Renewing and fixing wood work	Cf	2274	3	42	22538 1/2	38	7164	7538		The greater part of the wood from the bakery has been found unsound and to be repaired.

Comparative Statement and the work actually executed in showing the difference between the Sanctioned Estimate Constructing the Government Bakery at Bangalore.

Description of work	Estimate			Revised Estimate			Increase	Decrease	Remarks
	Per	Quantity	Rate	Amount	Per	Quantity	Rate	Amount	
		Rs.	P.	As.		Rs.	P.	As.	
Archwork brick in clay		1819	3	341		...	...	159	The above re apply a to increase
Fire brick in fire clay		428	6	161		493	9	277	
Arch work fire brick in fire clay		617	96	366		803	12	602	Owing to size of ovens being increased; and the rate is increased on account of fire br
Salt flooring to ovens		...	...	...		5386	543	177	
Quoin stones for doors ($1\frac{1}{2} \times 2\frac{1}{8} \times \frac{3}{4}$)	£	52	15	49		84	15	79	This was not estimated for. The Supd. Engineer directed salt to be used in accordance with Memo N: 4244 of 15: March/73 written by Major
Quoin stones for doors ($1\frac{1}{2} \times 2\frac{1}{8} \times \frac{3}{4}$)	£	56	12	42		88	12	66	
Quoin stones for windows ($1\frac{1}{2} \times 2\frac{1}{8} \times \frac{3}{4}$)	£	99	15	93		150	15	141	The thickness of the stones is reduced to correspond with the course of the superstructure.
Do. — Do. for windows ($1\frac{1}{2} \times 2\frac{1}{8} \times \frac{3}{4}$)	£	110	12	83		160	12	120	
Lintel stones for window sills ($7 \times 2\frac{1}{8} \times \frac{3}{4}$)	£	11	5	55		10	5	50	Only 10 were required
Carried over		14657				22938	8786	505	

Comparative Statement showing the difference between the sanctioned Estimate & the work actually executed Constructing the Government Bakery at Bangalore.			
Description of work	Per	Remarks	
		Estimate	Work actually executed
Brought over	2390856	12774 19	242
Demolition with 4 courses of flat tiles and 3 coats of plastering	12774 19	242	
Columns 1 1/2 diameter and 10 feet high with plastering complete	16 13 12	220	
Wrought iron sports 3	174 57 2	549 49	
inner diameter 7 1/2 inches	256 82	134 57	
Wooding two coats	6383	33 33	
Filling in basement	733 38 128	667 722	
Filling in Superfluous	133 38 5	667 667	
Excavation	6 00 25	120 77	
Flooring with stone slab	8 10 9	7 20	
Levelling Course of Concrete in the above	41 978		
Asphalte flooring under kneading table	29 49	1421	
Wooden stair case with railing	8 43 4	346	
Glazed fan light frames & fittings 1/2 complete (4 x 8)	33 54 12	1807 1807	
Pairs of windows barred, glazed & paneled - shutters with glazed fan light frames & fittings 1/2 complete (4 x 4)	96 24 7	168 72	
Ventilating Suring windows with frames 1/2 complete	24 4		
Painting with two coats of Chocolate color	272 63 34 5	317 45	
Building in & forming over mouth with slab stones	10 2	20 20	

15/54
Govt. of 1874 Madras.
PUBLIC WORKS.

The Inspecting Eng^r for
Civil and Military
Buildings

Dated

Recd.

Encl. 4

G. O. 3rd July 1874, No. 243.

Nos. 21 & 22

At. Bakery at Bangalore

red for the
instruction of the
Bakery, sanctioned
the remarks.