Archives I—10,006—16-8 77.

(1) Number of pages 36
(2) Date of repair 26.7.88
(3) Initials of the Referencer

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Pub works DEPARTMENT

G.O. No. B.P. No.	2946	Press. ~~Mis.~~
Dated	19-9-1888	197 .

297.

Not to be folded or roughly handled

19TH SEPTEMBER 1888, No. 2946 W., PUBLIC WORKS.

2946/1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

READ—the following paper:—

From Colonel H. SMALLEY, R.E., Superintending Engineer, III Circle, to the Chief Engineer, Public Works Department, dated Bellary, 11th September 1888, No. 1236.

[G.O., No. 613 W., dated 14th March 1885, para. 4.]

I have the honor to report on the point raised in the above Government Order whether Mangalore tiles can be used as a suitable and economical material in the construction of roofs of public buildings in the Bellary and Anantapur districts where ordinary roof tiles are represented to be a failure.

2. We have now had considerable experience in putting up roofs with Mangalore tiles at Bellary, and the Southern Mahratta Railway Company has adopted this style of roofing largely along their lines, and the conclusion I have come to is that it is a suitable and economical style of roofing for general adoption in this part of the country within reasonable limit of carriage by cart.

3. The only objection to Mangalore tiling here that I know of is that it does not keep out the heat of the sun in the hot weather sufficiently, and that can only be got over by a planked ceiling underneath the tiling; but that ceiling need not be of expensive wood, but of any junglewood at hand, or of deals to be procured from the nearest port, or even old packing cases, or a ceiling cloth, would do in some cases. The tiles, too, might be whitewashed outside before the approach of the hot weather.

4. As to cost, the accompanying data tables have been prepared which show, *cæteris paribus*, the cost of each description of roofing in use at Bellary:—

	Per square. RS.
(1) Mangalore tiling without ceiling	44
Do. with deal planks	50
(2) Stone slabs and concrete	54
(3) Terracing	66
(4) Bengal terracing	51
(5) Ordinary pot and pan tiles	50

In all these, teak rafters and joists are allowed but venteak reepers. The rafters and joists have been included in order to make a fair comparison. Hence the first cost of Mangalore tiling is not greater than that of any other kind of roofing material, and it is certain that its superior durability would tell very much in its favor in the course of years. Mr. Garrett has noted that, in consequence of the high winds that prevail at Bellary, all the cave tiles of this description of roofing must be screwed down to the rafters, *i e.*, if two rows of tiles project, then both rows must be screwed down.

5. As regards roofing with stone slabs and concrete, this style ought to answer well in these parts, but in point of fact it has not answered wherever it has been put up; whether this is due to want of sufficient care in mixing or laying the materials, or to other causes such as sagging of the timber underneath, settlement of foundations, or to variations of temperature, to which Mr. Milne attributes cracks in terraced roofs, I am not prepared to say. I think this style of roof should be tried again with all possible precautions.

6. As regards tar and sand, Mr. Garrett reports on this mixture having answered well on the roof of the station hospital, Bellary. One of tar to 6 of sand was used and applied in a layer of $\frac{3}{8}''$ thick in accordance with the standard specifications. It was seriously tested by a fall of 4" of rain on the night of the 30th June 1887 and only leaked in one place, which was traced to the defective treatment of one of the drains of the roof. Pitch and sand was tried to remedy the leakage in the combined office of the Superintending and Executive Engineer, Bellary, but here it has been distinctly a failure. The work, however, does not appear to have been carefully attended to by Conductor Ward and the result is inconclusive.

Order—dated 19th September 1888, No. 2946 W., Public Works.

Recorded.

(True Extract.)

Captain, R.E.,
Under-Secy. to Govt., P.W.D.

To the Superintending Engineer, III Circle.
„ Consulting Architect to Government.

Exd. J. Henricus.
Spare Copies

2948/2

GENERAL.
ACCOUNT.

Govt. of 1888 Madras.

PUBLIC WORKS.

Dated September, 19th.

Recd. *Encl.*

G.O., 19th Sept. 1888, No. 2946 W.

SEPTEMBER.

Mangalore Tiles

Letter from the Superintending Engineer, III Circle, reporting the use of — for roofing of public buildings in the Bellary and Anantapur districts, recorded.

14th March 1885, No. 613 W., Public Works.

2946/M

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

Read—the following paper:—

Proceedings of the Board of Revenue, dated 19th January 1885, Mis. No. 424.

Read—the following letter from A. CRUICKSHANK, Esq., Acting Collector of Anantapur, to the Secretary to the Board of Revenue, dated Atmakúr, 25th December 1884, No. 581:—

In forwarding, herewith, a copy of letter No. 1864, of 15th December 1884, from the Superintending Engineer, III Circle, with its enclosures, I have the honor to request that the sanction of the Government may be obtained to the revised estimate for the Head Assistant Collector's cutcherry at Penukonda.

Enclosure.

From Lieutenant-Colonel H. M. VIBART, R.E., Superintending Engineer, III Circle, to the Collector of Anantapur, dated Bellary, 15th December 1884, No. 1864.

I have the honor to forward, for your countersignature and submission to Government through the Board of Revenue, a revised estimate of Rs. 16,682, accompanied by a comparative statement, for constructing the Head Assistant Collector's cutcherry at Penukonda, in lieu of the estimate of Rs. 12,240 sanctioned in G.O., No. 2900 W., dated 15th October 1883.

2. Owing to the constant annoyance experienced and expense incurred in connection with the ordinary tiled roofings, it has been deemed advisable to substitute concrete terracing, and this modification was duly approved of by the late Collector, Mr. Roupell.

3. The previous estimate provided for a shed for witnesses; this has been now omitted. There is no need for it, as one already exists within the taluk cutcherry enclosure, not many yards distant from the Assistant Collector's cutcherry site.

4. The standard design approved in G.O. No. 155, dated 29th March 1876, has been followed as far as practicable, but the depth of foundation and basement has been altered to suit local circumstances.

5. Under the authority of the late Collector, the dead-house and female latrine belonging to the Local Fund dispensary, which were situated on the site selected for the Head Assistant Collector's cutcherry, were removed and rebuilt by this department on separate sites. The cost of the work, Rs. 164, is chargeable to the Head Assistant Collector's cutcherry estimate; provision has therefore been made for the same in the present estimate.

6. The excess over the original estimate, on account of the proposed modification, is Rs. 4,442, and I recommend that the extra sum be sanctioned, as the proposed alteration will effect a great saving in the long run.

Resolution—dated 19th January 1885, Mis. No. 424.

The proposed alteration in the construction of the Head Assistant Collector's cutcherry at Penukonda, by substituting a terraced for a tiled roof as originally proposed, will necessitate a heavy additional outlay; but the Board are satisfied, in the long run, it will be far the cheaper of the two estimates, and they, therefore, forward the revised estimate for the favorable orders of Government.

(True Extract,)

(Signed) E. GIBSON,
Secretary.

2946/4

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of [1885] Madras.

PUBLIC WORKS.

Dated March, 14th.

Recd. *Encl.*

G.O., 14th March 1885, No. 613 W.

MARCH.

Head Assistant Collector's Cutcherry at Penukonda

Revised estimate for —, sanctioned.

No. 228

SUPERINTENDING ENGINEER'S OFFICE,
Ramandrug ~~MADRAS~~,
~~Chepauk~~, 2d May 1885.

From Lt Col H. M. Vibart R.E.
~~THE~~ SUPERINTENDING ENGINEER,
3d ~~1st~~ CIRCLE,

29/6

To
THE Chief Engineer
P.W.D.
Madras

SIR,

Enclosures.

With reference to para 4 of G.O. No. 613 W dated 14th March/85, I have the honor to report that Mangalore tiles might be used as a suitable material in the construction of roofs of Public Buildings in the Bellary and Anantapur Districts; but the tiles, it appears, allow the heat to penetrate and it has been found necessary to add a wooden ceiling which adds very considerably to the cost.

2. The carriage of Mangalore tiles both by rail and road is very heavy

and cost of a square of the tiling (without the ceiling) amounts at Bellary to fully 26 Rs.

3. The ordinary terraced roof is perhaps more suitable.

4. This class of roofing, it is thought, can be constructed of the slab (granite) stone of the District coated over with concrete.

5. The Executive Engineer Bellary considers that this kind of terracing can be made at a cost of 18 Rs per square.

I have the honor to be
Sir
Your most obedt. Servant
Cuthbert Lt Col R.E.
Superintending Engineer
3d Circle

2946/6

G. O. No 613 W. of 14. 3. 85.

From (16) Reg. 397

The Superintending Engineer,
III rd Circle,

No. 94 Ed/ May 9th 1885.
Memo –
E/ Memo

To

The Chief Engineer
P. W. Department.

Recorded.

CB.
6. 5. 85

Dated 2nd } May 1885.
Recd. 5 }

2. The S.E. is requested to report whether the class of roof described in para 4 of this letter has been tried within the Bellary Division. Full particulars as to cost and result should be given, with a sketch of the roof.

3. If that class of roof has not yet been tried, early opportunity should be taken to give it a trial, if the S.E. is of opinion that it will prove successful.

S.E. III Circle
C. 6. 5. 85.

Despd 7/5 8. 5. 85

ENCLOSURES.

No. 94 Ed/ May 9th 1885

No. 228.

Mangalore Files

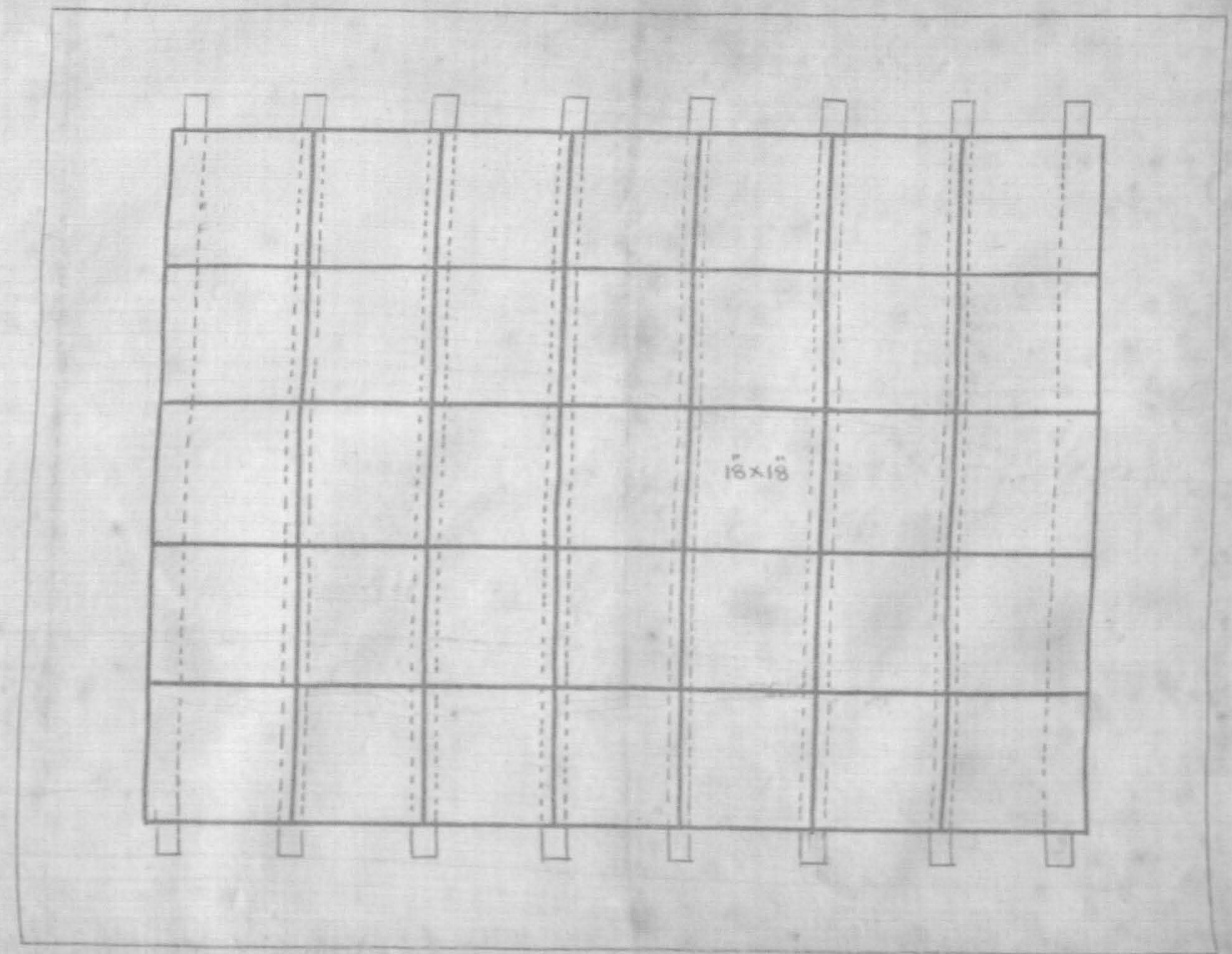
Reporting the opinion as to the substitution of the " " instead of the ordinary terraced roof.

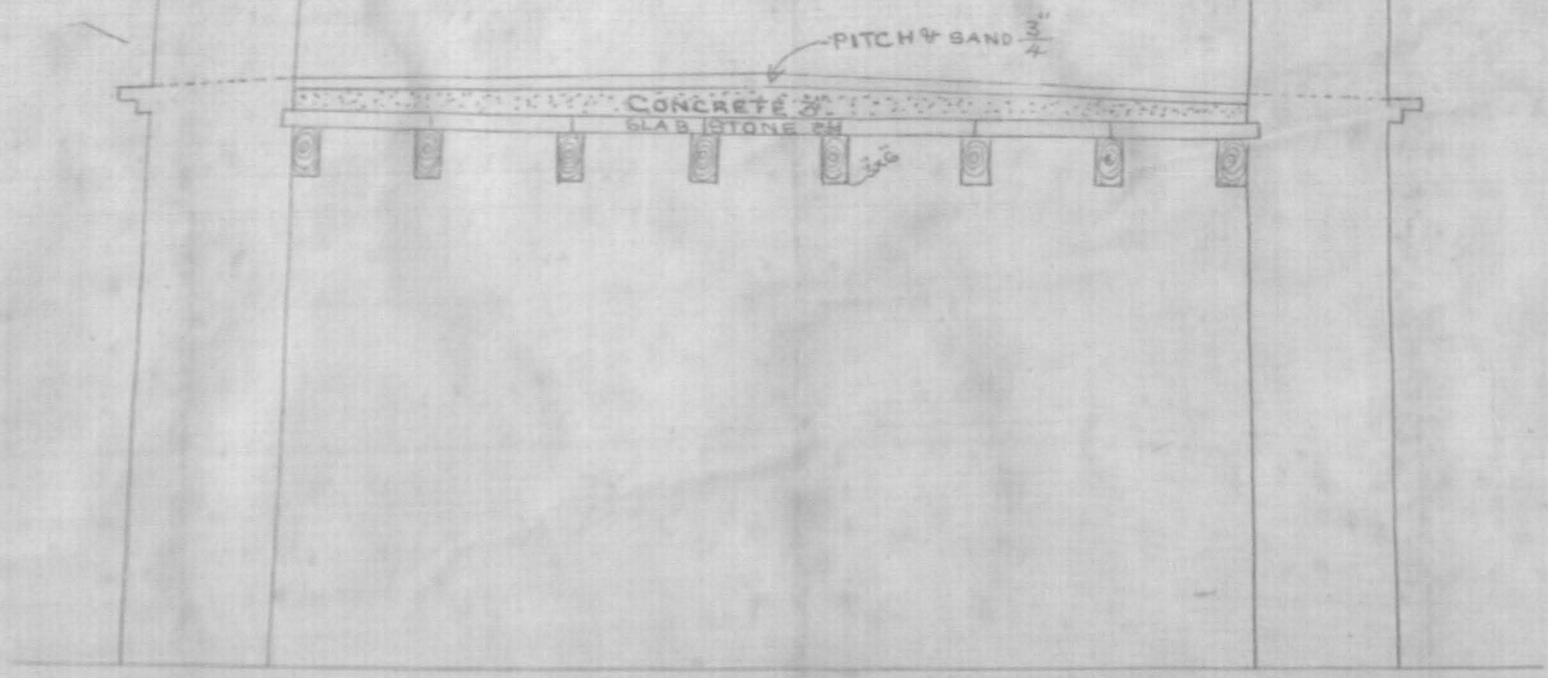
With memo

2946
7

[illegible] done [illegible] & thoroughly [illegible]

DETAIL PLAN OF STONE SLAB ROOFING





APPROXIMATE COST OF STONE SLAB ROOFING = Rs. 32.0.0 PER SQUARE

SCALE 1/25

EXEC: ENGINEERS OFFICE BELLARY
31st OCTOBER 1875

20/6/86

MAJOR R.E.

EXEC: ENGINEER

C.E. III Circle
S.E. III Circle
Despd 7/5 8.5.88
O. 6.5.88

With memo

Statement shewing cost of different classes of Roof — 2946/9

	Cost per square
Reroofing with Mangalore Tiles and Ven Teak Reepers —	Rs 26
Terracing with Brick on edge, Flat Brick 3" of jelly 3 courses of Flat Tiles & 3 Coats of plaster	" 30
Bengal Terracing —	" 20
Roofing with flat and pot Tiles and chunam Borders —	" 19
Roofing with stone slabs 18" × 18" - 3" of concrete & 1" plastering	" 32

—

Lt Col R.E.
Supdg Engineer
3rd Circle

Supdg Engrs office
Camp: Penukonda
21st November /82

S.E. III Circle
S.E. III Circle
W
Despd 7/5 8.5.83
6.5.83
With

SUPERINTENDING ENGINEER'S OFFICE,

No. 1771 Camp [illegible]

3RD CIRCLE.

~~Bellary~~ 2nd Nov. 1885.

From

Lt. Col. [illegible] R.E.

3/2

SUPERINTENDING ENGINEER,

IIIRD CIRCLE,

To,

THE Chief Engineer

P.W.D.

[illegible]

SIR,

Enclosures,

[illegible]

With reference to para [illegible] of your [illegible] dated [illegible] I have the honor to report that [illegible] Engineer [illegible] that the [illegible] [illegible] more [illegible] than the ordinary [illegible] [illegible] [illegible] [illegible] should be [illegible] this class of roofing will prove a failure as regards its imperviousness to rain water. To make the roofing still more secure, the experiment of superimposing a mixture of pitch and sand is now being tried 4 sand to 1 of pitch.

2. The Granite slab roofing has been tried in the Head Asst Collector's Cutchery at Hospet but during the late heavy rains, the roofing leaked considerably owing to the plastering and probably the concrete underneath having shrunk in various places.

3. A tracing of the slab stone roofing and a statement of cost of different classes of roofing are sent for information.

I have the honor to be
Sir
Your Most Obedient Servant
Lt Col R.E.
Superintending Engineer
3rd Circle

2946/11

No. 942 dated 9-5-85
G.O. No. 613 W dated 14-3-85

Recorded

2 The S.E. is requested to report the result of the experiment now being tried with a coating of pitch and sand

26/11/85

26-11-85

27/11/85

S.E. III Circle
Dated 27-11-85

From,

The Superintending Engineer,

IIIrd Circle.

To,

The Chief Engineer

P.W.D.

Madras

Dated 21st } November 1885.
Received }

Enclosures. 2.

No. 1771

Slab Stone roofing

Reporting that for the buildings in the Bellary Dist. is preferable under the reasons assigned.

With ~~[illegible]~~

Data list for different classes of roofings including wood work in the Bellary District

2946/12

quantity	Description of work	Per	Rate			amount			Total
	Roofing with Mangalore tiles with teak rafters & venteak reepers.								
150	Mangalore tiles	1000	118	-	-	17	12	-	Without ceiling
2½	Ridge tiles	Each	-	6	6	1	-	3	
4½	Cft Teak rafters (3"×5½")	Cft	4	-	-	18			
1½	" Venteak reepers (105 × 2" × 1") including nails &c complete	do	3	4	-	4	14	-	
2	Bricklayers	Each	-	12	-	1	8	-	
1	Man cooly	"		4	-		4	-	
2	Women	-	-	2	-	-	4	-	
1	Boy	-	-	1	6	-	1	6	
	Total					43	11	9	
	Sundries						4	3	
	Total per square Rupees								44—0—0
	Roofing with Mangalore tiles with Venteak rafters and reepers								
	Same as above					44	-	-	
4½	Minus teak rafters	-	18	-					
4½	Plus Venteak do	+	14	10	-	3	6	-	
	Total per square Rs					40	10	-	40—10—0
	Roofing with stone slabs 24" or 18" × 18" × 3" 2" concrete and 1" planking per square								
3	Stone cutters	Each	-	12	-	2	4	-	
1	Bricklayer	do	-	12	-	-	12	-	
	Carried over					3	-	-	

Quantity	Description of work	Per	Rate			amount			Total
	Brought forward					3	-		
3½	Men cooly	Each	-	4	-	-	14		
5	Boys	do	-	1	6	-	7	6	
1	Sqr slabs 2½" to 3" thick	100 Sqft	2	8	-	2	8		
9½	Cft Teak joists	Cft	4	-		38	-		
16	do Concrete	100 Cft	12	8		2	-		
	Cartage of stones 3 miles					1	-		
1	Sqr Plastering 1" thick					4	4		
	Total					52	1	6	
	Quandries for breakage of stones & water &ca					1	12	6	
	Approximate Estimate Total Rupees								53 - 14

Terracing with brick on edge flat tiles, 3" jelly 3 Courses of flat tiles & 3 Coats plaster &ca Complete per Square

Quantity	Description of work	Per	Rate			amount			Total
8	Bricklayers	Each	-	12	-	6	-	-	
3	Men cooly	-	-	4	-	-	12		
4	Women do			2		-	8		
11	Boys			1	6	1	5	-	
13	lb Jaggery	lbs		1	3	1	-	3	
18	parah Lime	parah	-	7	-	7	14		
30	do sand				6		15		
100	Burnt bricks 9"×4½"×2¼"	1000	7			-	11	2	
1200	Flat tiles 1" thick	1000	2	-		2	6	5	
500	Do ordinary	1000	1	8	-	-	12		
2000	Terrace bricks	1000	2	8	-	5			
9½	cft Teak wood joists	Cft	4	-	-	38			
	Total					65	3	10	
	Water Quandries &ca					-	12	2	
	Total Rupees								66 -

Bengal Terracing per square

Quantity	Description of work	Per	Rate			amount			Total
1½	Brick layers	Each	-	12	-	3	6		
2	Men Cooly	-	-	4	-	-	8		
	Carried over					3	14	-	

Quantity	Description of work	per	Rate			amount			Total
	Brought forward					3	14	-	
2	Women cooly	Each	-	2	-	-	4	-	
7	Boys	do	-	1	6	-	10	6	
1200	Flat tiles 1" thick	1000	2	-	-	2	6	5	
500	Do ordinary	1000	1	8		-	12	-	
4½	lbs Jaggery	lb	-	1	3	-	5	8	
9	parahs Lime	parah	-	7	-	3	15	-	
18	do sand	do	-	-	6	-	9	-	
1.43	Cft Venteak reepers	Cft	3	4	-	4	10	5	
8.38	Cft Teak joists (3"×5¾")	do	4	-	-	33	8	4	
	Total					50	15	4	
	Quandries &ca					-	-	8	
	Total per square Rs								51 - 0 - 0

Roofing with flat & pot tiles, chunam borders rafters reepers &ca Complete per square

Quantity	Description of work	per	Rate			amount			Total
2	Bricklayers	Each	-	12	-	1	8	-	
1	Man cooly	"	-	4	-	-	4	-	
6½	Boys	"	-	1	6	-	9	9	
4	parahs of Lime	parah	-	7	-	1	12	-	
8	do sand	"	-	-	6	-	4	-	
500	Flat tiles (ordinary)	1000	1	8	-	-	12	-	
1200	Pot tiles	1000	5	-	-	6	-	-	
8.38	Cft Teak rafters (3"×5¾)	Cft	4	-	-	33	8	4	
1.43	do Venteak reepers	"	3	4	-	4	10	5	
	Total					49	4	6	
	Quandries &ca						1	6	
	Total per square Rupees								49 - 6 -

276/13

A Smalley Col R.E.

Superintending Engineer 3rd Circle

11-9-88

Data list for different classes of roofings including wood work in the Bellary District

1

9207. (4)

It is not necessary to do more than record this paper, which is an answer to a reference made in 1885.

It has been established beyond doubt that Mangalore tiles make an excellent roof, the only objection being the cost of carriage; but now tiles exactly similar to the Mangalore ones, are made in Madras by Messrs [illegible] & Co of the [illegible] Works.

The question of ceilings must depend on the class of building.

14.9.88

Even with cost of carriage & ceilings. Mangalore tiles [illegible] [illegible] as cheap as any other roofing in 3rd class [illegible].

2946
1st

17/9/88

W
14-9

Superintending Engineer's Office,
3rd Circle
Bellary 11 September 1888.

No. 1236

FROM Col H. Smalley R.E.
~~THE~~ SUPERINTENDING ENGINEER,
IIIrd CIRCLE.

To
THE Chief Engineer
P. W. Dept.
Madras

2946
5

SIR,

G. O. 613 W. d/ 14/3/85 para 4.

Enclosures.
1 Data tables

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2. We have now had considerable experience in putting up roofs with

Mangalore

Mangalore tiles at Bellary and the Southern Mahratta Railway Company has adopted this style of roofing largely along their lines and the conclusion I have come to is that it is a suitable and economical style of roofing for general adoption in this part of the country within reasonable limit of carriage by cart.

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	Per Square
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—— " —— with deal planks	" 50
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2966/10

much in its favour in the course of years. Mr Garrett has noted that in consequence of the high winds that prevail at Bellary all the eave tiles of this description of roofing must be screwed down to the rafters i.e. if 2 rows of tiles project, then both rows must be screwed down.

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2946/17

I have the honor to be
Sir
Your most obedt servant
H Smalley Col R.E.
Supdg Engineer 3rd Circle

No 1983 C. 27. 11. 85
" 944 E. 9. 5. 85
G. O. 613 W. 14. 3. 85

Genl
Acct

A [illegible]

Recorded.

P. W. Cht 9207

From

The Superintending Engineer,
IIIrd Circle.

(4)

To

The Chief Engineer
P. W. D.
Madras

Dated 11 } September 1888.
Received 13 }

Enclosures. 1

No. 1236

Roofing with Mangalore tiles, the public buildings in the Bellary and Anantapur Districts

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Reporting on the [illegible]

17/9/88

S. E. III Circle
C. A. to Govt
C. E.
o. 14. 9. 88

2/10/88

With order

2946/18

Govt. of (1888) Madras.
PUBLIC WORKS.

Dated 21/8

Recd. Encl.

G.O. 19 Sep 1888 No. 2946 W

Mangalore Tiles

Letter from the Supg. Engr., III circle, reporting the use of – for roofing of public buildings in the Bellary & Anantapur Districts, ~~Ordered~~ Recorded

50/IX

20/9