Public Works (1898) Department.

Urgent

[illegible]

G.O., No. 1670 W

DATED 4 July '98

577

[Despatch Abstract.]

Light house at Mulki: Estimate of Rs 68.600 for the construction of a light house, with Subsidia buildings at Mulki in the South Canara dt., Sanctioned with remarks.

110

[P. W. 26. / 1,000—12-2-98.]

Indexed.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

BUILDINGS AND ROADS.
CIVIL WORKS.

Government {1898} of Madras.

PUBLIC WORKS.

Recd.	1898.	*Enclosures*
Regd.		*Spare copies*

G.O., No. 1670 W., 4th July 1898.

JULY.

Lighthouse at Mulki

Estimate of Rs. 68,600 for the construction of a lighthouse, with subsidiary buildings, at Mulki in the South Canara district, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following papers :—

From F. W. ASHPITEL, Esq., Superintendent of Works, Lighthouse Division, Madras, to the Chief Engineer, Public Works Department (through the Presidency Port Officer, Madras), dated 14th January 1898, No. 833.

I have the honour to forward, herewith, plans and estimates as noted below for a lighthouse and other necessary buildings at Kaph Rock on the West Coast (entered as Mulki rock in table I printed with G.O., No. 245, Marine, dated 8th April 1896).

2. This is the only large lighthouse proposed to be constructed north of Mangalore and is designed for a range of 18 miles in accordance with the proposals approved in G.O., No. 245, Marine, 8th April 1896. The other lights, all of which it is proposed to deal with during 1898–99, are : Kundapur, Hangarikotta (Barkur), Malpi and Mangalore.

3. At Kundapur all that is required is to construct quarters for keepers, and the estimate is only delayed because there is no one available to make the necessary survey. This will not take long.

4. At Hangarikotta the existing light is a 6th-order port light placed as a temporary measure on the boundary pillar of the port and the range required does not exceed 6 miles. It is proposed to move the cabin and mast now at Malpi to this port.

5. As stated in Appendix B, page 30, of G.O., No. 245, Marine, dated 8th April 1896, a better sight for Malpi light is on one of the islands, and Captain Street has suggested that the change should be made. The light now at Hangarikotta will be exhibited from the roof of a small building.

6. At Mangalore it is proposed to exhibit a light from a small building in the marine yard and to use the existing apparatus with a burner which will run the whole night without attention.

7. A tracing from the chart showing the proposed lights accompanies this letter. They are all, with the exception of Kaph Rock, very petty lights though extremely useful to navigation as anchoring lights.

8. The estimate for the lights mentioned in paragraphs 3, 4, 5, 6 of this report will be submitted when a subordinate is posted to No. 3 sub-division of this division.

9. Early sanction is requested to enable a start to be made before the south-west monsoon.

No. 61 W.

Forwarded, observing that I concur in Mr. Ashpitel's proposals as specified in this letter.

MADRAS,
15th January 1898.

(Signed) H. A. STREET, Comdr., R.I.M.,
Presidency Port Officer.

Note by the Chief Engineer, Public Works Department.

These estimates were received in this office in January 1898, and as the details required careful scrutiny, they have been left back in favour of other work, instead of being disposed of as quickly as possible. This will not be allowed to occur again.

2. The estimates would, under ordinary circumstances, have been returned for revision in some minor points, but owing to the above-mentioned delay, they are recommended for sanction as they stand, and attention is called below to the points in question which can be rectified during construction.

3. *Lighthouse tower.*—The wind pressure allowed in calculating the stability of the tower is ample, and it is considered that Basel Mission bricks in cement can withstand with safety the maximum intensity of pressure to which they are ever likely to be exposed during a cyclone, or heavy storm, which is calculated to be 8·6 tons on the square foot. The tower is therefore considered stable. The bricks will be plastered with portland cement outside and in, and will therefore be in no danger of deterioration from exposure to sea air. The tower is likewise founded on rock, so damp cannot rise from the foundations.

4. The girders provided in the estimate are in some cases rather heavier than calculation shows to be necessary, but as stiffness in the floors of a lighthouse is essential, they are allowed to stand. The increased cost involved is small.

5. The specification has been amended in some particulars, which shall be attended to during execution. Data for the rate for brickwork in cement should be supplied.

6. *Lightkeepers' quarters.*—The estimate for each set of quarters amounts to Rupees 6,250, or nearly Rs. 4 per square foot of plinth area. This is very high, and must be reduced in construction. In the first place, the soil being stated to be pure sand, 6 feet of foundations is unnecessary. It should be reduced to 4 feet. Secondly, cement plastering inside and out $\frac{3}{4}''$ thick is not required. It will be sufficient if the laterite is pointed with cement; the lower 2 feet of the walls outside alone being plastered $\frac{1}{2}''$ thick. The floors should be of Mangalore flooring tiles, not cement. Thirdly, the wood work need not be all teak. There are many excellent woods obtainable from Messrs. Brown & Co., Calicut, sufficiently good for the purpose both of roof and doors and windows at much less cost than teak. A circular on this subject is just issuing. The ceiling plaster should be $\frac{1}{2}''$, not $\frac{3}{4}''$ thick. Some of the rates are also already high. It seems impossible that concrete of laterite in surki can cost Rs. 26 per 100 cubic feet, especially when laterite in surki in basement and superstructure only cost Rs. 22-8-0. Explanation is required here, and data should be submitted for all items in excess of local rates.

7. *Oil store.*—The same remarks apply with regard to cement plastering and wood work.

(Signed) W. B. DEWINTON,
Chief Engineer.

24th June 1898.

ORDER—No. 1670 W., dated 4th July 1898.

The estimate, amounting to Rs. 68,600, for the construction of a lighthouse with subsidiary buildings, at Mulki in the South Canara district, is sanctioned.

2. A sum of Rs. 68,000 has been provided for the work in the current year's Excluded Local Fund budget.

3. Attention is drawn to the Chief Engineer's note recorded above, and the estimates for lighthouse keepers' quarters and oil store should be revised in accordance therewith.

4. It is observed that the lightkeepers' quarters are far away from the lighthouse. The Superintendent of Works will report whether this defect can be remedied.

5. The sanction accorded in paragraph 1 has been registered as Excluded Local, No. 10 W. of 1898-99, and classified as Miscellaneous Public Improvements—Original Works.

(True Extract.)

Under Secretary to Government.

To the Superintendent of Works, Lighthouse division, with enclosures. 30
" Examiner, Public Works Accounts.
" Marine Department.

Exd. T. K. Narayana Aiyangar.

The Hon. Sir Henry Bliss KCIE

To H E the Governor

P.W. DEPARTMENT.

urgent

Papers to be read in Proceedings :—

Again G.O., dated 189 , No.
Again G.O., dated 189 , No.
Current No. 451 of 1898, dated 15th January 1898, from The Supdt. of Works. Lt. H. Dn.
" " " 189 , " ,
" " " 189 , " ,

Note by the Chief Engineer P.W.D. dy 24-6-98

It seems a pity that the men's quarters are so far from the lighthouse - can't this be remedied?

Why call this the Kaph lighthouse? None knows where the Kaph rocks are whereas Mulki, the name used on p. 13 of G.O. $\frac{245\ \text{Mar}}{8.\ 4.\ 96}$ is well known - I should call it the Mulki light—

The order is passed subject to amendment as noted above

HS
28/6/98

T/B. P.

A.S.H
29.6.98

^ & The estimates for L. H. keepers quarters & oil store should be revised in accordance therewith

4. It is observed that the Light keepers' quarters are far away from the Light House The Supdt of Works will report whether this defect can be remedied

30 June 98

1-7

To

The S. W. Lt. H. Dn with enclos 30
" Exar. P.W. Accts
" Marine Dept

Plans by separate parcel

[P. W. 4. 500—24-3-98.]

H. M. 24.6.98 R 28.6.98. H.E. 28.6.98 R 29/6/98

ORDER.

No. 1670 W. dy 4.7.98

The estimate, amounting to Rs 68.600, for the construction of a lighthouse with subsidiary buildings at Moulki ~~Kaph rock~~, in the South Canara District, ~~on the West Coast~~, is sanctioned.

2. A sum of Rs 68.000 has been provided for the work in the current years Excluded Local Fund budget.

3. Attention is drawn to the Chief Engineer's note recorded above ^

*5. The sanction accorded in para 1 has been registered as Excluded Local No 10 W of 1898-99 and classified as Miscellaneous Public Improvements, Original Works.

ACK
17-6-98

Cn

22.6.98
W

P.K.S

Note. The estimate is dealt with in the accompanying technical note

ACK
17-6-98.

Cn

P.K.S

seen by GW

22.6.98
W

Note by C.E.

1. These estimates were received in this office in January 1898, & as the details required careful scrutiny, they have been kept back in favour of other work, instead of being disposed of as quickly as possible. This will not be allowed to occur again.

✓ 2. The estimates (would, under existing circumstances, have been returned for revision in some minor points, but owing to the above mentioned delay, they are recommended for sanction as they stand, & attention is called below to the points in question, which can be rectified during construction.

Lighthouse Tower ✓ 3. The (usual) pressure allowed in calculating the stability of the towers is ample, and it is considered that towers [illegible] in cement can withstand with safety the maximum intensity of pressure to which they would ever be exposed during a cyclone or heavy storm, which is calculated to be 5.6 tons on the square foot. The tower is therefore considered stable. The bricks will be plastered with P. cement outside and in, and will therefore be in no danger of deterioration from exposure to sea air. The tower is likewise founded in rock, so damp cannot rise from the foundations.

4. The girders provided in the estimate are in some cases rather heavier than calculations shows to be necessary, but as stiffness in the floors of a light-house is essential, they are allowed to stand. The increased cost involved is small.

5. The specification has been amended

in some particulars, ~~and the~~ which were should be attended to during erection.

Data for the rate for brickwork in cement should be settled.

Light keepers Quarters

6. The estimate for each set of quarters amounts to Rs 6200, and is nearly Rs 4 per sq. foot of plinth area. This is very high and must be reduced in construction. In the first place, the soil being stated to be pure sand, 6' of foundations is unnecessary. It should be reduced to 4 feet. Secondly, cement plastering inside and out ¾ inch thick is not required. It will be sufficient if the exterior is pointed with cement, the lower 2 feet outside if necessary alone being plastered ½ inch thick. The floors should be of Marseilles flooring tiles, not cement. Thirdly, the wood work need not be all teak. There are many excellent ~~woods~~ woods obtainable from Messrs Brown & Co, Calicut sufficiently good for the purpose

both of roof & doors & windows at much less cost than teak. A circular on this subject is being issued –

The ceiling planks should be 1/2" not 3/4" thick ^

7. Oil store. The same remarks apply with regard to cement plastering & woodwork –

24/6.8

^ Some of the rates are abnormally high. It seems impossible that concrete of laterite in surkhi can cost Rs 26/ per 100 cft. seeing when laterite in surkhi in basement & superstructure only cost Rs 22/8. Explanation is required here. & data should be submitted for all items in excess of sched. rates.

INDIAN TELEGRAPHS. Monthly Number.

To (Office) Telephonic
From (Office) message

Words	Day	Hour.	Minute.	Official Instructions
	30	12	20	

To (Person) The Head Clerk, P. W. Secretariat
From (Person) The Manager, Private Secretary's Office

The plan you referred to will be sent to you in the course of today.

12-20
30-6-8.

16784

64 Word Form.

F. C 2.

Recd. from LN At Hrs. Mts. by

Sent to LN At Hrs. Mts. by

Telegraph Master.

G G P—No. 383 T—13 6 07—6000000.

W

C W. 451

68,600?

Estimate of Rs 68,600 for Lighthouse and subsidiary buildings at Kaple rock.

Note by the Chief Engr.

This estimate has been carefully prepared by Mr Architect, & is recommended for the sanction of Govt. with the following remarks:—

(1) The wind pressure allowed, viz 81 lbs per sq. ft of vertical surface, & $\frac{2}{3}$rds of this, viz 54 lbs. per sq. ft of curved surface, is ample, and it is considered that the max^m. intensity of pressure at the external edge of the lee side of the tower, deduced from this wind pressure, will, during the prevalence of storms, be on the safe side.

(2) The lighthouse tower is proposed to be built of Basel mission bricks in cement, and to be plastered inside outside with Portland cem As the tower is to be founded on granite rock, 38 ft ab the sea level, there is no risk at all of the bricks deteriorating from exposu to sea air or from absorptio of salt from foundations — ~~thing~~ being not of common oc occurrence where buildings are founded on soil contain ing salt in its compositio So far as regards the dura bility of the tower, there is thus no objection to build it of brick.

3. It remains to be consid

whether the bricks will stand, during the prevalence of a cyclone, the maxm crushing force to which they will be exposed, at the base of the tower, at the extreme edge removed from the quarter where the wind is blowing. As worked out by Mr. Ashpitel, & as checked in this office, the maxm intensity of pressure to which the bricks will ever be exposed is 8.6 tons per sq. ft. This, though too great for ordinary bricks laid in cement, is not too great for Basel Mission bricks, which are of very superior quality. It is thought therefore that there is no occasion to spread out the ~~bearing~~ bearing surface of the tower more than Mr. Ashpitel proposes, or to build it, for some 10 ft in height from the base, entirely of stone, or of stone backed by brickwork.

4. The girders indicated in the estimate are in some cases somewhat heavier than calculation shows to be absolutely necessary, but as stiffness in the floors of a lighthouse is essential, & as the economy effected by using lighter girders is small, the girders proposed are recommended for adoption. A.C.K.

W/

Estimate for Kapu Lighthouse.

I have checked this estimate & the calculations very thoroughly, and submit it for sanction with a note by W.

2. There are some minor alterations which might perhaps be effected, but they are not essential and are matters for individual opinion. As the estimate was submitted by Mr. Ashpitel as long ago as 14 Jan/98, but was only sent up to me on 13th instant,* it is desirable it should be sanctioned as soon as possible, the grants for the lighthouse being in excess of sanctioned estimates.

3. I referred to C. A. for opinion regarding the crushing force to which ~~the~~ bricks can be exposed, & he agrees with me that 5 tons per sq. ft is a safe

* I have pointed out to T/ that estimates must not be again kept in office for so long as 5 months, and have shewed him what formulae to apply in future to check calculations for heavy foundations, such as lighthouse foundations.

Repd

21-6-98

load for ordinary bricks in lime, and 7.5 tons per sq. ft for ordinary bricks in cement, while these machine bricks will bear much more. They are, I believe, of very superior quality, & Professor Haker has ascertained from actual experiments that these bricks will bear as much as 20 tons on the square foot.

AFK
16. 6. 98.

Public Works Department.

Current No. 451
Letter No. 61 W
Dated 15th January 1898.
From the Presidency Post Office

Note by Technical Section.

Name of work Light house and subsidiary buildings at Kapu rock on the West Coast.

Amount of Estimate Rs 68,600.

With reference to G.O. W. 245 Marine dated 8th April 1896 communicating with G.O. W. 1397 W. dated 2nd May 96 the Supdt. of Works, Light house Dept. submits plans & estimate amounting to Rs 68,600 for constructing a new Light house at Kapu rock, otherwise called Mulki rock on the West Coast, South Canara Dist.

The amount of the estimate is made up as under:-

(a) Constructing light house -	Rs 47,000
(b) Do. three light keepers Qrs. at Rs 6,250 each -	18,750
(c) Three cook houses at Rs 620 -	1,860
(d) Oil godown & general stores	990
Total estimate	Rs 68,600

Item (a) Light house. The site selected for this light house is situated

P. W. 60
250—30-9-97.

to be on the main land east of the Mulki or Punnung rocks on a rock close to the ruined Kapth battery. This rock, it is reported rises ~~to about~~ 38 feet above highest tide level and is for the greater part of the year connected with the mainland & during the south west monsoon the sandspit is generally breached by the small stream which enters the sea at this point & for which a lump sum of Rs 1000 is provided for a ropeway or foot bridge to reach the rock from the shore.

The soil is reported to be rock, granite

The light house will be founded on the rock after levelling it to the full width of the foundations, viz. 4½ feet wide & to a depth of 3 inches & the surface dressed smooth to receive the brickwork.

The light house column will

The sections proposed for the steel girders & joists for the Service & lantern floors appear to be more than sufficient to carry the load proposed to be placed on them, as per calculations below but as it is not clear what the weight of the lantern apparatus would be, the girders may be passed of the sections entered in the estimate.

Weight roughly calculated on the girders of ~~Service~~ room floor, where they are placed 4 feet apart from centre to centre

Chequered iron floor 3/8" thick

12 x 4 = 48 x 15.16 lbs = 727.68

Steel joists 7 x 4 (5"x3") x 11 lbs = 308.00

Live load 12 x 4 x 120 lbs — = 3360.00

Total lbs 4395.68

or say Tons 2.

By formula W = WL

W = 2 x 12 = 24 Tons which would suit a Dorman & Long steel section 6" x 3", weighing 13 lbs per foot run, vide page 27 plate 79 of Handbook against 8" x 4" weighing 19 lbs.

In the lantern floor the girders are placed much nearer viz. 2'6" centres & appear to be sufficiently stiff to carry the apparatus.

The economy effected by using lighter girders is small, and it is essential in a lighthouse that the floors shall be thoroughly stiff.

Item (6) provides for constructing 3 sets of quarters for Light Keepers and the accommodation for each man will consist of the following:-

Dining room ——	14'0" x 12'0"
Bed room ——	14'0" x 12'0"
Bed room ——	14'0" x 12'0"
Bath room ——	11'0" x 8'0"
Bath room ——	8'0" x 8'0"
Store room ——	8'0" x 8'0

with front & rear verandahs 8 ft. wide.

The nature of soil at site of proposed quarters is reported to be sand.

The foundations are proposed to be laid 6 feet deep, the lower 2 ft will be of concrete in surkhi mortar & the upper 4 feet built of laterite in surkhi mortar. The basement will be raised 2½ feet & the superstructure walls of main rooms 15 feet with verandah rooms & verandahs 11½ feet and built with laterite in surkhi mortar & with arch work of brick in chunam over voids. The surface of walls will be plastered both interior & exterior with 3/4" cement plaster, the floor will be of surkhi concrete 4" thick & the surface plastered with cement & thread lined. Roof will

will be of Mangalore tiles laid over teak reepers & ceiled with 7/8" cedar planks. Doors and windows will be of teakwood as described in the estimate & painted 3 coats

The scantlings for roof timbers are correct.

Item (c) provides for constructing three cook houses, one for each set of quarters. The outer dimensions of the cook house will be 13'×11' & the interior of the kitchen 8'×9'9 with flue & chulas, as shown on plan sheet B.

The foundations will be laid 4 feet deep, the lower 2 feet will be of laterite concrete in lime mortar & the upper 2 feet together with the basement raised one foot and the superstructure walls 8 ft. & built of laterite in lime mortar.

The materials of construction are the same as that of the main building except that the roof will not be ceiled.

The scantlings of roof timbers are correct.

Item (d) provides for constructing a general store. The building will consist of 2 rooms each 10'×8' & built near the light house column the soil of which is rock.

The godown will be built o rock after levelling it to the ful width of the foundations, viz. 9 wide and to a depth of 3 inch & the surface dressed smooth receive the masonry. The basement will be raised 6 inches the superstructure walls 9 feet & built of laterite stone in lime mortar with flat archwork of bric in chunam over voids. The wall will be plastered with 3/4" cement throughout both interior & exteri The floor will be of 4" concrete & plastered over with 3/4" Portland cement & the roof arched with a rise of 5 inches & made up of 6" concrete of brick jelly in lime mortar resting over cement til 1½" thick and supported by T iron joists of a section 3½" × 3½" × 3/8" Doors & windows will be batten of teakwood & painted with 3 coats of paint.

The plinth area & cost of the several buildings is as ~~[illegible]~~ under:-

	area		
Light house —	314 sq ft.	Rs	66.7-3
Light Keepers Qrs.	1575 ...	"	3-15.6
Cook house —	143 ...	"	4.5.6
oil godown —	284 ...	"	3.7.9

The rates entered in the estimate, as far as can be en examined with the Divisional Schedule are fair.

The pressure on the foundations have been worked out to 8.63 Tons per sq ft. as maximum & 0.31 Tons as minimum.

The plans & estimates have been countersigned by the Presidency Port Officer & should be approved in the Marine Dept. before sanction is accorded.

ACK
15-6-98.

11.6.98

Submit for sanction with note attached

22-6-98

Public Works (1898) Department.

CURRENT No. 451

From The Presidency Port Officer

No. 61 W.

Dated 15th January 1898

Received } 18 – do –

Registered }

Enclosures 3 (plans 3)

Spare copies

SUBJECT.

Lighthouse and other necessary buildings at Kaph Rock on the West Coast.

Forwarding, with approval, letter from the Supdt. of Works, Light-house division submitting plans and estimates for a —.

5

J/ For scrutiny

15-1-98

cm/

o LS. 183

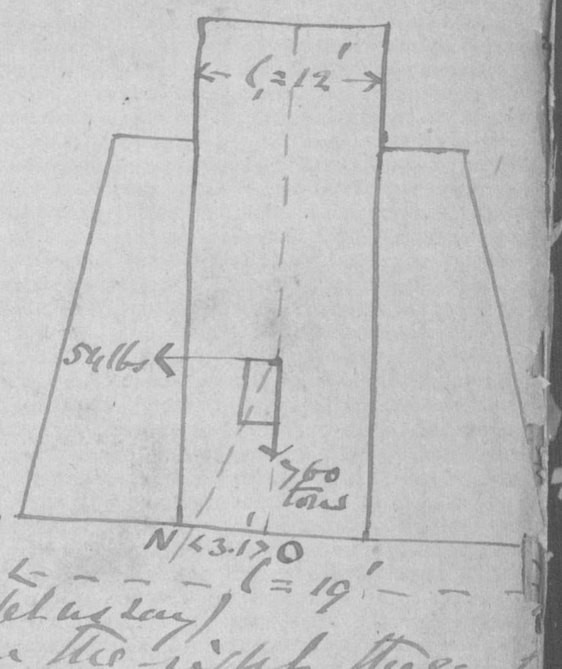
BACK PAPERS.

G.O.	No.	Department.	Date.
	245-462m		8-4-96

FURTHER PAPERS.

G.O.	No.	Department.	Date.

Check on Mr. Architect's calculations for max.m & min.m intensity of pressure at base of lighthouse



With no external force acting on the lighthouse, the load on C D is uniform and is equal to the total weight of the tower (W) divided by area of bearing surface of tower base (S), i.e. $= \frac{W}{S} = \frac{760}{170}$ = 4.47 tons per sq. ft.

But when the wind is blowing (let us say) from the right, the centre of pressure is moved to the lee side to a distance 3.1 ft (d) from centre of tower, the pressure becoming a max.m at C and decreasing uniformly towards D.

The column can thus be considered as a Cantilever, and by taking moments about N and considering the principle of the resistance of materials

$$\text{Pressure max.}^{m} \text{ \& min.}^{m} = \frac{W}{S} \pm \frac{Ml}{2I} \quad \dots \quad (1)$$

where M = moment of resistance due to wind

I = moment of inertia

But I for a circular hollow column $= \frac{\pi}{64}(l^4 - l_1^4)$

And M = W d, so that (1) becomes by substituting these values

$$\text{Pressure max.}^{m} \text{ \& min.}^{m} = \frac{W}{S}\left(1 \pm \frac{8dl}{l^2 + l_1^2}\right)$$

or in the case of the lighthouse above figured

$$\text{Max.}^{m} \text{ pressure at C} = \frac{760}{170}\left(1 + \frac{8 \times 3.1 \times 19}{19^2 + 12^2}\right)$$

$$= 4.47\left(1 + \frac{471}{361 + 144}\right)$$

$$= 8.6 \text{ tons per sq. ft}$$

And min^m pressure $= 4.47\left(1 - \frac{8 \times 3.1 \times 19}{361 + 144}\right)$

$= 0.3129$ tons

These results agree with Mr Ashpitel's, and the intensities of pressure, as calculated by him, are thus correct.

AcK
16. 6. 98.

22.6.98

Kaph Rock Lighthouse.

Calculation Sheet.

Mr Ashpitel's figure is on the safe side, & the 4.47 tons pressure per sq. ft is obtained by neglecting the bearing area of the staircase, & considering the tower merely as a circular hollow column.

Weight of tower = 760 tons (56.54 × 3.00 × 89.58 × 112 = 1701789 lbs = 760 tons)

Circum of tower $= 2\pi r$
$= 2\pi \times 9$

Uniformly distributed load $= \frac{760}{170} = 4.47$ tons per sq ft

283 2.69

Bearing surface of tower base
= 56.54 × 3
= 170 sq. ft (taking tower as a circular ring of 3' diameter)

Wind pressure = 81 lbs per sq foot of vert surface
= 54 lbs per sq foot of curved surface.

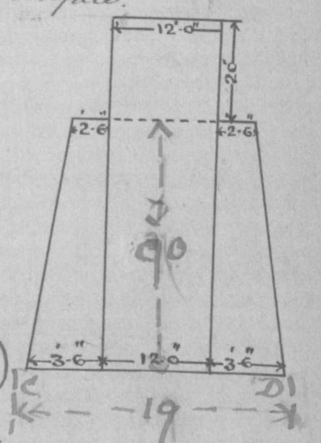
Overturning moment = 2355 foot tons

2336

Centre of Pressure
$\frac{1}{3}$ CD $= \frac{1}{3} \times 19$
= 6.33 ft from C

Center of pressure on base = 3.1 feet from centre of tower

from centre of tower
Centre of pressure
$\frac{19}{2} - 6.33$
= 3.17 ft.



Pressure max & min $= 4.47\left(1 \pm \frac{8 \times 3.1 \times 19}{361 + 144}\right)$

= 8.63 tons per sq ft max

= 0.31 tons per sq ft mini

[illegible]

See detailed calculation on separate sheet.

AcK
16. 6. 98

22.6.98

W. Ashpitel
Superintendent of works,
Light-House Division.

Madras.
14th Jany 98

$\times 90 \times 18 \times 45 + 54 \times 20 \times 12 \times 100$
= 5232600 lbs = 2336 foot Tons

Centre of pressure at base $= \frac{2336}{760}$
= 3.1 ft. from centre of bottom section of tower

P.W.E.3
451/98

No. 833 Dated 14th January 1898.

From

F. W. ASHPITEL, Esq.,

~~Executive Engineer~~ Superintendent of works

Light-house Division,

Madras.

To

The Chief Engineer,

Public works Department.

Thro' the Presidency Port officer, Madras.

Sir,

I have the honour to forward herewith plans and estimates as noted below for a lighthouse & other necessary buildings at Kaph Rock on the West Coast (entered as mulki rock in table I printed with G. O. No 245 marine dated 8th April 1896.)

(2) This is the only large lighthouse proposed to be constructed north of Mangalore and is designed for a range of 18 miles in accordance with the proposals approved in G. O. No 245 marine 8th April 1896. The other lights all of which it is proposed to deal with during 1898-9 are Kundapur, Hangarkotta (Barkur) Malpi and Mangalore.

(3) At Kundapur all that is required is to construct quarters for Keepers and the estimate is only delayed because there is no one available to make the necessary

survey

survey. This will not take long.

(4) At Hungarikotta the existing light is a 6th order port light placed as a temporary measure on the boundary pillar of the port and the range required does not exceed 6 miles. It is proposed to move the Cabin and mast now at Malpi to this port.

(5) As stated in Appendix B page 30 of G. O. No 245 Marine dated 8th April 1896 a better sight for Malpi light is on one of the islands and Captain Street has suggested that the change should be made. The light now at Hungarikotta will be exhibited from the roof of a small building.

(6) At Mangalore it is proposed to exhibit a light from a small building in the Marine yard and to use the existing apparatus with a burner which will run the whole night without attention.

(7) A tracing from the Chart showing the proposed lights accompanies this letter. They are all with the exception of Kaph Rock very petty lights though extremely useful to navigation as anchoring lights.

The

(8) The estimates for the lights mentioned in paras 3, 4, 5, 6 of this report will be submitted when a subordinate is posted to No. 3 Sub Division of this division.

Since posted

(9) Early sanction is requested to enable a start to be made before the South West monsoon.

I have the honor to be,
Sir,
Your most obedient Servant,

Superintendent of Works,
Light House Division.

Enclosures

Light House Estimate	47,000
5 Plans	
1 Detail of Tower stair case	
1 Estimate for Lighthouse	
1 ...do...... Iron Ladder stair case	
1 ....do........ Lantern floor.	
1 ..... do ..... Service room floor.	
4 Specifications	
1 Tracing of Chart.	
1 Calculation sheet.	
Light Keepers quarters Estimate	18,750
and Kitchen -- do	1,860
1 Plan	
2 Estimates	
2 Specifications	
Oil and general store Estimate	990.
1 Plan	
1 Estimate	
1 Specification	
1 Survey of Kaph Rock.	
Total .	68,600.

ns sent direct to the Chief Engineer's Office
s they have been countersigned by the
Presidency Port Officer.-

No. 61 P.W.

Recd 3 [illegible]

Forwarded, observing that I concur in Mr. Ashpitel's proposals as specified in this letter.

H Abbot
Commdr. R.I.M.
Presidency Port Officer

Madras
15 January 1898