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MADRAS RECORD OFFICE

Government of Madras

Public Works

DEPARTMENT

G.O. No. 1273B. 1273C. Press
B.P. No. Mis. _____

Dated

11 - 5 - 1954

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
11th May 1874.*

No. 271c. Read the following letter from Lieutenant-Colonel W. T. F. FAREWELL, Inspecting Engineer for Ports and Communications, to Colonel G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Chepauk, 9th April 1874, No. 16-2 :—

I HAVE the honour to submit two pencil sketches of the designs proposed for the lighthouses to be constructed at Cape Comorin and Muttum under the supervision of the District Engineer of Tinnevely, together with his letter and my memorandum on the subject, and with reference to the increased intensity of light, viz, from fourth to first order, sanctioned for the Comorin light, I request I may be informed to what distance Government desire that this light should be visible from the deck of a vessel at sea. I would note that to make the Comorin light visible to the same distance as the Muttum would necessitate its being raised 50 feet above what is now shown, or a total height of 134½ feet, which would admit of a much more elegant and symmetrical column being designed for the reception of the lantern.

From J. W. RUNDALL, Esq., District Engineer, Tinnevely, to Lieutenant-Colonel W. T. F. FAREWELL, Inspecting Engineer for Ports and Communications, dated Camp at Ettapuram, 26th March 1874, No. 208.

I HAVE the honour to acknowledge the receipt of your letters, dated 26th February and 2nd March, respectively, regarding the alterations required in the designs of the Travancore Lighthouses.

2. The requirement of Messrs. Chances & Co., that the top diameter of the light towers shall be 21 feet, coupled with the fact that in their lantern the focal height is 11 feet 7½ inches above the masonry, giving an increased top width with less height, necessitates a complete alteration in the style of the works.

3. In the case of Comorin where, under G. O., No. 2,482, of the 22nd October 1872, the height of the light is to be 150 feet above the sea level, as the height of the site fixed by Mr. Dalrymple is 54 feet, the focal height above masonry 11½ feet, the height of column must be 84½ or only four times the top diameter. This proportion renders a column out of the question, and even a tower too thick for its height.

4. I should mention here that, trusting to the correctness of Lieutenant Shepherd's survey with contours marked in, I previously allowed for the height of site at Comorin being 40 feet; but recent levels have proved that the contours shown on Lieutenant Shepherd's plan were very incorrectly marked in, and I had on account of this error prepared a revised design for Comorin, when your first letter directing me to stop work reached me.

5. In the case of the Muttum or Cudipatam light, the elevation of site being 75 feet focal height above masonry 11½, and total height fixed by Government 200 feet, we have 118½ feet as the required height of the column. Here also the height of top 21 feet prevents a properly proportioned column being erected.

6. The extra thickness required in each column precludes the use of cut-stone throughout, as provided in the sanctioned designs, except at an expense which the Government would not, I believe, be willing to sanction. Brick alone could not be used exposed to the force of the south-west monsoon, which both at Comorin and Muttum blows with great violence.

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7. In order that these and other questions, to be referred to hereafter, may receive due consideration, I think it advisable, before making out fair drawings and estimates for these works, to send you the designs I would propose for adoption drawn out in pencil.

8. Please instruct me as to any alterations which you or the Chief Engineer may desire to have made.

9. With regard to the designs now forwarded, I would beg to remark, first, as regards Comorin, I have allowed for the oil-godowns and verandah round the base of the tower to relieve the bare hideousness of a plain tower without base of some kind. The verandahs I would propose to construct of coursed rubble, the vousoirs and quoins having their edges dressed. The tower might be constructed of coursed ashlar, as there is plenty of partly dressed stone available from the old forts, but I do not think the work could be done of the quality required under Rupees 12½ per cubic yard, as the stone, though good, would require further dressing and fitting. I have made the thickness of the walls suitable for this kind of work.

10. With regard to the column to be erected at Muttum, the stone available at the site is not of as good quality as is obtainable at Comorin and has to be wedged out. Under these circumstances, I think it would be better to use brick faced with stone for the column itself, with carefully executed coursed rubble for the foundations.

11. I have designed a column as similar to a Tuscan column as the dimensions to which I am bound will admit of. The oil-godown will thus have to be a separate structure. I will design a detached plain terraced building of coursed rubble.

12. The nearest point at which bricks of reliable quality are to be obtained is nine miles from Muttum, of which distance nearly three miles are heavy sand. It will therefore, I believe, be necessary to allow Rupees 10 per cubic yard for the brick work and Rupees 80 for facing stone. Rupees 40 for mouldings. I am having further inquiries as to rates made by Lieutenant Boddie, R.E., who is on the spot, and shall be able to fix the rates with more certainty by the time the designs are returned to me.

13. There is however one point regarding the light to be shown at Comorin to which I would beg to invite attention. All the Marine authorities at home being agreed that a fourth class light would be sufficient at Comorin, the Government at first (No. 2,482, dated 22nd October 1872,) ordered a fourth class light to be provided, but subsequently, agreeing with Mr. Dalrymple's arguments, they directed (G. O., No. 72, of 10th January 1873,) that the light at Comorin should be a first class revolving. In this order nothing was said as to extra elevation being given to the light column, and my design for one 150 feet high was passed. As, however, a first class light costing upwards of £3,000, and visible with sufficient elevation 30 miles off is to be erected, it would, I submit, be advisable to increase the elevation of the Comorin light to 180 or 185 feet to ensure its visibility from the deck of a ship coming from the west or north-west while that ship was 20 miles off, or 4 miles from the Crocodile. This alone would ensure effective cross bearings. I would suggest that the orders of Government be obtained on this point.

14. I would also beg to remark regarding the design for a lantern forwarded by Messrs. Chance, that 19 feet 2 inches being the outside diameter of the railings they propose to use, 21 feet is an unnecessary width for the masonry. I note that in their specification they propose the use of cast-iron balustrade with wrought-iron rails. In this case 21 feet might be wanted, but if wrought-iron standards with an inside claw be used, 20 feet diameter of masonry might in each case be sufficient. This would be a decided advantage in many ways. I would therefore suggest that Messrs. Chance be instructed to provide balustrades with wrought-iron standards, the claw facing inwards. These standards would of course be fixed with lead in the stones of the top course.

15. Again, the lantern design furnished to me does not show what is to carry the lamp houses a cast-iron beam be provided to carry the lamp and lens.

16. The lantern must likewise have a floor or deck with trap door; no details of this are however given in the drawing. The floor should, I conclude, be on the same level as the top of the masonry. As the stone stairs could not run up to the trap door, access to this latter must be

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provided from a stone platform by a ladder either of iron or wood. These details should all be arranged by Messrs. Chance & Co., but the general design need not await the settlement of these points.

17. With regard to the red light to be exhibited at the base of the Muttum column, the red light is intended to be thrown over the Crocodile rock, and is not required to be visible at a greater distance than six or seven miles. For this the height ($75 + 22 =$) 97 feet allowed in the design now forwarded is ample. I have supposed that a lantern 3 feet to 3½ feet high by 3 feet deep (constructed with a single parabolic reflector) would be all that is required and provided a suitable recess in the masonry. It might however be left to Messrs. Chance to decide whether this or fixing a narrow piece of red glass in the main lantern would be the better arrangement.

Memorandum on District Engineer's letter No. 208, dated 26th March 1874.

THE Comorin Lighthouse, according to G. O., No. 2,482, dated 22nd October 1872, is to be 150 feet above sea level; thus we have site 54' + focal height of lantern 11' 6" = 65½ feet. Column from ground line to cap must therefore be 84½ feet. Pencil sketch gives only 84 feet. The elevation, though plain, is substantial, in addition to the relief given by the verandah at the base the capital altered as shown in pencil would tend to relieve the heavy appearance of the column. The distance this light can be seen from the deck of a vessel is 17·201 English miles; should Government sanction the proposition to raise the light to the same elevation as that at Muttum, viz., 200 feet above sea level, then a more symmetrical column can be designed with a height of 134½ feet above the ground line. The elevation of the Alguada Reef Lighthouse is handsome, and built in plain brick work, painted in broad bands, white and red, would make a most excellent land mark.

2. The Muttum or Crocodile Lighthouse, Government have fixed, should be exhibited at a total of height of 200 feet; thus we have site 75 feet + 11½ feet focal height of lantern = 86½ feet, and the column must therefore be 113½ feet from the ground to the cap; the elevation of the design appears to show the column to be in good proportion, with 200 feet in height above level of the sea; the light will be visible at 18·708 English miles. The recessed red light ($22' + 75 =$) 97 feet above sea will be visible nearly 13 miles. Nautical authorities state separate lights are preferable to streaked lights. To use railings of the kind noticed in paragraph 14 the saving would be small, and they would be likely to interfere with the general effect of the design.

3. Paragraphs 15 and 16.—Lamps are carried on iron standards provided with the whole apparatus; the standard is fitted into the crown of the closing arch of the column, in which an opening is left for access to the lantern by a light iron stair-case; the landing floor will therefore be below the covering arch 10 feet.

4. All windows in the column must be glazed with plate-glass, gun metal frames and astragals, and at least three or four doors placed in the column to regulate the draft into the lantern.

5. A copy of Lieutenant-Colonel A. Fraser's illustrations, giving different descriptions of lanterns, etc., and his report on the Alguada Reef, Lights, etc., etc., are herewith forwarded for information and guidance, and to be returned to this Office when no longer required.

(Signed) W. T. F. FAREWELL, Lieut.-Colonel,
Inspecting Engineer for Ports and Communications.

No. 371D.

ORDER THEREON, 11th May 1874, No. 1,273B.

CIVIL WORKS, No. 30A.

THE increased dimensions necessitated for the lighthouses at Cape Comorin and Point Cadiapalam by the size of the lanterns for first class lights, and by the height to which they are proposed to be raised, being such as will doubtless greatly increase the amounts at which they

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7. In order that these and other questions, to be referred to hereafter, may receive due consideration, I think it advisable, before making out fair drawings and estimates for these works, to send you the designs I would propose for adoption drawn out in pencil.

8. Please instruct me as to any alterations which you or the Chief Engineer may desire to have made.

9. With regard to the designs now forwarded, I would beg to remark, first, as regards Comorin, I have allowed for the oil-godowns and verandah round the base of the tower to relieve the bare hideousness of a plain tower without base of some kind. The verandahs I would propose to construct of coursed rubble, the voussairs and quoins having their edges dressed. The tower might be constructed of coursed ashlar, as there is plenty of partly dressed stone available from the old forts, but I do not think the work could be done of the quality required under Rupees 12½ per cubic yard, as the stone, though good, would require further dressing and fitting. I have made the thickness of the walls suitable for this kind of work.

10. With regard to the column to be erected at Muttum, the stone available at the site is not of as good quality as is obtainable at Comorin and has to be wedged out. Under these circumstances, I think it would be better to use brick faced with stone for the column itself, with carefully executed coursed rubble for the foundations.

11. I have designed a column as similar to a Tuscan column as the dimensions to which I am bound will admit of. The oil-godown will thus have to be a separate structure. I will design a detached plain terraced building of coursed rubble.

12. The nearest point at which bricks of reliable quality are to be obtained is nine miles from Muttum, of which distance nearly three miles are heavy sand. It will therefore, I believe, be necessary to allow Rupees 10 per cubic yard for the brick work and Rupees 30 for facing stone, Rupees 40 for mouldings. I am having further inquiries as to rates made by Lieutenant Boddy, R.E., who is on the spot, and shall be able to fix the rates with more certainty by the time the designs are returned to me.

13. There is however one point regarding the light to be shown at Comorin to which I would beg to invite attention. All the Marine authorities at home being agreed that a fourth class light would be sufficient at Comorin, the Government at first (No. 2,182, dated 22nd October 1872,) ordered a fourth class light to be provided, but subsequently, agreeing with Mr. Dalrymple's arguments, they directed (G. O., No. 72, of 10th January 1873,) that the light at Comorin should be a first class revolving. In this order nothing was said as to extra elevation being given to the light column, and my design for one 150 feet high was passed. As, however, a first class light would, I submit, be advisable to increase the elevation of the Comorin light to 150 or 185 feet to ensure its visibility from the deck of a ship coming from the west or north-west while that ship was 20 miles off, or 4 miles from the Crocodile. This alone would ensure effective cross bearings. I would suggest that the orders of Government be obtained on this point.

14. I would also beg to remark regarding the design for a lantern forwarded by Messrs. Chance, that 19 feet 2 inches being the outside diameter of the railings they propose to use, 21 feet is an unnecessary width for the masonry. I note that in their specification they propose the use of cast-iron balustrade with wrought-iron rails. In this case 21 feet might be wanted, but if wrought-iron standards with an inside claw be used, 20 feet diameter of masonry might in each case be sufficient. This would be a decided advantage in many ways. I would therefore suggest that Messrs. Chance be instructed to provide balustrades with wrought-iron standards, the claw facing inwards. These standards would of course be fixed with lead in the stones of the top course.

15. Again, the lantern design furnished to me does not show what is to carry the lamp and lens, the drawing being that of the lantern only. I would recommend that for both light-houses a cast-iron beam be provided to carry the lamp and lens.

16. The lantern must likewise have a floor or deck with trap door; no details of this are however given in the drawing. The floor should, I conclude, be on the same level as the top of the masonry. As the stone stairs could not run up to the trap door, access to this latter must be

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provided from a stone platform by a ladder either of iron or wood. These details should all be arranged by Messrs. Chance & Co., but the general design need not await the settlement of these points.

17. With regard to the red light to be exhibited at the base of the Muttum column, the red light is intended to be thrown over the Crocodile rock, and is not required to be visible at a greater distance than six or seven miles. For this the height ($75 + 22 =$) 97 feet allowed in the design now forwarded is ample. I have supposed that a lantern 3 feet to 3½ feet high by 3 feet deep (constructed with a single parabolic reflector) would be all that is required and provided a suitable recess in the masonry. It might however be left to Messrs. Chance to decide whether this or fixing a narrow piece of red glass in the main lantern would be the better arrangement.

Memorandum on District Engineer's letter No. 208, dated 26th March 1874.

The Comorin Lighthouse, according to G. O., No. 2,482, dated 22nd October 1872, is to be 150 feet above sea level; thus we have site 54' + focal height of lantern 11' 6" = 65½ feet. Column from ground line to cap must therefore be 84½ feet. Pencil sketch gives only 84 feet. The elevation, though plain, is substantial, in addition to the relief given by the verandah at the base the capital altered as shown in pencil would tend to relieve the heavy appearance of the column. The distance this light can be seen from the deck of a vessel is 17·201 English miles; should Government sanction the proposition to raise the light to the same elevation as that at Muttum, viz., 200 feet above sea level, then a more symmetrical column can be designed with a height of 134½ feet above the ground line. The elevation of the Alguada Reef Lighthouse is handsome, and built in plain brick work, painted in broad bands, white and red, would make a most excellent land mark.

2. The Muttum or Crocodile Lighthouse, Government have fixed, should be exhibited at a total of height of 200 feet; thus we have site 75 feet + 11½ feet focal height of lantern = 86½ feet, and the column must therefore be 113½ feet from the ground to the cap; the elevation of the design appears to show the column to be in good proportion, with 200 feet in height above level of the sea; the light will be visible at 18·708 English miles. The recessed red light ($22' + 75 =$) 97 feet above sea will be visible nearly 13 miles. Nautical authorities state separate lights are preferable to streaked lights. To use railings of the kind noticed in paragraph 14 the saving would be small, and they would be likely to interfere with the general effect of the design.

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(Signed) W. T. F. FAREWELL, Lieut.-Colonel,
Inspecting Engineer for Ports and Communications.

No. 371D.

ORDER THEREON, 11th May 1874, No. 1,273B.

CIVIL WORKS, No. 30A.

THE increased dimensions necessitated for the lighthouses at Cape Comorin and Point Cudiatam by the size of the lanterns for first class lights, and by the height to which they are proposed to be raised, being such as will doubtless greatly increase the amounts at which they

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11th May 1874.

were originally estimated, viz., Rupees 31,200 and Rupees 33,200, and the provision of funds for such works, in foreign territory and for Imperial purposes being quite out of the power of the Government, the District Engineer of Tinnevely will suspend all further operations connected with the same, and the Provincial allotments of the current year will be held at the disposal of Government.

2. The papers now submitted by the Inspecting Engineer for Ports, with all former correspondence on the subject, will be remitted for disposal of the Government of India in connection with the subject of lighthouses in the Red Sea and on Minicoy Island; on which it is understood that Colonel A. Fraser, C.B., will be deputed to report in the course of the current year.

(True Extract.)

(Signed) G. W. WALKER, Colonel, R.E.,
Secretary to Government.

No. 271E.

(Docket No. 1,273C, dated 11th May 1874.)

Copy of the above with previous correspondence forwarded to the Government of India in continuation of letter, No. 1,228, dated 8th May 1874.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

No. 208 District Inqrs. Office, Tinnevely.
Camp Ottiapuram 26th March 1874.
From, The District Engineer
Tinnevely.

To, The Inspecting Engineer
Ports and Communications.

Please despatch to

No. 73 Cd/11 May 74

from Madras - we have not the correspondence or alluded to. The plans in connection with the subject will be sent tomorrow.

R.A.
11/6

the honor to acknowledge the letter, dated 26th February and reply, regarding the alterations required of the Travancore Light

inment of Messrs. Chance & Co. of the Light towers shall be the fact that in their lantern is 11' 7¹/₂" above the masonry; and top width with less height, complete alteration in the style of

3. In the case of Comorin where under G.O. No. 24,82 of the 22nd October 1872, the height of the Light is to be 150 feet above the sea level, as the height of the site fixed by Mr. Dalrymple is 54', the focal height above masonry 11¹/₂', the height of column must be 84¹/₂', or only 4 times the top

top diameter. This proportion renders a column out of the question and even a tower too thick for its height.

4. I should mention here that trusting to the correctness of Lieut's Shepherd's Survey with contours marked in, I previously allowed for the height of site at Komorin being 140', but recent levels have proved that the contours shown on Lieut's Shepherd's plan were very incorrectly marked in, and I had on account of this error prepared a revised design for Komorin, when your first letter directing me to stop work reached me.

5. In the case of the Muttam or Kudeapattanam Light, the elevation of site being 75', focal height above masonry $11\frac{1}{2}$ ', and total height fixed by Government 200', we have $113\frac{1}{2}$ ' feet as the required height of the column. Since also the height of top 21', prevents a properly proportioned column being erected.

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at home being agreed, that a fourth class Light would be sufficient at Comorin, the Government at first (No. 2182 dated 22nd October 1872) ordered a 4th class Light to be provided, but subsequently agreeing with Mr. Dalrymple's arguments they directed (G.O. No. 72 of 10th January, 1873) that the Light at Comorin should be a first class revolving. In this order nothing was said as to extra elevation being given to the Light column, and my design for one 150' high was passed. As however a first class Light costing upwards of £3,000, and visible with sufficient elevation 30 miles off, is to be erected, it would I submit be advisable to increase the elevation of the Comorin Light to 180 or 185 feet — to ensure its visibility from the deck of a ship coming from the West or North West — while that ship was 20 miles off or 14 miles from the Laccadive. This alone would ensure effective cross bearings. I would suggest that the orders of Government be obtained on this point.

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I have the honor to be
Sir

Yours Most Obedt Servt
Hos. Russell
District Engineer

P.B.D. 9
15

1273B.

Proceedings of the Madras Government

Read the following -

From the Insp. Genl. for
Ports & Commerce

(H.E. No. 16 of 9th April
1874)

The increased dimensions necessitated for the Light houses at Cape Comorin and Point Indrapatam by the size of the Lanterns for 1st Class lights, and by the height to which they are proposed to be raised, being such as will doubtless greatly increase the amounts at which they were originally estimated, viz Rs. 31,200 and Rs. 32,200, and the liability for

Md. 29/10
Lo S
1/5

So Chief Secretary
to Govt. of Madras
of 9th April 1874

Commenced
The Secretariat
of the Government
of Madras
26th March 1874
Recd 26th April 1874

Respectfully
and respectfully
in the subject

Md. 2109/174

for 13th April 1874

Ph. B. 9
15

1273B.

Proceedings of the Madras Government
Read the following -
From the Insp. Insp. for
Ports & Comm. (H.E. No. 16 of 9th April 1874)

The increased de-
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Cape Comorin and Point
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Mr. 29th
L.S.
7/5

to Chief Secretary
to Govt. No. 16
of 9th April 1874

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Memorandum

The following papers forwarded to the Government of India.

G.O. No. 1229 dated 8th May 1874.

" " 1228 " 8th " "

" " 2128 " 26th August 1873.

" " 1175 " 23rd April "

" " 1174 " 23rd " "

" " 1402 " 11th October 1872. 2nd Sept

" " 72 " 10th January 1873.

" " 2482 " 22nd October 1872.

" " 216 " 29th August " Marine Dept

No. 4 dated 16th February "

G.O. No. 18 dated 5th " " Marine Dept

Mis. No. 210 " 25th September 1871.

* Drawing Illustrative of Report on the means of
Illuminating Sea Coast & Harbours

* Reports on the operations at the Alaguade
Reef, Double Island &c. for 1863-64

* Revised design for Muttam Light House
for Cape Comorin "

* These plans were intd. on the 21st Aug 76
vide G.O. No. 6080 of 76.

* Sent by Bunchy 17/6/74

* sent to D. L. Timmelly vide G.O. No. 4525

271C-271E

Memorandum

The following papers forwarded to the Government of India.

G.O. No. 1229 dated 8th May 1874.

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* Revised design for Muttans Right Hand
for Cape Comorin "

* These plans were filed on the 21st May/74
vide G. No. 6080 of 76.

* Sent by Bunchy 17/6/74

* Sent to D. L. Zimmerly vide G. No. 8586

271C 271E

Can be at the Port 11/5/74

2109
Govt. of 1878 Madras.
PUBLIC WORKS.

Most Truly
Respectfully
Yours
Secy. to Govt. of Madras

Dated

Recd.

Encl. 2

G. O. 11 May 1878 No. 12736
12736

Nos 2716-2718

Horses at Cape
& Point Puduchalam
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