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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 3573

Press
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608-610

Dated 24. 11. 1865.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
24th November 1865.

Read the following papers:—

No. 608. From the Superintending Engineer, 7th Division, to the Secretary to Government, Department Public Works, dated Calicut, 6th November 1865, No. 166.

I have the honor to submit some observations, made by Major Farewell and myself, on the effects of the violent storm which visited Ootacamund and the Hill Range about it on the night of the 23rd October. It may be useful to place them on record, with reference to plans and estimates which will have to be prepared for works mentioned in these papers.

MEMORANDUM.

1. I have taken advantage of my presence at Coonoor at the date of the extraordinary fall of rain which so suddenly filled all the nullahs converging at Coonoor, and also the Kartairy nullah, personally to verify the highest water marks on their banks.

2. *Stanes's Bridge*.—This has gone bodily with its right approach, and the whole of the revetments, and filling in of the new glát on that side, together with the abutment of the proposed new bridge. The water was up to the foot of the scarp on the right bank. And from what now shows, it is evident that far too much of the water-way was stopped up by the right approach of the old bridge. Another span of 40 feet (I should say) is indispensable; a pier of granite stone, partly rough, partly cut, in chunam, being substituted for the former abutment, and footings for the same cut out of the solid rock. A large rock, over which the old approach went, to be blasted. Greater height of bridge is not absolutely required; that attained by the flood being evidently due to the restricted water-way, and not natural. Plan and estimate for the new structure, with an accurate section of the site, to be prepared and submitted; the work meanwhile being undertaken with all diligence.

3. *Coonoor Bridge*.—The water-way of this bridge was evidently insufficient to carry off the sudden flood, which accordingly over-topped its right approach by about a yard and a half, rising to a height of one yard (measured) in the room used by the Collector for an Office, when at Coonoor. The revetment at the head of the new ghát gave away from the over-fall, and what remains of it was deposited in a slope along the river bank, which must now be accepted as the basis of a pitching to be continued up to the required level. But a solid parapet must not be added; only a strong fence, to permit of future floods finding their way down with as little obstruction as possible. Doubtless the parapet while it stood helped to dam up the water, and consequently when it fell increased the sudden rush, by which a number of carts and several of their drivers were carried down the nullah.

4. The flood was all but awash with the road on the left bank, at the angle of junction of the two streams. At that height there cannot be any current to endanger the new bridge to be built on the Commissariat road; but as the flood runs off, a strong current is produced at the lower levels. So long, therefore, as the bottom of the beams of the new bridge are kept as high as the present road on the left bank it will suffice; but much more width of water-way should be given. In fact, the new structure should be designed very much to suit the present section of the smaller nullah, i. e., with two spans of 30 feet each on a brick in chunam pier, and abutments (well rounded) of rough stone in chunam. Plan, estimate, and accurate section of the site to be prepared accordingly.

5. Of the three timber bridges between Coonoor and Wellington, that between Wellington bazaar and the Commissariat godown, though it must have been nearly six feet under water, stood undamaged, thanks to the principle adopted by Major Farewell of propping up such structures by down-streams struts in a line with the pile piers. A few feet of the approach on the left bank were washed away. The wooden bridge higher up, between Wellington bazaar and the Barracks, long in a shaly state, was swept away bodily. The opening of the new line called the "Market

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24th November 1865.*

Road," for which Rupees 288 were sanctioned in G.O. No. 2,829 of 25th September 1865, will obviate the necessity of re-constructing this bridge. And in the event (which cannot be remote) of the bridge first mentioned requiring re-construction, it will be well to take the opportunity of placing it in a better site, so as to connect the Wellington bazaar not only with the Commissariat godown, but also more directly than at present with the Coonoor bazaars. Captain Law knows the site selected by me, and will be instructed, on his return from leave, to trace and estimate for its connection with the new Commissariat road and for bridging it. Highest flood level is marked by the foot of a small stump, which I have barked on three sides. The large timber bridge on the main line from Wellington Barracks to Ootacamund has afforded ample water-way to the flood.

6. The timber bridge at Coonoor, and masonry bridge higher up which span the smaller of the two streams meeting at the heads of the old and new ghâts, have sustained no injury, although the flood must have risen to the top of the latter archway.

7. On the road between Wellington and Kotagerry is witnessed one of the most curious effects of the storm. It evidently burst with great intensity along the ridge of hills from Rallia Saddle to Dodabetta; and at the Peat bog the sudden influx of water has been such as fairly to wash out the substratum, causing the surface to subside and break up in a remarkable manner. And the soft deluvium has been deposited along the road to an extent which has made it absolutely impassable even on foot; in fact the valley below the bog is choked up with mud. Emergent expenditure must be incurred to clear the old line for traffic, but the opportunity should not be lost of planning and estimating for the new line and bridge required to complete the new trace of road now being carried out. I should have been glad to have met either Major Farewell or Captain Law on the spot, to have decided with them whether to take advantage of an almost imperceptible ridge of dry ground which divides the bog into two parts, and to bridge just above a slight overfall. Or whether to hug the hill side on the right (facing Kotagerry) and cross lower down, where the nullah is well defined with a rocky bed, and can be well approached. Money might be found for the work, if it could be carried out this year; but at all events a fresh trace must be made on Captain Law's return, and a survey and estimate of the line sent in.

8. *Kartairy Nullah.*—Flood mark is just short of Captain Law's double pegs on the banks. A central span of 30 feet on piers of brick or rough stone in chunam, with side spans of 15 to 20 feet will be the safest design. The abutments will be high and dry, and very small; and may be of rough stone. Plan, estimate, and accurate section at site selected by Captain Law should be furnished, with the view of making use at once of Local Funds which the Collector proposes to make available.

9. The rocky nullah, tributary to the above, which is crossed on the new Kartairy trace, near its junction with the new ghât, must be crossed in two spans of 20 to 24 feet each, with pier of puckah masonry, and dry rough stone, abutments thrown back as far as the large rocks which define the nullah at the crossing selected.

NOTE.—The time of the highest flood cannot be accurately told, as the night was very dark and foggy; but it must have been between 9 and 11 P. M. of Monday the 23rd October, at Coonoor. Next morning the nullahs were fordable with the greatest ease. At Coonoor and on the ghât the rain fall was insignificant. It was on the high ridge extending from Dodabetta to within four or five miles of Kotagerry that the heavy fall of rain occurred.

COONOOR,
28th October 1865.

(Signed) G. W. WALKER, Lieut.-Colonel, R. E.,
Superintending Engineer, 7th Division.

From the Executive Engineer, Neilgherries, to the Superintending Engineer, 7th Division, dated Ootacamund, 31st October 1865, No. 170.

1. I have the honor to report that this Range was visited by a violent storm on Monday the 23rd instant; at Ootacamund 4 inches of rain were gauged in twelve hours; at the Lawrence Asylum Works 5 inches; at Wellington 6½ inches; and I fancy at Dodabetta much more must have fallen in

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the same time. The rain was accompanied by terrific gusts of wind and continuous thunder and lightning, the storm commenced at about 5 in the evening, and was most violent from 7 to 11 P. M.

2. The damage done to Public Works is not so considerable as might have been expected. In the Cantonment of Ootacamund one of the abutments of the bridge behind Abboo Sait's shop (which was built in 1863) was swept away, and the other so considerably shaken as to require removal, the water-way having been blocked up with boxes, casks, and debris of all kinds which had been laying on the low ground on each side of the lake stream before the storm; the water rose and cut away one of the approaches to the bridge behind the abutments, which were of rough stone pointed with chunam, and demolished the bridge; the timber platform was however saved, but it will be of no use in the re-construction of this bridge, which I consider, to render it intact in future storms, should have nearly double the water-way of the old structure.

3. Several large drains in the Cantonment were also swept away, the water having risen in one case at least from four to five feet over the road-way.

4. The water in the lake rose to the level of the top of the billow bund, and when I inspected the calingulah in the morning 3½ feet of water stood on the floor of the work, and the surplus channel discharged most freely; the whole of the arrangements made in 1863 for protecting its out-fall standing well, and having every appearance of continuing to do so. On the night of the 25th instant, however, a second heavy fall of rain took place, two inches being gauged in six hours, and on my again inspecting the calingulah and its out-fall channel, I observed a great change had taken place, causing me much anxiety for the safety of the lake. One of the rocks at the end of the out-fall had been undermined and had rolled over, while the water was speedily cutting away the floor of the channel back towards the calingulah, on measurement I found in some places to a depth of five feet and more. I immediately collected a mass of rough stone, and with the assistance of the convicts (placed at my disposal for opening out the Neddiwuttum road) by the evening succeeded in making a good rough stone apron at the out-fall, and filled up the channel so considerably that before night I felt the work was tolerably safe except in the event of another heavy fall of rain such as we have lately experienced. To-day a large party are engaged in making further additions of rough stone to secure the work from accident. I feel convinced if another calingulah is not furnished to the lake this year, on the first heavy storm again visiting the station the embankment of the lake will in all probability be destroyed. The plan, estimate, and full report for the work are now in hand, and shall be submitted immediately.

5. During the storm of the 23rd instant eight temporary bridges were destroyed on the Kotagerry road, and numbers of drains choked and washed away.

6. On the Avalanche road seven temporary bridges were washed away.

7. On the road from Wellington to the forest three temporary bridges were destroyed, and the roads a good deal cut up.

8. At Wellington the water rose to the level of the tie beams of the truss bridge in the brick-fields, the bridge remains intact; a bridge built on the same principle near the new bazaars was submerged to a depth of from six to seven feet and lost nothing but a few feet of railing; the brick and tile fields were submerged to a depth of from seven to eight feet; 30,000 tiles were destroyed, some wheel-barrows, tile and brick moulds, and a quantity of firewood were swept away in the torrent; the water swept through a lime shed and carried away about 100 parabs of slaked lime. Several of the Military buildings are reported to have leaked considerably, but generally with one exception they sustained no damage during the storm, the exception being a dilapidated (sick cart) shed which came bodily down. The bridge on the road to the Rifle Practice ground has been entirely swept away, as also the temporary bridge between the Barracks and the bazaars which need not be re-built.

9. The road from Ootacamund to Wellington and Coonoor stood the storm well, three revetments have been slightly damaged, and one already being re-built. I was very much struck on inspecting the line to find how well the dry rough stone drains did their work, in some cases these drains had upwards of ten feet head of water on their inner sides, which was discharged without the slightest injury to the drains.

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21th November 1865.

10. At the Lawrence Asylum Works, where the rain fell almost as heavily as at Wellington hanks, the rain having penetrated through unburnt bricks as having been destroyed on the containing 45,000 bricks, which was being burnt at the time of the storm, was much injured; some 10,000 to 15,000 bricks having been spoilt. The earthen embankments have also suffered a good deal from sinking and cracking. Since the storm heavy rain has fallen almost daily on the sites; the rain gauged on the 23rd being five inches, on the 24th one inch, and on the 25th two more inches, and it has rained heavily at intervals every day since.

11. Being yourself at Coonoor when the storm took place, you have noted all the damage caused there by the storm, which it will be therefore unnecessary for me to recapitulate.

12. Plans and estimates for the necessary repairs are being framed, and shall be shortly submitted.

No. 609. Endorsement of the Superintending Engineer, 7th Division, dated 9th November 1865.

From the Executive Engineer Neilgherries, to the Superintending Engineer, 7th Division, dated Ootacamund, 4th November 1865, No. 176.

1. In continuation of my Report No. 170, dated 31st October 1865, I have the honor to inform you that the left abutment and wing-walls of a bridge situated at the head of the Segoor Ghat were swept away during the storm of the 23rd ultimo. I have inspected the bridge, and am of opinion that the water-way provided is insufficient; a plan and estimate for a new bridge are under preparation, and will be submitted immediately.

2. I find an omission occurred in my report regarding the damage done at Wellington, the mud wall round the Soldiers' garden, which had just been entirely completed, and for which the Officer Commanding Wellington was prepared to grant me the usual receipt, has been so seriously damaged by the extraordinary fall of rain as to require considerable repairs. An estimate for these repairs is being framed, and will be submitted as soon as possible.

Submitted to Government in continuation of the reports which accompanied the Superintending Engineer's letter No. 106 of 6th November 1865.

(Signed) G. W. WALKER, Lieut.-Colonel, R. E.,
Superintending Engineer, 7th Division.

No. 610.

ORDER THEREON, 21th November 1865, No. 3,573.

CIVIL WORKS, No. 85.

Ordered to be recorded.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
Editor's Table.

Exd. S. T. Augustin.

7-11-65
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Executive Engineer's office
Neilgherries
Ootacamund 4-Nov-1865.

From

Major W. Farwell
Executive Engineer

To
Lieut. Col. G. W. Walker, R.E.
Superintending Engineer
Coimbatore

In continuation of my report No. 170, dated 31st October 1865 I have the honor to inform you that the left abutment and wing walls of a Bridge situated at the head of the Segoor Ghat were swept away during the storm of the 23rd ultimo. I have inspected the Bridge and am of opinion that the waterway provided is insufficient; a plan and estimate for a new Bridge are under preparation and will be submitted immediately.

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Have the honor to be

Yours most obedt Servt

W. Farwell Major
Executive Engineer

Submitted to Govt. in continuation of the reports which accompanied the Superintending Engineer's letter No. 106 of 6th Nov. 1865.

Checked
9th Nov 1865

W. Walker R.E.
Superintending Engineer

for 865 D. 24th
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 Engineer - Dist.

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Submitting observations
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 Major Farewell on
 the effects of the violent
 storm which visited
 Ootacamund and the
 Hill Range about it
 on the night of the
 23rd Oct. 1865

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No. 3573 - 24th Nov 1865

Public Works Department
 No. 3573
 Proceedings of the Madras Government
 Under date the 24th November 1865
 Read the following

From the Executive Engineer
 Nilguberies

Reporting regarding (See entry 14th Nov 1865 No. 176)
 damage done by storm on the
 Seegore road and to the Hindoob
 round the Soldiers garden at
 Wellington.

From the Supg. Engineer
 of the 7th Division

Submitting observations by
 himself and Major Farewell on (— do — 6th — — — 1866)
 the effects of the violent storm
 which visited Ootacamund and
 the Hill Range about it on the
 night of the 23rd October 1865.

Ordered to be
 recorded -

[Signature]

To S. E. 7. On 24th Nov 1865
 Editors Table -

[Signature]

Dec. 27th November 21

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70 1865 Dept
No. of Govt for Govt

No. 573

No. of the Govt
D/24 Nov/65

18/11/65

Storm on the 23rd Dec last
in the Comblatore Dist. Certain
Correspondence relative to the dam-
age caused by the, - records.

Refos @ 670.

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