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# MADRAS RECORD OFFICE.

## Government of Madras.

Public Works DEPARTMENT.

G.O. No. 3577 Press —Mis.—

618-619

Dated 27. 11. 1865.

**Not to be folded or roughly handled**

## *Proceedings of the Madras Government, Public Works Department, 27th November 1865.*

No. 618. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Department Public Works, dated Calicut, 6th November 1865, No. 170:—

1. I have the honor to submit herewith the survey of the road to connect Pani Mangalore, at the head of the navigation of the Mangalore river, with Hossdroog, at the head of the canal communication which reaches to within a few miles of Cannanore. An estimate of Rupees 79,640 for the earthwork of the new portion of the line, 45 miles in length, is likewise submitted; out of which sum Rupees 34,460 will have been spent by the end of the calendar year in opening the line to 12 feet in width, leaving Rupees 44,980 to complete to clear 18 feet, which it is proposed to do in three consecutive years. Estimates for bridges and covered drains along two-thirds of the line, with accompanying plans, are all that the Executive agency of Mangalore Range has yet been able to prepare; those of the remainder of the line will not be ready till the Budget of 1867-68 is compiled. The amount of those now submitted is Rupees 46,027, and their details are particularized in the following list;—

Enclosures 12.

*Bridges and Drains on Hossdroog Road.*

| | | | Rs. | Rs. | |
|---|---|---|---|---|---|
| 14 | Covered drains, | 4 ×4 at | 232 = | 3,248 | |
| 11 | Do. do. | 2 ×2 at | 127 = | 1,397 | |
| 29 | Do. do. | ¾×¾ at | 30 = | 870 | |
| 4 | Do. do. | 12×6 at | 625 = | 2,500 | |
| 27 | Do. do. | 1½×1½ at | 57 = | 1,539 | |
| 1 | Do. do. | 6 ×7½ at | 557 = | 557 | |
| 2 | Do. do. | 6 ×6 at | 450 = | 900 | |
| 2 | Do. do. | 16 ×8 at | 757 = | 1,514 | One built. |
| 1 | Do. do. | 16 ×8 at | 900 = | 900 | |
| 1 | Bridge of 3-30 feet spans (Wokatur) | | | 5,827 | Built, but the arches have since collapsed. Supplemental estimate to be sent. |
| 1 | Covered drain | 8 ×4 at | 375 = | 375 | |
| 1 | Do. do. | 4 ×4 at | 210 = | 210 | |
| 1 | Do. do. | 6 ×4½ at | 280 = | 280 | |
| 1 | Do. do. | 8 ×6 at | 490 = | 490 | Built. |
| 2 | Do. do. | 2 ×4 at | 190 = | 380 | |
| 3 | Do. do. | 4 ×6 at | 335 = | 1,005 | |
| 2 | Do. do. | 4 ×12 at | 700 = | 1,400 | |
| 1 | Bridge of 3-30 feet spans | ... | | 5,000 | Kadar bridge. Revised estimate to be sent. |
| 1 | Do. do. | 24 ×12 at | 1,440 = | 1,440 | |
| 2 | Covered drains | 12 ×12 at | 1,200 = | 2,400 | |
| 2 | Do, do. | 8 × 8 at | 565 = | 1,130 | |
| 1 | Bridge of 4-30 feet spans | ... | | 5,900 | |
| 1 | Covered drain | 4 × 8 at | 495 = | 495 | |
| 1 | Bridge | 30 ×16 at | 2,210 = | 2,210 | |
| 1 | Do. | 24 ×12 at | 1,375 = | 1,375 | |
| 1 | Do. | 36 ×16 at | 2,100 = | 2,100 | |
| 1 | Covered drain | 12 ×16 at | 585 = | 585 | |
| | | | | 46,027 | |

2. Rupees 15,000 will have been laid out on bridge and drain work by 30th April 1866; but owing to the fall of the Wokatur bridge soon after its completion, about Rupees 2,500 must be added to the amount of the list for its re-construction with a timber platform, the laterite of the neighbourhood having proved to be not of good enough quality for 30 feet arches. This will make a total of Rupees 48,500 on account of bridge and drain work, for which sanction is required; and a grand total of Rupees 1,28,140. Revised plans and estimates of the Wokatur and Kadar bridges will be submitted in the course of the season. Omitting the large Chundergherry river, which it is not at present proposed to bridge, the whole cost of the line may be put down at Rupees 1,50,000. That river will be crossed at Baivenja, the lowest spot where it is fordable in the dry weather at low-tide, with a hard shingly bottom, likely to afford good foundations for a screw pile bridge hereafter.

3. This road was ordered for construction in consequence of representations by the Military authorities of the necessity of keeping up the communication between Canara and Malabar during the monsoon, with a view to the free importation of rice for the Garrison of Cannanore and North Malabar. Extension of the coast canals being impracticable at a reasonable cost, the coast road was ordered to be perfected; but that idea was laid aside on my recommendation of a line more inland. Its whole course was determined by myself, after laborious examination of each feature of the country, one of no ordinary difficulty; and each of the numerous little ghâts on it has either been traced with my own hands, or by Mr. Supervisor Fernandez under my immediate superintendence; and he has worked out the intervals between them with his usual intelligence and zeal. For wants of hands the preparation of the papers required for submission to Government has been delayed greatly beyond my expectation; but I can assure Government that what has been done, and is proposed, will form a work most useful to the country, and creditable to the Department.

No. 619.

ORDER THEREON, 27th November 1865, No. 3,577.

CIVIL WORKS, No. 88.

6th September 1862, No. 2,134.
17th March 1863, „ 655.
30th October „ „ 3,168.

1. With this letter the Superintending Engineer of the 7th Division submits, with reference to the Orders noted in the margin, plans and estimates for the road now under construction connecting Pani Mangalore by Vitla with Hoosdroog in the District of South Canara.

2. The estimate for earthwork amounts to Rupees 79,640, of which sum it is stated Rupees 34,660 will have been spent by the end of this year in opening the line to a width of 12 feet, leaving Rs. 44,980 to complete it to its full width of 18 feet. A separate estimate of Rupees 46,027 is also submitted for bridges and drains along two-thirds of the entire length of 45 miles, the expenditure on which it is estimated will amount to Rupees 15,000 by the 30th April next, and Colonel Walker adds that the estimate for the masonry works required for the remaining distance will be ready for the Budget of 1867-68. The estimate for bridges includes



the cost of the Wokatúr and Kadar bridges, for which Rupees 5,550 and 3,940 respectively were sanctioned in the Orders marginaliy noted; the amounts now provided for them are Rs. 5,827 for the former, and Rupees 5,000 for the latter, and it is reported that an additional sum of Rupees 2,500 will be required for the Wokatúr bridge, as since its construction the arches have collapsed.

No. 655, 17th March 1863.
„ 1,355, 31st May 1865.

3. The estimate for earthwork, amounting to Rupees 79,640, is approved; but that for bridges and drains is essentially incomplete, providing as it does for works required on only a portion of the road, and for supplemental demands* the necessity for which has yet to be explained. Paragraph 24, Chapter V. of the Code contemplates that estimates should comprise the *whole* cost of a connected series of works on a line of road or canal. Sanction to this second estimate will therefore be deferred, but this need not delay the progress of the works included in it. Colonel Walker will provide in his ensuing Budget for such sums as may be advantageously laid out under both the estimates which have now been considered.

* For the Wokatur and Kadar bridges.

4. The Superintending Engineer will expedite his report on the failure of the Wokatúr bridge, and he will submit the fullest explanation of the causes which led to its fall. The necessity for the increased demand for the Kadar bridge should also be fully explained.

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

To the Superintending Engineer, 7th Division.
„ Controller of Public Works Accounts.
„ Accountant General.

Exd. S. T. Augustin.

## Abstract Estimate No. 12 of 1865/66.

### Districts South Canara.

Work. Constructing a Military Road 8 yards wide to Connect Mangalore and Cannanore by Ditto to head of River Navigation and Canal Communication near Koperagy.

| | Description of Work. | Rate | Amount | Total. |
|---|---|---|---|---|
| 1,901 2/3 | C.Yards of Earthwork Ind. percp. | 1. 2 b. | 297 1 2 | |
| 246 86 47/108 | Do. Do. Laterite Easy soil | 1. 3 b. | 57,002 3 . | |
| 3,982 5/6 | Do. Do. Hard soil | 1. 6 | 14,934 6 . | |
| 297 11/24 | Do. of Blasting | 1. 8 | 446 3 . | |
| 3,453 7/16 | Do. of Rough Stonework | 1. | 3,453 3 1. | |
| 9,640 | Square yards of Clearing Jungle & Cpcp. | 1. 6 | 1176 4 . | 74,309 6 3. |
| | | | Total of Estimate Rupees | 74,309 6 3. |
| | Sundries on the above Total of Rs 74,300 @ 2½ p Cent | | 1857 8 0. | |
| | Tools charged to the work up to 30th April 1865 | | 870 5 0. | |
| | Superintendence charged to do up to ditto | | 2230 11 10. | |
| | Compensations paid for lands taken up for the Road | | 374 9 1. | |
| | | | | 5330 9 9. |
| | Total | | | 79,640 . . |
| | Deduct Amount Sanctioned in G. O. No 438 of 14th March 1862 | | | 34,660 . . |
| | Balance of Estimate requiring Sanction Rupees | | | 44,980 . . |

Mangalore Range Office
South Canara,
Mangalore, 19th August 1865

Superintendent [illegible]

Superintendent P.W.D.

Carried over | 62 . .

Abstract Estimate No: 13 of 1865/66.

District South Canara.

Work: Constructing Bridges and Drains on the Permanent Cart & Bullock Road.

| Quantity | Description of Work. | Rate | Amt. | Total |
|---|---|---|---|---|
| | **No: 1. Cattiwater Drain to the end of Paddy fields.** | | | |
| 694¾ | Cubic feet of Laterite in Chunam ——— Deduct | 18 | 125 . 10 | |
| 191¼ | Do ——— of Arch work with do in do ——— " | 21 | 40 2 | |
| 4 | Rft. of Coursing ——— Rft. | 5 | 20 . | |
| 44 | Do ——— of Cordon work ——— " | 6 | 16 8 | |
| 316 | Superfet of Pointing with Chunam ——— Sqre | 1 8 | 4 11 0 | |
| 176 | Do ——— of Plastering the parapets with do " | 4 | 7 . | |
| 66¾ | Cyards of Earthwork ——— Rq. | 3 | 12 6 3 | |
| | Sundries ——— | | 5 15 7 | 232 . |
| | **No: 2. Irrigation drain at the other end of Paddy fields** | | | |
| 37¾ | Cft. of Laterite in Chunam ——— Deduct | 18 | 66 1 | |
| 123¾ | Do ——— of Arch work with do in do ——— " | 21 | 25 15 9 | |
| 2 | Rft. of Coursing ——— Rft. | 5 | 10 . | |
| 24 | Do ——— of Cordon work ——— " | 6 | 9 . | |
| 133½ | Superfet of pointing with Chunam ——— Sqre | 1 8 | 2 . | |
| 90 | Do ——— of Plastering the parapets with do " | 4 | 3 9 | |
| 32 | Cyards of Earthwork ——— Rq. | 3 | 6 . | |
| | Sundries ——— | | 3 11 8 | 127 . |
| | **No: 3. Cattiwater drain at Cala Kandy** | | | |
| | Same as No: 1 ——— | | | 232 . |
| | **No: 4. Irrigation drain at Cala Kandy** | | | |
| 108¼ | Cft. of Laterite in Chunam ——— Deduct | 18 | 19 7 8 | |
| 20 | Rft. of Coursing with Laterite Slabs 18"×9"×4½" with Chunam ——— Rft. | 4 | 5 . | |
| 133¼ | Superfet of pointing with Chunam ——— Sqre | 1 8 | 3 3 | |
| 79¼ | Do ——— of plastering with do ——— " | 4 | 3 2 9 | |
| 5 | Cyards of Earthwork ——— Rq. | 3 | 1 4 5 | |
| | Sundries ——— | | 1 3 4 | 30 . |
| | Carried over ——— | | | 621 . |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Brought forward | | | | | 621 . . |
| | 14th Set No 5. Irrigation drain at the other end of Cola Landa Saure as No 1 | | | | | 30 . . |
| | Do No 6 Do on the road Saure as No 4 | | | | | 30 . . |
| | Do No 7 Do on do do No 2 | | | | | 127 . . |
| | Do No 8 Small Bridge over the Gelitta | | | | | |
| | Rajil Nallah | | | | | |
| 1571 | Cft. of Laterite in Chunam | Doo Ft | 18 | . . | 282 12 5 | |
| 910 | Do of Archwork with do | . . | 2 | . . | 171 1 0 | |
| 12 | Rft. of Centring | Do Ft | 5 | . . | 60 . . | |
| 92 | Do of Cordonwork | . . | 6 | . . | 27 . . | |
| 360 | Sqr feet of plastering the parapets with Chunam | Sqr | 4 | . . | 14 8 5 | |
| 656 | Do of painting with Chunam | . . | 18 | . . | 9 8 5 | |
| 1382½ | Cyards of Earthwork | Cyd | 3 | . . | 28 . . | |
| | Sundries | | | | 1342 | 625 . . |
| | 1st Set No 9. Irrigation drain in the Bunds of Gollitamajel Paddy fields Saure as No 8 | | | | | 30 . . |
| | 1st Set No 10 Do in do Do Do No 8 | | | | | 30 . . |
| | 1st Set No 11 Tailwater drain at the end of Gollitamajel Paddy fields Saure as No 1 | | | | | 270 . . |
| | Do No 12 Drain on the Road. | | | | | |
| 2157½ | Cft. of Laterite in Chunam | Doo Ft | 18 | . . | 3812 1 | |
| 20 | Rft. of Coaming with Laterite Slabs 2+1×½ with Chunam | Rft | 1 | . . | 7 8 | |
| 36 | Sqr ft. of painting with Chunam | Sqr | 18 | . . | 8 0 1 | |
| 131½ | Do of plastering with do | . . | 4 | . . | 58 . . | |
| 17½ | Cyards of Earthwork | Cyd | 3 | . . | 3 4 6 | |
| | Sundries | | | | 1 10 10 | 570 . . |
| | 1st Set No 13. Tail water drain Saure as No 12. | | | | | 57 . . |
| | Do No 14. Saure as No 12 drain on the Road | | | | | 57 . . |
| | Do No 15 Drain on the Irkant Saure as No 12 | | | | | 57 . . |
| | Do No 16 Do do do No 12 | | | | | 57 . . |
| | Do No 17 Do do do No 12 | | | | | 57 . . |
| | Do No 18 Small Bridge over the Tirkamba Nallah Saure as No 8 | | | | | 625 . . |
| | Do No 19. Irrigation Channel with Tirkamba Paddy fields Saure as No 12 | | | | | 127 . . |
| | Do No 20 Drain Saure as No 4 | | | | | 30 . . |
| | Do No 21. Small Bridge at Tirkamba Tank | | | | | |
| 1900 | Cft. of Laterite in Chunam | Doo Ft | 18 | . . | 342 0 | |
| 352½ | Do of Archwork with do | " | 21 | . . | 74 4 | |
| | Carried over | | | | | 4416 4 2849 . . |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Brought forward | | | | | 4416 4 2849 . . |
| 6 | Rft. of Centring | Rft | 5 | . . | 30 . . | |
| 81 | Do of Cordonwork | . . | 6 | . . | 30 6 1 | |
| 727¾ | Sqr ft. of painting with Chunam | Sqr | 18 | . . | 1048 | |
| 324 | Do of plastering the parapets with do | . . | 4 | . . | 1215 | |
| 228½ | Cyards of Earthwork | Cyd | 3 | . . | 142 6 | |
| | Sundries | | | | 1342 | 557 . . |
| | 1st Set No 22 Small Bridge over the Coamer Nallah | | | | | |
| 1416¼ | Cft. of Laterite in Chunam | Doo Ft | 18 | . . | 2574 0 | |
| 352½ | Do of Archwork with do | . . | 21 | . . | 73 15 | |
| 6 | Rft. of Centring | Do Ft | 5 | . . | 30 . . | |
| 69 | Do of Cordonwork | . . | 6 | . . | 25 4 | |
| 568 | Sqr ft. of painting with Chunam | Sqr | 18 | . . | 884 | |
| 276 | Do of Plastering the parapets with do | do | 4 | . . | 110 | |
| 174 | Cyards of Earthwork | Cyd | 3 | . . | 320 | |
| | Sundries | | | | 1368 | 450 . . |
| | 1st Set No 23 Small Bridge on Perapade Nallah | | | | | |
| 1276¾ | Cft. of Laterite in Chunam | Doo Ft | 18 | . . | 2298 | |
| 1338¾ | Do of Archwork with do in do | . . | 21 | . . | 2812 2 | |
| 16 | Rft. of Centring | Rft | 5 | . . | 80 . . | |
| 92 | Do of Cordonwork | . . | 6 | . . | 34 8 | |
| 460 | Sqr ft. of plastering with Chunam | Sqr | 4 | . . | 18 6 5 | |
| 500 | Do of painting with do par do | . . | 18 | . . | 90 | |
| 196½ | Cyards of Earthwork | Cyd | 3 | . . | 36 13 6 | |
| | Clearing rock for foundations average of 6 d/f | | | | 50 . . | |
| | Sundries | | | | 1821 | 735 . . |
| | No 24. Saure as No 2 Drain at Palatadu | | | | | 57 . . |
| | No 25. Small Bridge over the Palatadu Nallah. Saure as No 8. | | | | | 625 . . |
| | No 26. Drain at the 1st Embankment Saure as No 1 | | | | | 332 . . |
| | No 27 Drain at Attadada Padoo Saure as No 2 | | | | | 127 . . |
| | No 28 Small Bridge on Pellanja Nallah. | | | | | |
| 2175½ | Cft. of Laterite in Chunam | Doo Ft | 18 | . . | 3919 5 | |
| 1338¾ | Do of Arch with do in do | . . | 21 | . . | 2812 2 | |
| 16 | Rft. of Centring | Rft | 5 | . . | 80 . . | |
| 92 | Do of Cordonwork | . . | 6 | . . | 348 | |
| 460 | Sqr ft. of plastering the parapets with Chunam | Sqr | 4 | . . | 1865 | |
| 500 | Do of painting with Chunam | do | 18 | . . | 90 | |
| 347½ | Cyards of Earthwork | Cyd | 3 | . . | 6526 | |
| | Sundries | | | | 2106 | 900 . . |
| | No 29 Drain Saure as No 4 | | | | | 30 . . |
| | Carried over | | | | | 6521 . . |

Brought forward 6534

No 30. Irrigational drain Same as No 4 — 30
" 31 Drain Same as No 4 — 30
" 32. Surplus drain Same as No 2. — 127
" 33. Drain Same as No 4 — 30
" 34 — Ditto — do. — 31
" 35 Ditto at Punjlajah Aluar as No. — 232
" 36 — Do Kent Ditto — Ditto — do. — 232
" 37 — Do — Same as No 4. — 30
" 38. Small Bridge over the Paved Salah Same as No 8. — 125
" 39. Hill water drain Same as No 2. — 127
" 40. Bridge over the Pokeloon Salah Sanctioned — 5827
" 41 Drain on the road Same as No 12 — 57
" 42. — Do. — Do. — Do. — No 4 — 30
" 43. Hill water drain approaching over Villa Paddy fields Same as No 4. — 30
" 44. Drain Same as No 2. — 127
" 45. — Do. — Ditto — No 12. — 57
" 46. Pt Drain South side of Potail's House

| | | | | | |
|---|---|---|---|---|---|
| 891 | Cft. of Laterite in Chunam | Bdo cft. | 18 | 160 | 6 |
| 5742½ | Do. of Arch work with do in do | | 21 | 113 | 4 10 |
| 5 | Rft. of Coating | Do Rft. | 5 | 40 | |
| 52 | Do. of Cornice work | | 6 | 19 | 8 |
| 260 | Sqr ft. of plastering with Chunam | | 4 | 10 | 6 5 |
| 250 | Do. of Painting with Chunam | Do | 18 | 3 | 12 |
| 100 | Cyards of Earthwork | Bcy. | 3 | 18 | 12 |
| | Sundries | | | 3 | 4 8 — 375 |

No 47 Second drain in the Middle of Villa Paddy fields

| | | | | | |
|---|---|---|---|---|---|
| 588¼ | Cft. of Laterite in Chunam | Bdo cft. | 18 | 106 | 1 |
| 191¼ | Do. of Arch work with do | | 21 | 40 | 2 9 |
| 4 | Rft. of Coating | Do Rft. | 5 | 20 | |
| 44 | Do. of Cornice work | | 6 | 16 | 8 |
| 176 | Sqr ft. of plastering with Chunam | Do Sqr. | 4 | 7 | 0 |
| 125 | Do. of painting with Ditto | | 18 | 14 | 4 |
| 64 | Cyards of Earthwork | Do Cy. | 3 | 12 | |
| | Sundries | | | 6 | 5 0 — 210 |

No 48. Third drain in the Panninjahs Paddy fields at Villa.

| | | | | | |
|---|---|---|---|---|---|
| 681¾ | Cft. of Laterite in Chunam | Bdo cft. | 18 | 122 | 11 5 |
| 352½ | Do. of Arch work with do | | 21 | 74 | 5 |
| 6 | Rft. of Coating | Do Rft. | 5 | 30 | |
| 48 | Do. of Cornice work | | 6 | 18 | |
| 192 | Sqr ft. of plastering to parapets with Chunam | Do Sqr. | 4 | 9 | 10 0 |
| | Carried over | | | 252 | 6 8 — 6983 |

Brought forward 252 6 8 6983

| | | | | | |
|---|---|---|---|---|---|
| 190 | Sqr feet of Painting with Chunam | Do Sqr. | 1 8 | 2 | 13 |
| 863 | Cyards of Earthwork | Do Cy. | 3 | 16 | 3 |
| | Sundries | | | 8 | 5 9 — 280 |

## 2nd Set from Villa Bazar

No 1. Small Bridge South of Villa Bazar with an Irrigation drain.

| | | | | | |
|---|---|---|---|---|---|
| 388 | Cft. of Laterite in Chunam | Bdo cft. | 18 | 249 | 7 8 |
| 6 70 | Do. of Arch work with ditto | | 21 | 126 | |
| 8 | Rft. of Coating | Do Rft. | 5 | 40 | |
| 64 | Do. of Cornice work | | 6 | 24 | |
| 320 | Sqr feet of plastering with Chunam | Do Sqr. | 4 | 12 | 12 9 |
| 250 | Do. of painting with Do | | 18 | 3 | 12 |
| 127 | Cyards of Earthwork | Do Cy. | 3 | 23 | 13 |
| | Sundries | | | 10 | 27 — 490 |

No 2. Irrigation drain in the Paddy fields Same as No 4 in the 1st Set — 30
No 3. Do Do Do No 4 — 30
No 4. Drain at Balle Arumanah

| | | | | | |
|---|---|---|---|---|---|
| 647½ | Cft. of Laterite in Chunam | Bdo cft. | 18 | 116 | 8 10 |
| 1293¼ | Do. of Arch work with Do | | 21 | 25 | 15 10 |
| 2 | Rft. of Coating | Do Rft. | 5 | 10 | |
| 34 | Do. of Cornice work | | 6 | 12 | |
| 249½ | Sqr ft. of painting with Chunam | Do Sqr. | 18 | 3 | 11 11 |
| 136 | Do. of Plastering with ditto | | 4 | 5 | 7 |
| 61½ | Cyards of Earthwork | Do Cy. | 3 | 11 | 8 6 |
| | Sundries | | | 3 | 15 11 — 190 |
| | No 5 Drain on the Advent Same as No 4. | | | | 190 |
| | No 6 Hill water drain on the Canal Same as No 12 in the 1st Set | | | | 57 |
| | " 7. Irrigation drain Same as No 2. | | | | 30 |
| | " 8. Hill water drain Same as No 6. | | | | 57 |
| | " 9. Do. Do. Do. No 6. | | | | 57 |
| | " 10. Second Surplus water drain. | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 1169½ | Cft. of Laterite in Chunam | Bdo cft. | 18 | 20 | 8 2 |
| 1914 | Do. of Arch work with do | | 21 | 40 | 2 9 |
| 4 | Rft. of Coating | Do Rft. | 5 | 20 | |
| 57 | Do. of Cornice work | | 6 | 21 | 6 |
| 468½ | Sqr ft. of Painting with Chunam | Do Sqr. | 18 | 7 | 5 |
| 114 | Do. of Plastering with Do. | | 4 | 4 | 8 11 |
| 115 | Cyards of Earthwork | Do Cy. | 3 | 22 | 2 |
| | Sundries | | | 9 | 3 11 — 335 |
| | No 11. Catchwater drain Same as No 10. | | | | 335 |

Carried over 1104

| | | | | | | |
|---|---|---|---|---|---|---|
| | Brought forward £ | | | | | 1044 |
| | No 2 Drain South of Mopellias House Same as No 2 in the 1st Lot | | | | | 127 - - |
| | No 3. Do: in the Cookara Paddy fields Same as No 2 | | | | | 30 - - |
| | No 4. Do: Do: Do: No 2 | | | | | 30 - - |
| | No 5 Small Bridge on the Rothetholiy Salla Same as No 23 in the 1st Lot | | | | | 37 - - |
| | No 6. Irrigation drain in the Rothetholiy high fields Same as No 2 | | | | | 30 - - |
| | No 7. Drain at the Side of paddy fields Same as No 6 | | | | | 57 - - |
| | No 8. Irrigation drain in the Paddy fields Same as No 2 | | | | | 30 - - |
| | No 9. Hill water drain Same as No 6 | | | | | 57 - - |
| | No 20 Hill water drain in Kapos Village | | | | | |
| 2688¾ | Cft. of Laterite in Chunam | Procft | 18 | - | 483 9 4 | |
| 1914 | Do: of Archwork with Do: Do: | | 21 | - | 40 2 7 | |
| 4 | Rft. of Centring | Rft. | 5 | - | 20 - - | |
| 80 | Do: of Cordonwork | Do: | 6 | - | 31 - - | |
| 1014 | Cft. of Painting with Chunam | Sft. | 18 | - | 15 3 4 | |
| 320 | Do: of Plastering with Do: | Do: | 4 | - | 12 12 - | |
| 449¾ | Cyards of Earthwork | Cy. | 3 | - | 8 4 6 | |
| | Sundries | | | | 13 5 - | 730 - - |
| | No 21. Hill water drain Same as No 6 | | | | | 57 - - |
| | No 22. Do: Do: Do: Do: No 2 | | | | | 30 - - |
| | No 23. Do: Do: Do: Do: No 2 | | | | | 30 - - |
| | No 24 Do: Do: Do: Do: No 6 | | | | | 57 - - |
| | No 25 Do: Do: on proposed Embankment about Erambos Paddy fields Same as No 1 in the 1st Lot | | | | | 232 - - |
| | No 26. Second drain Same as No 25 | | | | | 232 - - |
| | No 27. Hill water drain Same as No 25 | | | | | 232 - - |
| | No 28 Irrigation drain in the 3d Erambos Paddy fields Same as No 2 | | | | | 30 - - |
| | No 29. Do: do: Same as No 6 | | | | | 57 - - |
| | No 30. Hill water drain Same as No 6 | | | | | 57 - - |
| | No 31. Do: at Bungoad Do: No 6 | | | | | 57 - - |
| | No 32 Do: Same as No 6 | | | | | 57 - - |
| | No 33. Do: Do: No 2 | | | | | 30 - - |
| | No 34. Do: at the 5th Pitch near large Mango tree Same as No 6 | | | | | 57 - - |
| | No 35. Catchwater drain at Perrayajih Same as No 6 | | | | | 57 - - |
| | No 36. Second Hill water Drain at Do: Same as No 6 | | | | | 335 - - |
| | No 37. Hill water drain Same as No 6 | | | | | 57 - - |
| | Carried over £ | | | | | 1452 6 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Brought forward £ | | | | | 1452 6 |
| | No 38. Catchwater drain South side of Perrayajih Same as No 6 | | | | | 57 - - |
| | No 39. Drain in the Kurkenny Paddy fields Same as No 25 | | | | | 232 - - |
| | No 40. Hill water drain North Corner of Hill of Saradka Same as No 2 | | | | | 730 - - |
| | No 41. Hill water drain Same as No 25 | | | | | 232 - - |
| | No 42. Do: Do: Do: No 2 | | | | | 127 - - |
| | No 43. Do: Do: above the Saradka Paddy fields Same as No 6 | | | | | 57 - - |
| | No 44. Do: Do: Do: No 6 | | | | | 57 - - |
| | No 45. Irrigation drain in the Paddy fields North of Saradka Nallah Same as No 2 | | | | | 30 - - |
| | No 46. Bridge on Saradka Nallah. | | | | | |
| 2928½ | Cft. of Laterite in Chunam | Procft | 18 | - | 526 12 6 | |
| 2685 | Do: of Archwork with Do: | | 21 | - | 563 13 7 | |
| 24 | Rft. of Centring | Rft. | 5 | - | 120 - - | |
| 128 | Do: of Cordonwork | | 6 | - | 48 - - | |
| 1840 | Sft. of Painting with Chunam | Sft. | 18 | - | 241 11 - | |
| 768 | Do: of Plastering with Do: | | 4 | - | 30 11 6 | |
| 474¾ | Cyards of Earthwork | Cy. | 3 | - | 89 3 - | |
| | Sundries | | | | 36 15 4 | 1440 - - |
| | No 47. Irrigation drain Same as No 2 | | | | | 30 - - |
| | No 48. Small Bridge on 2d Saradka Nallah. | | | | | |
| 4046⅜ | Cft. of Laterite with Chunam | Procft | 18 | - | 728 5 6 | |
| 1057½ | Do: of Archwork with Do: | | 21 | - | 222 1 2 | |
| 12 | Rft. of Centring | Rft. | 5 | - | 60 - - | |
| 124 | Do: of Cordonwork | | 6 | - | 46 8 - | |
| 1329 | Sft. of Painting with Chunam | Sft. | 18 | - | 19 14 11 | |
| 620 | Do: of Plastering with Do: | | 4 | - | 24 12 9 | |
| 390 | Cyds of Earthwork | Cy. | 3 | - | 74 1 - | |
| | Sundries | | | | 23 11 7 | 1200 - - |
| | No 49 Catchwater drain Same as No 25 | | | | | 232 - - |
| | " 50. Hill water drain Same as No 25 | | | | | 232 - - |
| | No 51. Do: at Seralos Same as No 25 | | | | | 232 - - |
| | No 52. Do: above the Seralos Paddy fields Same as No 2 | | | | | 127 - - |
| | No 53. Irrigation drain Same as No 2 | | | | | 30 - - |
| | No 54. Do: Do: Do: No 2 | | | | | 30 - - |
| | No 55. Small Bridge Northside of Seralos Paddy fields | | | | | |
| 1657½ | Cft. of Laterite in Chunam | Procft | 18 | - | 297 1 5 | |
| 600 | Do: of Archwork with Do: | | 21 | - | 126 - - | |
| 8 | Rft. of Centring | Rft. | 5 | - | 40 - - | |
| 76 | Do: of Cordonwork | | 6 | - | 28 8 - | |
| | Carried over £ | | | | 491 9 5 | 1657 - - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Brought forward | | | 491 | 9 | 5 | 1354 - - |
| 1883¾ | Sq.ft of Painting with Chunam | Sq.re | 1 | 8 | 11 | 4 | |
| 389 | Do. of Plastering with Do. | " | 4 | - | 15 | 32 | |
| 166¼ | Cyards of Earthwork | Cyd | - | 3 | 31 | 29 | |
| | Sundries | | | | 15 | 34 | 555 - - |
| | No 56. Timber Bridge of 4 Spans on Kattalla Cheer. | | | | | | |
| 16,208¾ | Cft. of Laterite in Chunam | Doo cft. | 18 | - | 297 | 7 | |
| 106 | Sft. of Corduroy work | Sq.ft. | - | 6 | 39 | 12 | |
| 3363¾ | Sq.ft of Painting with Chunam | Sq.re | 1 | 8 | 19 | 15 | |
| 936 | Do. of Plastering with Do. | " | 4 | - | 37 | 7 | |
| 623 | Cyards of Earthwork | Cyd | - | 3 | 116 | 13 | |
| 529 | Sq.ft of cleaning rock for foundation | Sq.ft. | - | 6 | 198 | 6 | |
| 1320 | Cft. of Good jungle wood | Cft. | 1 | 4 | 450 | - | |
| 331 | Do. Do. planking | " | 1 | 8 | 496 | 8 | |
| | Baling water | | | | 200 | - | |
| | Sundries | | | | 163 | 10 | 4 5710 - |
| | No 57. Cut from Galitadda Small Bauer. | | | | | | |
| | No 1. Irrigation drain above Pocalibeck Paddy fields Same as Bo2 in the 2nd Set. | | | | | | 127 - - |
| | 2. Hill water drain Same as Bo22 in the 2nd Set. | | | | | | 450 - - |
| | 3 Do. Do. No 6 in the 2nd Do. | | | | | | 57 - - |
| | 4 Drain above the Carumbilla Paddy fields | | | | | | |
| 1886¼ | Cft. of Laterite in Chunam | Doo cft. | 18 | - | 239 | 8 | 5 |
| 1914 | Do. of Archwork with Do in do | " | 21 | - | 40 | 2 | 7 |
| 4 | Cft. of Cutting | Dft. | 5 | - | 20 | - | - |
| 67 | Do. of Corduroy work | Sq.ft. | - | 6 | 25 | 2 | - |
| 555 | Sq.ft of Painting with Chunam | Sq.re | 1 | 8 | 9 | 12 | - |
| 268 | Do. of Plastering with Do. | " | 4 | - | 10 | 11 | 6 |
| 197 | Cyards of Earthwork | Cyd | - | 3 | 35 | 5 | - |
| | Sundries | | | | 12 | 12 | 6 495 - |
| | No 5. Bridge of 1 Span of 65 feet over the Carumbilla Nallah. | | | | | | |
| 7795 | Cft. of Laterite in Chunam | Doo cft. | 18 | - | 1336 | 14 | 5 |
| 1700 | Do. of Archwork with Do | " | 21 | - | 357 | - | - |
| 30 | Cft. of Cutting | Dft. | 5 | - | 150 | - | - |
| 168 | Do. of Corduroy work | Sq.ft. | - | 6 | 63 | - | - |
| 2262 | Sq.ft of Painting with Chunam | Sq.re | 1 | 8 | 33 | 4 | 11 |
| 1008 | Do. of Plastering with Do. | " | 4 | - | 40 | 5 | 1 |
| 681 | Cyards of Earthwork | Cyd | - | 3 | 127 | 8 | - |
| | Sundries | | | | 37 | 5 | 7 2210 - |
| | No 6 Small Bridge over the Nallah on the Permanagos Hill. | | | | | | |
| 2272¾ | Cft. of Laterite in Chunam | Doo cft. | 18 | - | 409 | 16 | - |
| 2685 | Do. of Arch work with Do. | " | 21 | - | 547 | 1 | 10 |
| | Carried over | | | | 958 | 3 | 4 23375 - - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Brought forward | | | 958 | 3 | 4 | 23375 - - |
| 24 | Cft. of Cutting | Dft. | 5 | - | 120 | - | - |
| 128 | Do. of Corduroy work | " | - | 6 | 48 | - | - |
| 1646 | Sq.ft of Painting with Chunam | Sq.re | 1 | 8 | 24 | 11 | - |
| 768 | Do. of Plastering with Do. | " | 4 | - | 30 | 11 | 6 |
| 471½ | Cyards of Earthwork | Cyd | - | 3 | 89 | - | 3 |
| | Clearing rock for foundation | | | | 75 | - | - |
| | Sundries | | | | 31 | 5 | 4 1375 - |
| | No 7. Bridge of 36 feet Span of Arch over the Nr Klagik Nallah. | | | | | | |
| 6185¾ | Cft. of Laterite in Chunam | Doo cft. | 18 | - | 1113 | 6 | 11 |
| 2040 | Do. of Arch work with Do | " | 21 | - | 428 | 6 | 5 |
| 36 | Cft. of Cutting | Dft. | 5 | - | 180 | - | - |
| 180 | Do. of Corduroy work | Sq.ft. | - | 6 | 67 | 8 | - |
| 2802 | Sq.ft of Painting with Chunam | Sq.re | 1 | 8 | 42 | - | 6 |
| 1050 | Do. of Plastering with Do. | " | 4 | - | 43 | 3 | 2 |
| 175½ | Cft. of cleaning rock for foundation | Sq.ft. | - | 4 | 43 | 14 | - |
| 690½ | Cyards of Earthwork | Cyd | - | 3 | 129 | 7 | 6 |
| | Sundries | | | | 52 | 1 | 6 2100 - - |
| | No 8 Small Bridge at Edwarr. | | | | | | |
| 1601¾ | Cft. of Laterite in Chunam | Doo cft. | 18 | - | 288 | 5 | - |
| 665 | " of Arch work with Do. | " | 21 | - | 139 | 10 | 5 |
| 12 | Cft. of Cutting | Dft. | 5 | - | 60 | - | - |
| 72 | Do. of Corduroy work | Sq.ft. | - | 6 | 27 | - | - |
| 748 | Sq.ft of Painting with Chunam | Sq.re | 1 | 8 | 11 | 3 | 6 |
| 288 | Do. of Plastering with Do. | " | 4 | - | 11 | 8 | 4 |
| 174 | Cyards of Earthwork | Cyd | - | 3 | 32 | 10 | - |
| | Sundries | | | | 14 | 10 | 9 585 - - |
| | No 9. Small Bridge next to Large Nallah Same as No 55 in the 2nd Set. | | | | | | 565 - - |
| | No 10 Small Bridge at Pallalee Embankment Same as No 48 in do | | | | | | 1200 - - |
| | Kadar Bridge - Sanctd for £3940 in G.O. No 655 of 17th March 63 Revised Estimate Not submitted | | | | | | 5000 - - |
| | Total Rupees | | | | | | 34200 - - |

Remark.

Account of Estimates made out above on account of the following Bridges built up in 1863/64 1864/65 and sanctioned Arrangements altered in G.O. of 4th July 1864 No. 1940.

| | | | | |
|---|---|---|---|---|
| 22 Set | No 1. Small Bridge South side of Tellai Bazaar | 490 | - | - |
| | No 5 Ditto on the Kottaypatty Nallah | 757 | - | - 1247 - - |
| | | | | 16027 - - |
| | Balance of Estimate requiring Sanction | | | 33953 - - |

Trangabare Range Office,
Small Canara,
Trangabare 19 August 1865

G. Walker A.C.G.
Supdg.

Peter Thomas Lt
Superintendent P.W.D.

No 170

Supdg. Engineers Office 7 Dec.
Calicut, 6th Nov. 1865

From The Superintending Engineer
y 4th Division

To The Secretary to Government
Department Public Works

Sir,

I have the honor to submit herewith the Survey of the Road to connect Panithangadi, Kad, at the head of the navigation of the Mangalore River, with Hosdroog, at the head of the Canal Communication which reaches to within a few miles of Cannanore. An Estimate of Rs 79640 for the earthwork of the new portion of the line, 15 miles in length, is herewith submitted; out of which sum Rs 34460 is required to be spent by the end of the Calendar year in opening the line to 12 feet in width, leaving Rs 44980 to complete to clear 18 feet, which it is proposed to do in 3 consecutive years.

Estimates for Bridges and Covered Drains along two-thirds of the line, with accompanying Plans, etc all that the Executive Agency of Mangalore Range has yet been able to prepare; those of the remainder of the line will not be ready till the Budget of 1867/68 is compiled. The amount of those now submitted is Rs 46027 and their details are particularized in the following List

| | | |
|---|---|---|
| 16 Bridges and Drains on Hosdroog Road | | |
| 16 Covered Drains, 4×4 at Rs 232 | Rs | 3248 |
| 14 Do Do 2×2 at 127 | = | 1397 |
| | | 4645 |

I am a letter from the Superintending Engineer of the 4th Division of Public Works dated 6th Nov. 1865.

P. Rose Esqrs

Executive Estimate of Rs 13 of 1865/66

Detailed Estimate of Bridges and Covered Drains on the Hosdroog Road

Public Construction
Bridges and Drains
on the Hosdroog Road
and Hosdroog Road

Estimate No. 33/65

| | | | | | |
|---|---|---|---|---|---|
| 29 | Covered Drains | ¾ × ¾ | at Rs 30 = | 16[illegible]5 | |
| 4 | Do Do | 12 × 6 | " 625 = | 2500 | |
| 27 | Do Do | 1½ × 1½ | " 57 = | 1539 | |
| 1 | Do Do | 6 × 7½ | " 557 = | 557 | |
| 2 | Do Do | 6 × 6 | " 450 = | 900 | |
| 2 | Do Do | 16 × 8 | " 757 = | 1514 | One built. |
| 1 | Do Do | 16 × 8 | " 900 = | 900 | |
| 1 | Bridge of 3. 30 feet spans (Notkatoor) | | | 5824 | Built, but the Arches have since collapsed. Supplemental Estimate to be sent. |
| 1 | Covered Drain | 8 × 4 | " 375 = | 375 | |
| 1 | Do Do | 4 × 4 | " 210 = | 210 | |
| 1 | Do Do | 6 × 4½ | " 280 = | 280 | |
| 1 | Do Do | 8 × 6 | " 490 = | 490 | Built. |
| 2 | Do Do | 2 × 4 | " 190 = | 380 | |
| 3 | Do Do | 4 × 6 | " 335 = | 1005 | |
| 2 | Do Do | 4 × 12 | " 700 = | 1400 | |
| 1 | Bridge of 3. 30 feet spans | " | | 5000 | Kadar Bridge. Revised Estimate to be sent. |
| 1 | Do | 24 × 12 | " 1440 = | 1440. | |
| 2 | Covered Drains | 12 × 12 | " 1200 = | 2400 | |
| 2 | Do Do | 8 × 8 | " 565 = | 1130 | |
| 1 | Bridge of 4. 30 feet spans | " | | 5900 | |
| 1 | Covered Drain | 8 × 8 | " 495 = | 495 | |
| 1 | Bridge | 30 × 16 | " 2210 = | 2210 | |
| 1 | Do | 24 × 12 | " 1375 = | 1375 | |
| 1 | Do | 36 × 16 | " 2100 = | 2100 | |
| 1 | Covered Drain | 12 × 16 | " 585 = | 585 | |
| | | | | 46027 | |

2 Rupees 15,000 will have been laid out on Bridge and Drain work by 30th April 1866; but owing to the fall of the Wokadoor Bridge soon after its completion, about Rs 2300 must be added to the amount of the list for its reconstruction with a timber slab form the talents of the neighbourhood having proved to be made of good enough quality for



30 feet arches. This will make a total of 8 Pieces 43511 on account of Bridge and Drain work for which sanction is required and a grand total of 8 Pieces 128146 Revised Plans and Estimates of the Wokadoor and Kadar Bridges will be submitted in the course of the season. Omitting the large Chunderghery River which it is not at present proposed to bridge, the whole cost of the line may be put down at 8 Pieces 150000. That river will be crossed at Bairampa the lowest spot where it is fordable in the dry weather at low tide, with a hard shingly bottom likely to afford good foundations for a Screw Pile Bridge hereafter.

This road was ordered for construction in consequence of representations by the Military authorities of the necessity of keeping up the communication between Canara and Malabar during the monsoon, with a view to the free importation of rice for the Garrison of Cannanore and North Malabar. The Coast Canals being impracticable for a considerable part of the year, the Coast road was ordered at a reasonable cost, the Coast side was laid aside on account of the expected land. In my recommendation of the line made inland. The whole course was determined by myself after laborious examination of each feature of the country, one of no ordinary difficulty, and each of the numerous hills I have on it has either been traced with my own hands, or by Mr Supervisor Fernandez under my immediate superintendence; and he has worked out the intervals between them with his usual intelligence and zeal. Attendance of hands the preparation of the papers required for submission to Government

Civil Works — Public Works Department

No 3577 3577

Proceedings of the Madras Government

Under date the 27th November 1865

Read the following

From the Supt. Engineer
of the 7th Division

Submits Plans and
Estimates for constructing
Road and Bridges &c. to
connect Mangalore and
Cannanore by Villa.

Here enter 6th Nov/65 No 170

With this letter the Superintending Engineer of the 7th Div. submits, with reference to the orders noted in the margin, Plans & Estimates for the road now under construction connecting Pani Mangalore by Villa with Nooreday in the District of South Canara.

The estimate for earthwork amounts to Rs 79,640, of which sum it is stated Rs 34,660 will have been spent by the end of this

6th Sept. 1862 - 2134
17th March 1863 - 655
30 Oct - 3168

See memo under

WM

Read 4th March 1864 - 212
" 17th " " 655 " "

Read the Supt. Engineer's Report
Copy of the Superintending Engineer's Report
See Public Consultation of 4th March 1864
No 212

Read the Report of the Superintending Engineer
Dated 6th November 1865
Received 13th " "
No 3577

Directed that Plans and Estimate for Construction of Road to Pangalore via Villa be prepared by Captain Manners Lyon Public Works Department

Certified that Rs 3577 - 0 - 0 is the amount required

Signed

year in opening the line to a width of 12 feet, leaving Rs 14,980 to complete it to its full width of 18 feet. A separate estimate of Rs 46,027 is also submitted for Bridges & drains along two thirds of the entire length of 45 miles, the expenditure on which it is estimated will amount to Rs 15,000 by the 30th April next, & Colo Walker adds that the estimate for the masonry works required for the remaining clearance will be ready for the Budget of 1867/8. The estimate for Bridges, includes the cost of the Wokadur & Kadar Bridges for which Rs 5550 & 3,940 respectively were sanctioned in the orders marginally noted; the amounts now provided for them are Rs 5827 for the former & Rs 5000 for the latter, & it is reported that an additional sum of Rs 2500 will be required for the Wokadur Bridge as since its Construction the Arches

Why not for that of 66/67
How is it possible for Govt to
sanction an estimate for a
road when such an estimate
total the work is not likely to be
completed — I think that future
instructions should specify
for each Work in which an
work before they begin with
another [illegible]

665 - 17 March/68
1665 - 31 May/68

* For the Wokadur & Kadar Bridges

have collapsed.

The estimates for earth-
work amounting to Rs 79,640,
is afforded; but that for Bridges
& drains is essentially incomplete,
providing as it does for works
required on only a portion of
the road, & for supplemental
demands [illegible], the
necessity for which has yet to
be declared. Para 24 Chapter
IV of the Code Contemplates that
estimates should Comprise the
whole cost of a Connected series
of works on a line of road or Canal
so that the accepted estimate
thereof will therefore not be deferred,
but this need not delay the
progress of the works included in
it. Col: Walker will provide
in the ensuing Budget for such
time as may be advantageously
laid out under both the estimates
which have now been Considered

The Supdg Engr will
expedite his report on the failure
of the Wokadur Bridge, & he will

submits the fullest explanation of the Causes which led to its fall. The necessity for the increased demand for the Kader Bridge should also be fully explained.

D.18.619.

C. 17th Nov. 1865 R. 21st

To The Secretary
" Controller
" Asst. Genl.
Desp. 28th November

24/4

7

P. of V 1855 Deposited
Plan of Govt. Ter. Door

No 3577

Pcor. of the Alligt.

D/27 Novr. /66

Road connecting Pani
Mangalore by Villa with Roor.
: drogn in the S. Canara Dist.
Paponi orders on Letter from the
Supdg Engr 1st Divr submitting
Claw Estimate for earth works
&c in connection with -