

(1) Number of pages_____

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MADRAS RECORD OFFICE**Government of Madras***Public Works*

DEPARTMENT

G.O. No.	1718	Press	<i>Original</i>
B.P. No.		Mis.	
Dated	6. 7-	195	1876

Not to be folded or roughly handled

Read the following papers:—

No. 106. Proceedings of the Madras Government in the Military Department, dated 9th October 1875, No. 4,918.

Read the following papers:—

From Brigadier-General A. HOWLETT, C.B., Quartermaster-General, to Colonel A. C. SILVER, Secretary to Government, Military Department, dated Head Quarters, Ootacamund, 30th September 1875, No. 455-5,966.

I HAVE the honor, by order, to forward for the approval of Government the

	rs.	estimates and plans as per margin, for
1 Estimate for extending the Rifle Range at Berhampore to 800 yards.	650	the extension of the Rifle Range at Berhampore to 800 yards, and to request
1 Estimate for constructing a branch road to the Rifle Range	380	that, if approved, the documents may be
3 Plans.		transferred to the Public Works Department for disposal.

2. In addition to the Public Works Department estimates, a grant will be required in the Military Department for compensation for land as follows:—

	rs.
For the extension of the Rifle Range	42
For the branch road	532
Total...	574

APPROVED.

2. The Controller of Military Accounts is requested to state whether funds are available for the grant of compensation for land, alluded to in paragraph 2 of the foregoing letter.

(True Extract.)

(Signed) A. C. SILVER, Colonel,
Secretary to Government, M.D.

No. 106-A. From Major H. SMALLEY, R.E., Officiating District Engineer, Ganjam, to Major-General G. W. WALKER, R.E., Secretary to Government Public Works Department, dated Camp at Berhampore, 27th January 1876, No. 56.

I HAVE the honor to submit a revised estimate, amounting to Rupees 2,216, for constructing Rifle Range at Berhampore, with comparative statement showing the increase and decrease of each item in the revised and original estimate, and I request that funds to the amount of Rupees 716 may be allotted in addition to the original grant to complete the work.

2. The amount of the general estimate to which sanction has been last accorded is Rupees 1,500, and the date and number of the Order of Government conveying such sanction is G.O., dated 16th May 1874, No. 1,318.

3. The amount expended up to the end of the previous year is Rupees 775-5-0.

4. The allotment of the current year is Rupees 725.

5. The expenditure of the current year up to the end of December is Rupees 893-10-4.

6. Great difficulty has been experienced in getting out the rock in the range. It was thought that simply burning the rock would have been sufficient, that is, that

it would have split off in pieces removable by the means of crowbars and sledge hammers; this however has not proved to be the case, and blasting has had to be resorted to, greatly increasing the cost of the work, as well as delaying its completion, as the Range Officer was obliged to fire every blast himself, not being able to confide this duty to the Overseer or workmen on account of their inexperience in such work, and the consequent fear of accident.

7. The earthwork has considerably exceeded the estimated allowance in being brought up to the requisita section with drainage trenches, &c., and has, moreover, been injured by the rains which had to be made good.

8. Levelling the surface was insufficiently estimated.

9. Gravelling was at first thought not to be necessary, and was actually taken up again when first laid at the request of the Assistant Adjutant-General for Musketry, but was afterwards declared by the same officer to be absolutely necessary if the range is to be used before the rainy season is over.

10. Compensation for land is entered in this estimate at the difference between the amount sanctioned in G.O., dated the 27th November 1875, No. 198, *viz.*, Rupees 574 for the range and road thereto, and the amount as per revised compensation account herewith attached, now stated to be necessary to be paid for land taken up by the same.

11. The range has been in use since the 1st October 1875, but there are several items remaining to be completed, such as gravelling, stone platforms.

No. 106B. From the same Officer, dated Camp at Berhampore, 12th February 1876,

No. 61.

With reference to your Memorandum, dated the 27th October 1875, No. 596, I have the honor to report that the targets on the Rifle Range at Berhampore cannot be conveniently moved back so as to avoid

1 Plan.

1 Estimate.

the nullah at the extremity of 800 yards extension, inasmuch as there is rock cropping up above the ground immediately behind the targets which experience has shown is difficult and expensive to remove; moreover, there is a stream between the targets and the hill at their back which would have to be bridged were the targets moved back.

2. On looking over the plan and estimate again, I think the arched bridge provided for the nullah or rather channel at the extremity of the range is larger than necessary, and I propose therefore to alter it entirely by making it a flat stone covering drain of three vents of 3 feet span each filled over with earth to the level required for the range, and of the same breadth as centre road of the range, *viz.*, 30 feet in order that it may afford as little obstruction as possible when firing is going on. The channel is 9 feet wide at bottom, and has never more than 3 feet water of it, it forms a surplus channel to a tank close by. Excellent flat covering stones can be obtained close at hand. The cost of the work is exactly the same as for the arch before proposed.

3. The stream shown on the cross road between the Digupudi road and the extremity of the range is insignificant, and is made to appear on the plan inordinately large by showing as its limits what is in fact merely low ground with a small hill defined stream running through it which never has more than 2 feet of water in it and does not exceed 6 feet average breadth.

4. The Assistant Adjutant-General for Musketry inspected the range before and after it was marked out, and expressed his approval of the site chosen. The officer commanding the station has approved of the arrangements now proposed.

P.S.—The following original papers are returned, *viz.* :—

- 1 Estimate for extending Rifle Range.
- 1 Branch road to do.
- 1 Plan of drains.
- 1 Survey of proposed range.
- 1 Plan of bridge.

No. 106-C. From the District Engineer, Ganjam, dated 23rd March 1876, No. 72.

No. 107.

ORDER THEREON, 6th July 1876, No. 1,718.

MILITARY WORKS, No. 3.

(a) Head of Service.—Imperial.
Fund.—Ordinary.
Class.—Original Works.
Main-head.—Military.
Sub-head.—Miscellaneous, Military.
Name of Work.—Rifle Range at Berhampore.
Amount.—Rupees 2,987.
To be carried out by the Public Works Department.

With the second letter above quoted, the District Engineer of Ganjam submits detailed estimates for the extension to 800 yards of the Rifle Range at Berhampore, approved in Military Department Order, No. 4,918, of 9th October 1875. The items consist of Rupees 650

for the extension, and Rupees 380 for a road of approach to the range, exclusive of compensation for land payable in the Military Department.

2. The first and third letters relate to a revised estimate of Rupees 1,957 (exclusive of Rupees 833 for land compensation) for which sanction is desired in lieu of the estimate of Rupees 1,166 (exclusive of Rupees 334 land compensation) sanctioned in G.O., No. 1,318, of 16th May 1874. The excess of Rupees 791 is accounted for by insufficient rates and quantities of the original estimate, and some blundering as to the gravelling. There is no real explanation given, and it seems that the work has been carried out irrespective of sanction. The Government consider that the course adopted in respect to this work very unsatisfactory.

3. Each estimate forms part of one and the same work. Sanction is accordingly given for a total of Rupees 2,987 as the cost of the Berhampore Rifle Range; exclusive of land compensation which appears to aggregate Rupees 833. Of this amount Rupees 1,669 were spent up to 31st March 1876; and the balance of Rupees 1,318 has been provided from the Reserve in G.O., No. 1,543, dated 20th June 1876.

(True Extract.)

Colonel,

Offg. Under Secy. to Govt., P.W.D.

To the District Engineer, Ganjam.

Examiner of Public Works Accounts.

Military Department, with Compensation Statement.

Exd. W. H. French.

Spare Copies

Specification Report to Accompanying the revised estimate
of Rifle range at Amborgada for the use of 20 Rifles.

CN 1103

338. 16" July 76.

The Chief Engineer has the
honour to return the papers
received with letter No. 58 of
27th June 1876 from the Dist.
Engineer of Gurgaon for
explanation as to their dispo-
sition, without dispo-
sition at the same time
of the papers referred back
with reference No. 546 of 27th
October 1875.

It is observed that Rs 364.4.0
meant the disposal of the
Dist. authorities for pay-
ment of compensation
for the land originally
stated to be required -
The sum of Rs 574 for extension.

measuring
every 50 yards from target down centre line, stone
flag will be set on surface level with the distance
yards cut there on at each stage.

view and a branch
 road, which is also made
 available by Mil. Dept.
 Order No. 5748 of 20 Decr.
 But Major Muddley has
 nothing to do with pay
 being for the land, and
 will be paid for the
 compensation. The
 amount of the military
 authorities must wait
 till the other
 from the estimate -
 14.2.76.

N/A

Specification Report to Accompanying the revised Estimate
 of Rifle Range at Amborgada for the use of 20 Bore
 N. I. at Berhampore.

- Site** The site has been approved of by the Deputy Inspector Genl. of Musketry which is situated on the North West of the station Berhampore about $2\frac{1}{2}$ miles from Barracks.
- General Description.** There is a good road from the Barracks to the site of the proposed Range which is under the Amborgada hill, the ground is well drained it is 70 + Mean sea, with a gradual rise up to 100 + Mean sea at foot of hill the site of butt, the hill is 100 + rising at an angle of about 45° the top 200 + Mean sea the area of land occupied is $14\frac{1}{2}$ Acres for which a compensation of Rs 717 is proposed the ground affords a range of 600 yards but may be extended to 800 yards.
- Work** The Range will be established in pairs with an interval of 20 yards between each range and a margin of 40 yards in the side.
- Butt** The butt will be 12 ft high 1 to 1 slope and tamped and turped.
- Markers butt.** Will be in interior dimension 9 x 6 as per revised standard plan inclined inwards at an angle of 55° vide G. O. C. C. dated 12 May 1873 and will be brought up to line of slope butt.
- Recochet butt** Will be in interior dimension as per revised standard plan 6 x 4 and they will be situated 15 feet to the flank of markers butt.
- Measuring** The distance of firing points should be measured at every 50 yards from target down center line, stone flag will be set up surface level with the distance in yards cut there on at each stage.

9

Leveling All irregularities in the ground between the firing point and the target to be removed and the ground leveled, and a road way of 26 ft. center raised $1\frac{1}{2}$ ft. + ground level.

Blasting. The rock to be blasted to ground level.

James Lewis Leff
Captains Engineer
Ganjam

N/V
No. 56

Ganjam District Engineer's Office
Camp Berhampore
27 January 1876
The Off District Engineer
Ganjam

To The Secretary to Government
Public Works Department
Fort St George

Encls 3

Sir,

I have the honor to submit
a revised estimate amounting to
Rupees 2216 for Constructing Rifle
Range at Berhampore, with
Comparative statement showing
the increase and decrease of
each item in the revised and
original estimate and I request
that funds to the amount of
Rupees 716 may be allotted in
addition to the original grant
to complete the work.

2. The amount of the general
estimate

Recd. No. 56 927/77
14/1/76

Works for Review
Estimate of Rifle Range
at Berhampore Rs. 2290
Berhampore 27/1/76

Mr. 1105/1
8/3/76

estimate to which sanction has been last awarded is Rupees 1500 and the date and number of the order of Government conveying such sanction is. C.O. 36
Dated 16th May/74 N^o 1318

3. The amount expended up to the end of the previous year is Rupees 775-5-

4. The allotment of the current year is Rupees 725.

5. The expenditure of the current year up to the end of December is Rupees. 893-10-4.

6. Great difficulty has been experienced in getting out the rock in the range. It was thought that simply burning the rock would have been sufficient, that is, that it would have split off in pieces removable by the means of crowbars and sledge hammers; this however has

has not proved to be the case and blasting has had to be resorted to greatly increasing the cost of the work as well as delaying its completion as the Range officer was obliged to fire every blast himself not being able to confide this duty to the overseer or workmen on account of their inexperience in such work and the consequent fear of accidents. The earthwork has considerably exceeded the estimated allowances in being brought up to the requisite section with drainage trenches and has moreover been injured by the rains which had to be made good.

8. Levelling the surface was insufficiently estimated.

9. Gravelling was at first thought not to be necessary, and was actually taken up again when first laid at the request of the Assistant Adjutant General for

or musketry but was after-
wards declared by the same
officer to be absolutely necessary
if the range is to be used before
the rainy season is over.

9. Compensation for land is
entered in this estimate at the
difference between the amount
sanctioned in G.O. dated the 27
November 1875 No: 198 of P. 574
for the Range and Road thereto
and the amount as per revised
Compensation account herewith
attached now stated to be necessary
to be paid for land taken up
by the same.

10. The Range has been in use
since the 1st October/75 but
there are several items re-
maining to be completed such
as travelling, stone platforms.

I have the honor to be
your ^{Sir} most obedient servant.

Wm. M. Major R.E.
Offy District Engineer
Gaujam

Excavations	2	15 1/2	37	4 1/2	3	499 1/2
Abutments	4	12	48	4	3	576
Tring walls	2	13 1/2	27	2	3	162
Retaining walls	1	"	15	13 1/2	1 1/2	303 1/4
Flooring						

Total Rough stone in Chumam cys 149 1/4 55 25/108

Superstructure						
Abutments	2	17	34	2 3/4	6	561
Backing to abutment	2	14	28	3	1	84
Tring walls	4	12 1/2	50	2	12	1200
Face walls	4	9	36	1 1/2	2 1/2	135

Total Face dressed stone in Chumam and Pointed cys 1980 73 1/3

Arch work	1	"	20	14	1 1/2	420
Total arch work cys						420 15 5/9

Parapet walls	2	26	52	1	1 1/2	78
Total Brick in Chumam cys						78 2 8/9

Cornice work	4	27	"	"	"	108
Total Cornice work Rft						108 108

Earth work						
Abutments	2	22	44	8	4	1408
Tring wall	4	13	52	7 1/2	4	1560
Retaining walls	2	13	26	6 1/2	4	676
Flooring	1	"	13	12	2	312

Total Earth work cys 3956 146 14/27

Contingencies

Abstract of the foregoing Estimate

Description of work	Rate	Amount	Total
833 Cys of Earth work	1	52	1
55 " Metalling	8	25	
55 1/3 " Graveling	8	33	54
6400 Sps. Rubbling Range	1	33	54
25 " Removing rock	1	25	
		158	118
Contingencies	5	8	44

No 3 Bridge 1 Arch 16' span

24 25/27 Cys Concrete in Foundation	18	37	62
55 125/27 " Rough stone in Chumam	14	103	8 11
15 5/9 " Arch work	38	54	71
2 8/9 " Brick work	3	8	108
7 5/3 " Face dressed stone in Chumam and Pointed	28	183	54
108 Rft cornice work	8	54	
146 14/27 Cys Earth work	1	9	26
		450	88
Contingencies	5	22	74 473

Total Estimate Rupee 650

I do hereby certify that the accompanying Estimate provides every thing necessary and that no supplemental Estimate will hereafter be required.

Camp Barharpur } H. M. M. Major D. E.
8th May 1905 } Off District Engineer
Gazipur

Mr 1482/96

Specification.

This estimate provides for extending the Rifle Range at Berhampore from 600 yards length as originally sanctioned to 800 yards.

Smallak has the croped just at the end of 800 yards and across this it is proposed to throw an arch of 16' span on 4' 6" abutments - versed sine $\frac{1}{4}$ th span - founded on rubble stone in concrete. Superstructure rubble stone - brick work and parapets of brick.

Smallak Major D.E.
Off District Engineer
Gaujam

Mr 1482/96

Detailed
Estimate No. 43 of 1875-76
District Gaujam
Salug Berhampore

Imperial Military original work
Work

Construction of a slab drain of 3 units of 3 span to be built on the Rifle Range at Berhampore

Particulars	Number	Measurement					Total quantity Each dimension - then per work
		Each	Total	Total length	Breadth	Depth	
<u>Concrete Work</u>							
Abutments	2	42	84				
Piers	2	46	92	176	4	1	704
Play walls	4	6	"	24	3 $\frac{3}{4}$	1	90
Flooring	3	41	"	123	2	1	246
Retaining walls	6	2 $\frac{1}{2}$	"	15	3	1	45
Total cft.							<u>1085</u>
<u>Foundation</u>							
Abutments	2	42	84				
Piers	2	44 $\frac{3}{4}$	89 $\frac{1}{2}$	173 $\frac{1}{2}$	2 $\frac{3}{4}$	3	1431 $\frac{3}{8}$
Play walls	4	6 $\frac{3}{8}$	"	21 $\frac{1}{2}$	2 $\frac{1}{2}$	3	161 $\frac{1}{4}$
Retaining walls	6	3 $\frac{3}{4}$	"	22 $\frac{1}{2}$	1 $\frac{3}{4}$	3	118 $\frac{3}{8}$
Flooring	3	41 $\frac{1}{2}$	"	124 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{1}{2}$	466 $\frac{3}{8}$
Total cft.							<u>2177 $\frac{3}{8}$</u>
<u>Superstructure</u>							
Abutments	2	42	84				
Piers	2	43	86	170	2	4 $\frac{1}{2}$	1530
Play walls	4	5	"	20	1 $\frac{3}{4}$	2 $\frac{1}{4}$	78 $\frac{3}{4}$
Parapet walls	2	15	"	30	1	1	30
Total cft.							<u>1638 $\frac{3}{4}$</u>

12th February 1865 W. District Engineer
Barrow

Specifications
 The work consists of 3 units each of 3 in width and 4' 6" in height covered with flat stones each in length, broad and 6" thick partly dressed so that there shall not be large joints between the stones and that they shall rest square on the abutments and piers. over the coming stones a thickness of earth is to be laid to bring up the road way to the level of the Rifle Range with slopes of 1 to 1 topped. The breadth of roadway at top is to be 30' of which 24' will be gravelled.

Foundations 3 deep in 2 steps resting on concrete 1 thick

Natural rubble stone in Chingai for foundations and the same slightly dressed for superstructure which also is to be pointed

Harshy Draj or R.E.

Off. District Engineer
 Gauran

14/8/96

25
 Detailed Estimate No. 2 of 1875-76
 District Engineer
 Talp Berhampur
 Construction of a Branch road to the Range at Berhampur

Part of Work	Measurement					Total Quantity of each description of work
	Each	Total	Unit	Rate	Amount	
work	1	300	9 1/3		600	
Total Earth work cuds					600	600
work	4	300	4 1/3		200	
Total masonry cuds					200	200
work	1	300	4 1/2		100	
Total painting cuds					100	100

agencies

Slab drain 1 Vent 2 span
 to Foundation

thrusts	2	16 1/2	33	3	1	99
walls	4	2	8	2 1/4	1	18
ing walls	2	1/2	1	3	1	3
eg	1	11 1/2	1 1/2	1/2	1	8 5/8

Total concrete in foundation cuds 123 5/8 4 55/72

foundations	2	15 1/2	31			
thrusts	4	2	8			
ing walls	2	1 1/2	3	42	2	2
eg	1	11 1/2	1 1/2	1 1/2		
Total Rough stone masonry cuds						103 3/8 1 39/216

Superstructure.

Abutments	2	15	..	30	1 1/2	1	45
Do	2	15	..	30	1	1	30
Wing walls	4	2	..	8	1 1/2	2	24
Parapet walls	2	9	..	18	1 1/2	1 1/2	40 1/2

Total Free draped stone in Chumam
Pointed cycle } 139 1/2 5 1/4

Covering stones 15 .. 3 1 1 15

Total number of covering stones 15 15

Revetments	4	2 1/2	..	9	1 1/2	1	13 1/2
Spouts	2	4 1/2	..	9	1 1/2	1 1/2	20 1/4
Parapets	2	9	..	18	1 1/2	1 1/2	40 1/2

Total Rough stone cycle 74 1/4 2 1/12

Earth work

Abutments	2	18 1/2	37				
Wing walls	4	2	8				
				45	5	3	625

Total Earth work cycle 625 23 1/4

No 2 Slab Drain 3 Vents 2' span

Concrete in Foundation

Abutments	2	16 1/2	..	33	3	1	99
Wing walls	4	2	..	8	2 1/2	1	18
Retaining walls	6	1/2	..	3	3	1	9
Piers	2	16 1/2	..	33	2 1/2	1	82 1/2
Flooring	3	11 1/2	..	34 1/2	1 1/2	1 1/2	25 7/8

Total Concrete in Foundation cycle 234 3/8 8 2/3

Foundations

Abutments	2	15 1/2	31				
Wing walls	4	2	8				
Retaining walls	6	1 1/2	9				

Piers				48	2	2	192
Flooring	2	15 1/2	..	31	1 1/2	2	93
	2	11 1/2	..	23	1 1/2	1 1/2	51 3/4

Total Rough stone in Chumam Cycle 336 3/4 12 5/108

Superstructure

Abutments	2	15	..	30	1 1/2	3	135
Do	2	15	..	30	1	1	30
Piers	2	13	..	26	1	3	78
Archways for Piers	3	1	..	3	1	3	9
Wing walls	4	2	..	8	1 1/2	4	48
Parapet walls	2	15	..	30	1 1/2	2	90

Total Free draped stone in Chumam
and Pointed cycle } 390 14 4/9

Covering stones 45 .. 3 1 1 45
Total covering stones number 45 45

Revetment	4	2 1/4	..	9	1 1/2	2	27
Spout	2	10 1/2	..	21	1 1/2	1 1/2	47 3/4
Parapets	2	15	..	30	1 1/2	2	90

Total Rough stone cycle 164 3/4 6 11/108

Earth Work

Abutments	2	18 1/2	37				
Wing walls	4	2	8	45	5	3	675
Piers	2	18 1/2	..	37	4 1/2	3	449 1/2

Total Earth work cycle 1174 1/2 43 1/2

Contingencies

Abstract of the foregoing Estimate

Quantities on Dimensions	Description of work	Per Cubit	Rate	Amount	Total
600	Cyds Earth work	cyd " 1 "	37 8		
200	" Metalling	" " 8 "	100		
100	" Graveling	" " 8 "	50		

Contingencies p.c 5 = 187 8
8 8
196

N. 1 Slab drain 1 V. cut 2' span				
4 ⁵⁵ / ₂ Cyds of concrete in Foundation	cyd 18 "	13	38	
7 ³⁹ / ₂ " Rough stone in Chumam	" 14 "	13	75	
5 ⁶ / ₆ " Face dressed stone in Chumam & Pointed	}	28 "	12	148
15 Dr. of opening stones				
2 ¹² / ₁₂ Cyds Rough stone	cyd " 8 "	1	5	
23 ¹ / ₄ " Earth work	" " 9 "	1	13	

Contingencies p.c 5 = 50 118
2 44
53

130 249²⁹

N. 2 Slab drain 3 V. cut 2' span				
8 ² / ₂ Cyds of concrete in Foundation	cyd 18 "	13		
12 ⁵¹ / ₁₀₈ " Rough stone in Chumam	" 14 "	23	62	
14 ⁴ / ₉ " Face dressed stone in do	}	28 "	36	19
45 Dr. of opening stones				
6 ¹¹ / ₁₀₈ Cyds of Rough stone	" 8 "	3	9	
48 ² / ₂ " of Earth work	" 9 "	2	7	
			122	93
Contingencies 5 percent			8	69
				131

Total Expenses = 380

I do hereby certify that the accompanying Estimate provides for every thing necessary and that no supplemental Estimate will hereafter be required.

Attest
H. Walley Major &c
Off District Engineer
Camp Beshawpur
8 May 175
Ganjam

Specification

This Estimate provides for forming a short road up to the Rifle Range Berhampore from the Berhampore and Segurpudi road and is absolutely necessary in order to allow of the troops reaching the Range during the rains. It is laid out so as to come in to the end of the Range when extended to 800 yards length as it is believed is the intention. It leaves the Segurpudi Road about $\frac{1}{2}$ a mile from the Berhampore end crosses the side track of that road by a small flat stone culvert of 1 vent 2' span crosses the fields for 112 yards via nullah over which a flat stone culvert of 3 vents of 2' span after which it proceeds along an old Cart track to the Range. The ^{top} surface of the road is to be 5 yards wide of which 4 are to be metalled and gravelled - 6" metal and 3" gravel. The culverts to be of rubble stone or concrete.

Compensation for land not included the necessary information not having been received from the civil authorities. It

is suggested this may be settled in the military department.

Wm. H. Major
Off District Engineer
Farjam

No 1482/96

6784-
2640
1482
1103

No 1482/96

Other Report

Aug 10 3931

No 6 p.m. Gaujam District Engineer
Camp Berhampore
27th February 1876

To
The Off District Engineer
Gaujam
To The Chief Engineer and
Secretary to Government
O.W.D Fort George

Sir,

With reference to your
Memo dated the 27th October/75
No 596 I have the honor to report
that the Targets on the Rifle
Range at Berhampore cannot
be conveniently moved back to
avoid the rala at the ex-
tremity of 800 yards extension in
as much as there is rock cropping
up above the ground immediate-
ly behind the Targets which
experience has shown is difficult
and

Encls.
Please
Estimate

and expensive to remove; more-
over there is a stream between
the Targets and the Hill at their
back which would have to be
bridged were the Targets moved
back.

2. On looking over the plans
and estimate again I think
the arched bridge provided for
the rāla or rather Channel
at the extremity of the Range
is larger than necessary and I
propose therefore to alter it en-
tirely by making it a flat stone
Covering drain of 3 vents of 3 span
each filled over with earth to
the level required for the Range
and of the same breadth centre
road of the Range viz 30 feet
in order that it may afford
as little obstruction as possible
when firing is going on. The
Channel is 9 wide at bottom
and has never more than 3
water

water of it - it forms a surplus
Channel to a tank close by.
Excellent flat covering stones can
be obtained close at hand.
The cost of the work is exactly
the same as for the arch before
proposed.

3 The stream shown on the
cross road between the Sigupudi
Road and the extremity of the
Range is insignificant and is
made to appear on the plan in-
ordinately large by showing as
its limits what is in fact merely
low ground with a small ill
defined stream running through
it which never has more than 2
of water in it and does not exceed
6 average breadth.

4. The Assistant Adjutant General
for Mysore inspected the Range
before ^{and} after it was marked out and
expressed his approval of the site
Chosen. The officer Commanding
the

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the Station has approved of the
arrangements now proposed.

I have the honor to be
Sir
Yours most obedt.

Humbley Major R. E.
Off District Engineer
Punjab

P. L.

The following original
papers are returned viz

1. Estimate for extending Rifle
Range.

1. Branch Road to do

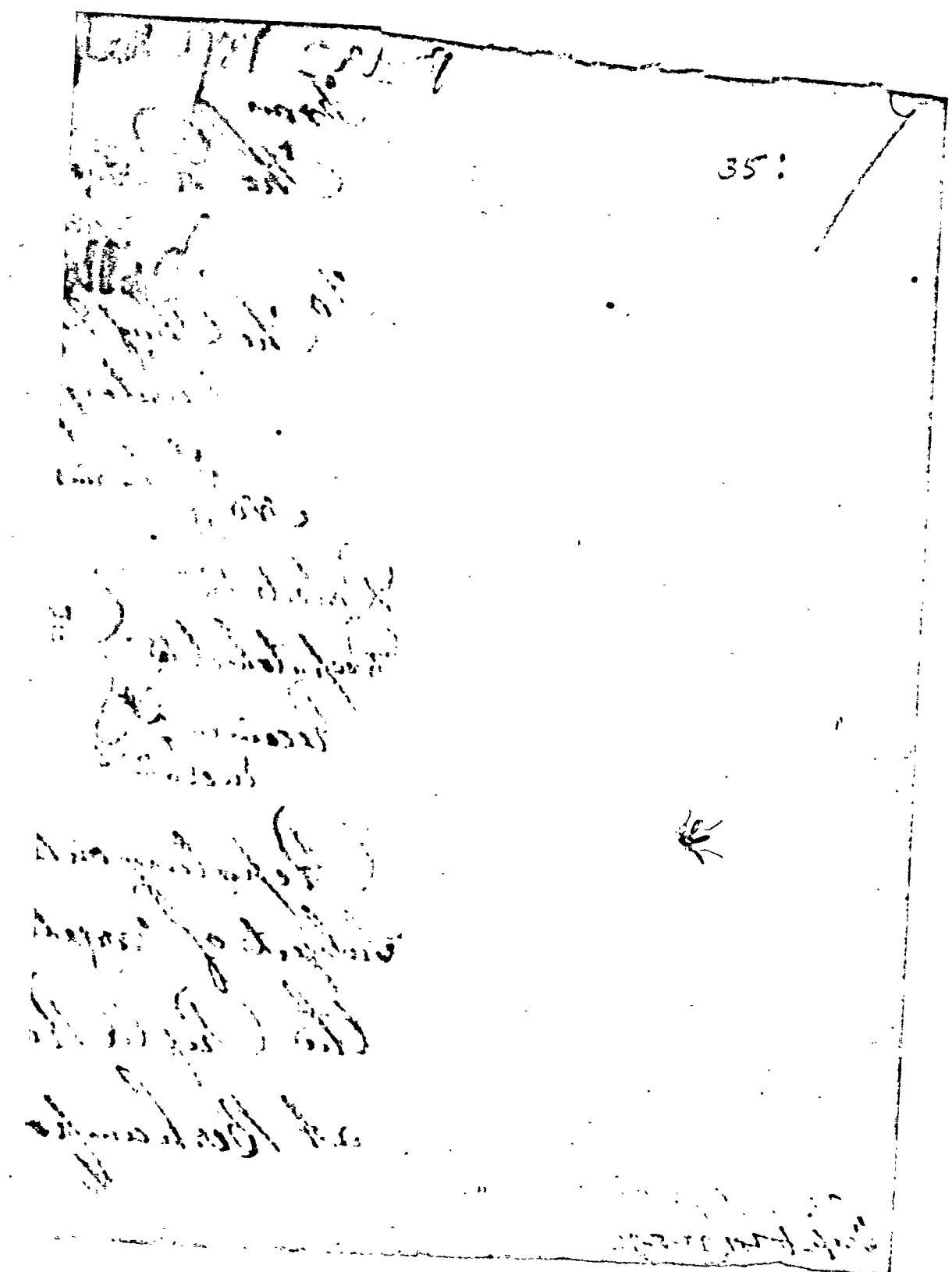
1. Plan of drains

1. Survey of Proposed Range

1. Plan of Bridge

Detailed

37



25

The station has approved of the

Per 1896 Sept.
 From
 The District Super
 Ganjam
 To The Chief Super
 Secretary to Govt
 P.W.D.
 Fort Saint George
 No 61

Dated 12
 Despatched 15
 Received 28
 Encl. 245 1/2

Reporting on the
 Subject of Targets on
 the Rifle Range
 at Berhampore

Cin 29.6.76 P.W.D. 6.7.76
 Despatched 23.5.76. R.S. 7.76

Detailed
 Estimate No 58 of 1875-76
 Ganjam District
 Berhampore Taluk
 Imperial
 Military
 Original work

Revised Estimate for Constructing Rifle Range
 at Chabazada for the use of 2nd Regiment, R.I.

Particulars	Measure	Unit	Content	Total quantity	Each eleven	work done
Marker's Butt						
Wall for marker's Butt	1	25	3	1	75	
Total Concrete work and foundation					2	57
Foundation						
Wall for marker's Butt	1	24	2	3	147	
Total Rough stone work in foundation					5	9
Superstructure						
Wall for marker's Butt	1	24	1	2	257	
Total Brick-work					9	3
Earthen bund near of the marker's Butt	1	30	4	8	960	
Total Earth work including tamping & treading					35	5
Flooring to marker's Butt	1	9	8	"	72	
Total Flooring with rectangular cut stone slabs in parallel and pointed with bituminous mortar					18	25
Inside of the marker's Butt	1	24	7	"	168	
Total Pointing in Chumau					1	25
Roofing						
Terrace Roofing	1	12	8	"	96	
Total terrace Roof with brick on edge 3" gully & corners of flat tiles & 3 coats of plastering with wood work					24	25

Small table fixing in the wall	1	4	3	1	
Tarring wood work					
Excavating foundation					
Contingencies					
Recochet Butt					
Concrete Work					
Wall for Recochet Butt	1	14	8	1	42
Total Concrete work under foundation cys					15
Foundation					
Wall for Recochet Butt	1	13	2	3	81
Total Rough stone work cys					3
Superstructure					
Wall for Recochet Butt	1	13	1	7	136
Total Brick work cys					518
Earthen bund rear of the Recochet Butt	1	23	4	8	736
Total Earthen bund rear of the Recochet Butt including tamping & turping cys					27
Plastering					
Plastering inside of the Recochet Butt	1	15	1	7	108
Total Plastering sqrs					14
Flooring					
Flooring to Recochet Butt	1	6	6		36
Total flooring with rectangular cut stone slabs parallel and pointed with bituminous mortar sqrs					9
Roofing					
Terrace Roof	1	9	6		54
Total Terrace Roof with bricks on edge 3' gully 3 courses of flat tiles & 3 coats of plastering in Chinaware with wood work sqrs					27
Tarring to Woodwork					
Excavating Foundation					
Contingencies 5 percent					

Rifle Range					39
Artillery Ground					
Sides of the Road	1	1600	26	1	211680
Total levelling for Rifle Range sqrs					2116
Earth Work					
Main Road	1	1800	26	1	70200
Cross Road	24	60	18	1	38880
Total Earth work for road & turping cys					109080
Catch drain for main road	2	1800	1	1	6750
Total Earth work for catch drain for main Road cys					250
Plat form for Target	2	18	12	2	864
Total Earth work cys					32
Stop Butt	1	163	12	12	23472
Total Earth work with tamping & turping cys					8693
Stones marking figures on it					12
Removing Rock here and there sqrs					80
Gravel					
Gravel for main Road	1	600	23	1	4600
do for cross Road	8	60	14	1	2240
Total Gravel cys					253
Metal					
Metal for main Road	1	600	23	1	4600
do for cross Road	8	60	14	1	2240
Total metal cys					6840
Gravel for main Road	1	1800	26	1	15600
do for cross Road	24	60	18	1	8640
Total Gravel cys					24240
Plat form for target	2	20	3		120
Total sqrs cut stone including					1
Contingencies at 5 percent					

12/15/16

Revised Estimate for Constructing Rifle Range at Berhamstead

Particulars	Rate	Per	Amount	Total
Marker Butt				
$2\frac{7}{8}$ Cyls Concrete under foundation	24	cid	64	✓
$5\frac{4}{9}$ " Rough stone work	212	"	14156	✓
$9\frac{1}{8}$ " Brick work	3	"	28	✓
$35\frac{5}{9}$ " Earth work with	16	"	354	✓
$\frac{18}{25}$ " Canvas and tarping				
" of flooring with				
rectangular cut stone				
slabs in parallel and	13	sq	959	✓
joined with bituminous				
mortar				
$\frac{17}{25}$ " of Pointing walls	18	"	283	✓
$\frac{24}{25}$ " of terrace roof with				
brick on edge 3" by 3"				
Courses of flat tiles and	20	"	1932	✓
3 coats of plastering with				
wood work				
Small table fixing in the	6	Each	6	✓
wall				
Tarring wood work			3	✓
Excavating foundation			2	✓
Contingencies percent	5		56	✓
Total for one			100	✓
for Two			200	✓

Check Check Butts
 1 1/3 Cys Concrete under foundation 2 4 " cy 3 8
 1 1/3 " Rough stone work 2 12 " 8 4
 5 1/8 " Brick work 4 " 20 3 6
 27 2/3 " Earth work and
 tamping and turping } 1 6 " 20 3 6
 1 1/4 Srs of Pointing to walls 1 8 " Srs 1 9 11
 1 9/25 " of flooring with rec.
 angular cut stone
 slabs parallel and
 pointed with bituminous
 mortar 13 " 4 10 10
 2 1/2 " of Terrace roof with
 brick on edge 3" jelly
 3 courses of flat tiles
 and 3 coats of plastering 20 " 10 12 9
 with wood work
 Tarring wood work 2 8
 Excavating foundations 1 4
 Contingencies 5 - p.c 2 10 2
 Total for one 58
 for two 116

Rifle Range
 2 11 6 4/5 Srs of dwelling ground 1 9 Srs 23 1 8 4
 40 40 Cys Earth work for
 main and cross road 2 " cy 50 5
 with turping
 250 " Catch drain for main road 9 " 11 11 6
 86 9 3/4 " Earth work for slop butt 3 " 16 3
 with tamping & turping
 32 " Earth work for platform
 of target 1 " 2
 253 3/4 cy Metalling for main
 cross roads 4 " 63 5 4
 12 Stones for marking figure 10 Each 7 8
 C.O. 984 1 2 3 16

80 Cys removing rock
 here and there } 3 8 " cy 280 - 145
 115 1/9 " Travelling " 4 " 287 12 4
 1 1/3 Srs cut stone platform
 for targets } 12 " Srs 14 6 4
 1566 3 10
 Contingencies 5 - p.c 74 12 2
 1641
 Compensation for land taken up 8 3 3
 Amount Originally sanctioned 2790
 Amount to be sanctioned 1500
 Amount to be sanctioned 1290

I do hereby certify that the amount
 paying estimate provides for every thing
 necessary and that no supplemental
 Estimate will hereafter be required

Compared
 B.S.

/Sd/ James Liversidge
 Assistant Engr

Munster Major R.E.
 Off District Engineer
 Ganjam

19/5/26

Mr. 2640/96.

Mar 27/90.

Recd March 27/90
9230 March 17/96

3901

Gauguin Dis. Engrs. office
Camp Berkanpore

23 March 1876

N: 72 From
The Off. District Engineer
Gauguin
The Chief Engineer
Department. P. D.
Fort St. George
Ser

With reference to your

Encls Memo dated the 16 February
1876 N: 338 I have the honor
to inform you that the papers
referred back with memo N:
596 of 27 October 1875 were dis-
posed of in this office letter
N: 61 dated 12 February 1876.

I considered that the estimate
for the Range was a revised
estimate and that for the road to
it a new estimate, and thought
they should be treated sepa-
-rately and hence did not
- send

ment.

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P. W. 1876 Report
 from No: 26410
 The District Super
 of our
 to the Chief Super
 of the
 Delet 23:
 1876
 Dec 11 1876
 E. 3. 11
 Forwarded Received
 Estimate, Specifications
 Report & Comprehensions
 Statement & for
 the Rifle Range
 at B. & C. for
 for Auction

(a) Heads of Service— *Imperial*

Fund. *Ordinary*

Class. *Original Works*

Main-head. *Military*

Sub-head. *Miscellaneous Military*

Name of Work. *Rifle Range at Berkhamstead*

Amount. *Rs 2987*

To be carried out by the *P. W.* Department.

is in the margin of G. O. No 1718 of 6 July 1876

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 6th July 1876
Read the following:

Pro: in the Military Dept. (No. 4918 of 9th Oct. 1875)
From The Dist. Engr. Ganjam - (No. 56 - 27th Jan. 1876)
do do do (No. 61 - 12th Feb. 1876)
do do do (No. 72 - 23rd March 1876)

With the second letter above quoted the District Engineer of Ganjam submits detailed estimates for the extension to 800 yards of the Rifle Range at Berhampore, approved in Military Department order No. 4918 of 9th Oct. 1875. The items consist of Rs 650 for the extension and Rs 380 for a road of

of approach to the Range,
exclusive of compensation
for land payable in the
Military Department.

2. The 1st and 3^d letters
relate to a revised estimate
of Rs 1957 (exclusive of Rs 833
for land compensation) for
which sanction is desired
in lieu of the Estimate of
Rs 1166 (exclusive of Rs 334
land compensation) sanctioned
in G.O. N^o 1318 of 16th May
1874. The excess of Rs 791
is accounted for by insuff-
icient rates and quantities
of the original estimate,
and some blundering as to
the gravelling. There is
no real explanation given,
and it seems that the
work has been carried out
irrespective of sanction.

The Govt considers that the
work adopted in respect
to this work very unsatisfactory.

the

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The unsatisfactory manner
which seems habitual in
Ganjam.

Each Estimate forms
part of one and the same
work. Sanction is accord-
ingly given for a total of
Rs ~~2778~~²⁹⁸⁴ as the cost of the
Berhampore Rifle Range;
exclusive of land compen-
sation which appears to
aggregate Rs 833. Of this
amount Rs 1669 were spent
up to 31st March 1876,
and the balance of Rs
1318 has been provided
from the Reserve in G.O.
N^o 1543 dated 20th June
1876.

& Being provided

Dist: Engr: Ganjam ✓
Ex: P. W. Accts. A Detd from
Military Dept with compen-
sation statement, 15
sett 26/7/76 Nil 17

2640 1482 1103 6784
Gobt. of 1876 Madras.
PUBLIC WORKS.

To

Mr. H. C. Ganjam

Dated

Issued

Recd

Encl.

G. O., 6 July 1876, No. 1718

Nos. 106-107

File Range at
Berhampore - Ganjam
Pr. Estimate of Rs.
1987 for a —
sanctioned with re
marks.

sent to Mr. P. J.
27-7-11