

(1) Number of pages_____

(2) Date of repair_____

(3) Initials of the Referencer_____

MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	2966.	Press
B.P. No.		Mis.
Dated	3-11	1876 195

Not to be folded or roughly handled

Read the following papers:—

No. 77. From Colonel E. A. FOORD, R.E., District Engineer, Bellary, to Major-General G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Bellary, 1st December 1874, No. 1,483.

With reference to G.O., No. 170, dated 31st October 1873, I have the honor to

1 Survey and levels.
4 Plans of masonry works.
1 Estimate.
1 Report.

submit, for the sanction of Government, plans as per margin, with an estimate of Rupees 7,660, and report for the construction of a road from Soondoor to Somalapore

in order to complete the line of communication between the Eastern and Western Taluqs of the Bellary District *via* Soondoor.

2. The road up to the nullah, before commencing the ascent of the ghaut, has been completed with the loan of Rupees 2,500 granted to the Rajah of Soondoor. The present estimate provides for completing the line from that point up to the limits of the Soondoor territory. Length, 3 miles, 4 furlongs, and 21 yards, and for constructing four bridges, five dry stone tunnels and three road dams at an aggregate cost of Rupees 4,075.

The estimate has been approved by the Collector.

The survey and estimate were prepared by Mr. Lyon, Assistant Engineer, Hospett Range. I have had to increase the thickness of the abutments and arches of the bridges, but I have not altered the rest of the estimate.

No. 25.

No. 77-A.

MEMORANDUM.

THE Chief Engineer is unable to recommend the estimate for the Kunawayhully road in Soondoor, as submitted with letter, No. 1,483, of 1st December, from the Superintending Engineer, Bellary District, for the sanction of Government, whether with reference to Mr. Lyon's trace of the line or to his rates. They show plainly his want of experience in the design and execution of a ghaut road such as this.

2. It is only by bold treatment that a really good job can be made of such a work; a maximum gradient* must be fixed ^{3" 30"} for each ascent and descent, and *never* exceeded. Mr. Lyon shows "general inclinations" of 1 in 15 in his ascents and descents; but the actual gradients allowed would seem from his levels to run as high as 1 in 10 to 12 in places. He may have varied his slopes to avoid expensive obstacles; this is allowable only with the proviso that the maximum gradient is *never* exceeded. But practically it will be found that variation from a fixed gradient to avoid some one particular obstacle often leads into other (perhaps worse) obstacles further on. At all events each feature should have a trial* trace run from top to bottom at a fixed gradient, to give accurate knowledge of the ground, and to be a guide for such variations as it may show to be absolutely necessary.

3. Take the first ascent from east to west. The station marked as 195.49 may be assumed as the fixed point from which to trace (though possibly the old road 50 feet below would do as well). There is a fall of 123 feet between this and the plain at station

72.46 in a distance of 2,175 feet; admitting therefore of a uniform gradient of 1 in 17 $\frac{3}{4}$ nearly, instead of 1 in 15, without resort to the two returns that have been allowed, an objectionable expedient which should not be resorted to in such a case as this on any consideration. In descending it would appear that so easy uniform a gradient as 1 in 25 was possible.

4. The chief difficulty occurs at the high rock alluded to in paragraphs 12 and 13 of the report, where the Chief Engineer is inclined much to prefer a high level line involving even 2 or 300 feet of rock cutting to an embankment of 400 feet, much of it in the actual bed of main river. At any rate the foundations and sections of revetments proposed by Mr. Lyon are insufficient, to say nothing of the rates. The road dam at 2 miles 1,356 feet is objected to, as from its level the crossing will be impassable; when the main stream is in flood, there should be a bridge. Of the two last hillocks crossed (see paragraph 16) the first will require to be carefully traced over or must be heavily cut through.

5. From his personal knowledge of the road and his experience of the similar (though much less difficult) gorge by which the Soondoor valley is entered from the Bellary side, which was traced and opened by him, the Chief Engineer cannot but think that Mr. Lyon has erred in his calculation of the amount and cost of the earthwork involved in making a road 5 yards wide along such steep and stony or rocky hill sides. He is inclined to double the former, and increase the latter to at least 4 Annas a cubic yard. The rate for blasting rock he would put at Rupees 1 $\frac{1}{2}$ (even allowing for the use of cast steel jumpers), and increase the quantity to be dealt with very considerably, owing to the improved traces he recommends. Rough stone revetments built of larger stones and thicker section than proposed, and check-drains and under-drains throughout will, he is confident, altogether treble the amount of the estimate for roadwork and raise the total estimate to Rupees 15,000, which after all cannot be considered excessive for 3 $\frac{1}{2}$ miles of ghaut road. The Chief Engineer would recommend that Mr. Supervisor Power, who has had much experience of such work, be detached for the trace and estimate of the line, guided by these remarks and by Mr. Lyon's survey and levels, which have evidently been very carefully taken, and without which such detailed instructions could not have been given. It is not at all surprising that he has not been able to deal with such difficult ground quite to the satisfaction of the Chief Engineer, who gives him however much credit for his first attempt at such work.

FORT ST. GEORGE,
8th January 1875.

To the District Engineer, Bellary.

(Signed) G. W. WALKER, Major-Genl., R.E.,
Chief Engineer.

No. 77-B. From W. B. LEGGATT, Esq., A.I.C.E., Officiating District Engineer of Bellary, to Major-General G. W. WALKER, R.E., Chief Engineer and Secretary to Government, Public Works Department, dated Camp at Raman-droog, 11th October 1876, No. 2,665.

In reference to G.O., No. 2,698, of the 6th instant, this morning received, I have the honor to inform you that I have some time ago, in company with Mr. Macartney, inspected the country through the Kunnawahully gorge of the Soondoor valley, and we have selected a line for a cart road through it.

We are prepared to begin work there immediately, and I have addressed Mr. Macartney on the subject; the work shall have my best attention; but, as it is not possible with the ordinary establishment of the district to provide special supervision for famine works now being undertaken all over this district, I beg that I may be

authorized to employ not more than four temporary Sub-Overseers* as necessity may arise, reporting my proceedings to Government.

2. Paragraph 2 of the Government Order above quoted shall be attended to in a separate communication.

MEMORANDUMS.

No. 1,526.

With reference to his letter, No. 2,665, dated 11th October 1876, the District Engineer, Bellary, is authorized to entertain such temporary lower establishment as he may require to assist in Famine Relief Works.

(Signed) G. W. WALKER, Major-Genl., R.E.,
Chief Engineer.

No. 1,527.

Copy of the above forwarded to the Examiner of Public Works Accounts for information.

(Signed) G. W. WALKER, Major-Genl., R.E.,
Chief Engineer.

19th October 1876.

No. 77-C. From W. B. LEGGATT, Esq., A.I.C.E., Officiating District Engineer, Bellary, to Major-General G. W. WALKER, R.E., Chief Engineer and Secretary to Government, Public Works Department, dated Bellary, 21st October 1876, No. 2,867.

With reference to paragraph 2 of my letter, No. 2,665, of the 11th instant, I have the honor to report that an estimate of Rupees 7,660, accompanied by plans and a specification report, for the construction of a road from Soondoor to Somalapore, were forwarded to Government, with letter from Colonel Foord, R.E., No. 1,483, dated 1st December 1874.

2. These documents not meeting with your approval were returned with your memorandum, No. 25, dated 8th January 1875, with instructions to have a fresh estimate and trace for a ghaut road prepared by Supervisor Mr. Power.

3. Mr. Power was accordingly directed, on the 4th March 1875, to make another trace of the road as soon as he could spare a few days from the ordinary work of his range; but, as he was then engaged in looking after the repairs of the large tanks* in the Pennaconda Range which were breached by the heavy rains of October 1874, he could not, without detriment to works in that range, be spared for the ghaut trace.

* Dhurmaverum and Bookapatam tanks. Also restoration of Gottoor tank.

4. On the receipt of G.O., No. 172, dated 25th April 1876, I called upon Mr. Power to report how soon he would be prepared to furnish the estimate called for on the 4th March 1875. I took the opportunity to point out to Mr. Power that I had seen the country over which the road was to be carried; that I was of opinion that about ten days would suffice for the tracing of the line; and that the Sub-divisional Officer, Supervisor Mr. O'Leary, could take charge of the Pennaconda Range during Mr. Power's temporary absence therefrom.

5. Mr. Power was prepared to leave Pennaconda on the 4th June 1876, but, as Mr. O'Leary's services were required to conduct the prosecution of Mr. Johnson for the irregularities reported in my letter, No. 556, dated 15th May 1876, I was obliged to request Mr. Power to defer leaving his range until Mr. O'Leary's return to duty.

6. The Supervisor in charge of the Hospett Range, Serjeant Frankland, having in the meanwhile obtained three months' privilege leave, I have placed Mr. O'Leary in temporary charge of the Hospett Range as reported in my letter, No. 2,598, of the 9th instant.

7. I regret to add that Mr. Power's services cannot be spared at present for tracing the Soondoor ghaut road, as he is busily engaged in finding and supervising relief works for the famine-stricken poor in that range. I shall however take the earliest opportunity of setting Mr. Power free for the ghaut work, and shall submit an estimate for the same as soon as possible.

No. 78. ORDER THEREON, 3rd November 1876, No. 2,966.

CIVIL WORKS, No. 5.

HIS GRACE the Governor in Council is seriously displeased that the District Engineer of Bellary has up to this date failed to provide such an estimate for opening a cart road through the Kunawayhully gorge between Soondoor and Koodlighee, as could be approved by the Chief Engineer. It was called for by Government three years ago, and in reviewing the first estimate sent in by Colonel Foord in December 1874, the Chief Engineer gave minute instructions as to the manner in which the line should be laid out, and the agency to be employed for the purpose. A simple exchange of Range Officers was all that was necessary.

2. As the work is one which will afford relief where it will be available to many, and will shorten the communication for carts between Bellary and the Western Taluqs by a route usually well watered, and probably even in this dry season offering more water and fodder than those in the open country; and, as it is desirable on all considerations to strengthen the hands of the Public Works Executive in the Bellary District, the District Engineer will arrange for relieving Supervisor and Conductor Power from charge of the Pennaconda Range as soon as possible, and will place him in charge of the work of opening the Kunawayhully Pass to wheel traffic, authorizing him to employ labor on it as soon as he shall have satisfied himself of the correctness of his tracks; a credit of Rupees 15,000, according to the Chief Engineer's

rough estimate, being made available for the purpose, and debited to Famine Relief Funds, Imperial. Mr. Power will supply the Chief Engineer with survey and estimate of his work in due course; and the District Engineer will meanwhile see to provision of tools, including steel jumpers and powder for blasting, of which there will be a good deal.

3. To supply Mr. Power's place permanently in the Pennaconda Range, Sub-Engineer Syed Yussuf will be directed by the District Engineer, Trichinopoly, to join with all expedition, his place being taken by Assistant Engineer Evans, already attached to that district for general duty.

(True Extract.)

Major-General, R.E.,
Secretary to Government.

To the District Engineer, Trichinopoly.

" " Bellary.
" Examiner of Public Works Accounts.
" Financial Department.
" Revenue Department.

Exd. A. Grubert.
Spare Copies

Public Works Dept

Notification

The following transfer is ordered.

Syed Ghous Saib, Sub Engineer
3rd grade to the Bellary District.

To join expeditiously at the public
expense.

G.M.

①

N^o 1

No. 1483

District Engineer's Office
Bellary 1st December 1874

From

The District Engineer

Bellary

To

The Secy. to Government

P. M. Department

Sir

Enclosed

1 Survey & Levels

4 Plans of Ma-

sony works

1 Estimate

1 Report

With reference to G. O. No. 170 dated 31st October 1873, I have the honor to submit for the sanction of Government, plans as per margin, with an Estimate of Rs. 7660, and report for the construction of a road from Soudoor to Somatapur in order to complete the line of communication between the Eastern and Western Taluqs of the Bellary District via Soudoor.

2. The road up to the Mullah, before commencing the ascent of the Ghant, has

26-11-76
20/2966/2-11-76

Directed
7th November 1874

The Survey and Estimate were prepared by Messrs. Lyons, Steel, Vig-
ner, Aspell & Mearns. I have had to
increase the thickness of the Abut-
ments and Arches of the bridges, but

I have the honor to be
Sir
Your most obedt. Servant
E A Smith Col R.E.
District Engineer Henry

Aug 2-10-76. 1921-22

them four temporary Sub Overseers as
 necessity may arise reporting my pro- * At Rs 60 per
 ceedings to Government. Month each

2. Paragraph 2 of the G.O. above
 quoted shall be attended to in a separ-
 ate communication

I have the honor to be
 Sir
 Yours most obedt. Servt.
W. J. P. [Signature]
 Dy District Engineer
 Bellary

15
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Q86-9-734266 Vol 1 Op-
 31-10-73. 170 Fair-
 6-10-76. 2698. or

P.W.D.
 14 OCT 76
 No 7382

No. 2665
 Soudon & Grand
 Road. Repairs &c.
 No 2698 of 6 Oct 76
 regarding sub mts

Dated 11 October 1876.
 Recd.

TO
 THE SECRETARY TO GOVT.,
 P. W. DEPARTMENT.
 FROM
 THE
 Chief Engineer of
 Bellary.

In memo No 1526, and
 1527 of 19/10/76.

With reference to his letter No.
 2665 dated 11 Oct 1876 the District
 Engineer Bellary is authorized
 to entertain such temporary lower
 Establishment as he may require
 to assist in Famine Relief works.

207. S. W. W.
 No. 1527

Copy of the above forwarded
 to the Examiner P. W. &c for
 information
 207. S. W. W.

Copy 2-10-76. 13-11-76
 Dpts to Oct 18-10-76.

5/10/76 No 2867

17
 District Engineer's Office
 Bellary 21 October 1876

From

The Off. District Engineer
 Bellary

To

The Chief Engineer &
 Secy. to Government.

Sir

Ch. En. Bellary
 19-10-76

With reference to para 2 of my letter
 No. 2665, of the 11 Instant, I have the honor
 to report that an Estimate of Rs 7660, ac-
 companied by Plans and a Specification
 Report for the construction of a road from
 Soudon to Somalapur, were forwarded
 to Government, with letter from Colonel Town
 R. E. No 1483, dated 1st December 1874.

2. These documents not meeting with your
 approval, were returned with your Memo No 25
 dated 8 January 1875, with instructions to have
 a fresh Estimate and trace for a short road
 prepared by Engineer Mr Power.

3. Mr Power was accordingly directed, on the

4. March 1875, to make another trace of the road as soon as he could spare a few days from the ordinary work of his Range; but as he was then engaged in looking after the repairs of the large tanks in the Pennacunda Range, which were breached by their heavy rains of October 1874, he could not, without detriment to works in that Range, be spared for the Ghat trace.

4. On the receipt of G. O. No. 172, dated 25th April 1876, I called upon Mr. Power to report how soon he would be prepared to furnish the Estimate called for on the 4. March 1875. I took the opportunity to point out to Mr. Power that I had seen the Country over which the road was to be carried; that I was of opinion that about 10 days would suffice for the tracing of the line; and that the Sub Divisional Officer, Supervisor Mr. Cleary could take charge of the Pennacunda Range, during Mr. Power's temporary absence therefrom.

5. Mr. Power was prepared to leave Pennacunda on the 4 June 1876, but as Mr. Cleary's services were required to conduct the prosecution of Mr. Johnson for the irregularities reported

Thunavaram
+ Pookapatam
tanks. Also visit
rations of Ghat
Tanks.

* Ch. Exp. Inver
No. 897 -
1-6-76

This memo appears
of the D's opinion
with reference to
Mr. Johnson's loss
of property & his
long trial.

* C. 1. 172
G. O. No. 172

13-9-1876
reported in my letter No. 556 dated 15th May 1876, I was obliged to request Mr. Visser to defer leaving his Range until Mr. Cleary's return to duty.

6. The Supervisor in charge of the Hospital Range, Sergeant Frankland, having in the meanwhile ^{obtained} 3 months' Privilege leave, I have placed Mr. Cleary in temporary charge of the Hospital Range as reported in my letter No. 2598 of the 9th Instant.

7. I regret to add that Mr. Power's services cannot be spared at present for tracing the Soundoor Ghat road, as he is busily engaged in finding and supervising relief works for the famine-stricken poor in that Range. I shall however take the earliest opportunity of setting Mr. Power free for the Ghat work, and shall submit an Estimate for the same as soon as possible.

I have the honor to be
Sir
Your most Obedt Servant
W. J. C. E.
Off. District Engineer, Bangalore

986-9-73 k. 366 1st 1st 1st
 - 21-10-73 - 170
 - 25-4-76 - 172
 - 6-10-76 - 2698

P.W.D.
 23 OCT 76
 No 7613

From
 The Chief Engineer
 Bellary
 To
 The District Engineer
 Bellary
 Subject
 Estimate for opening
 a foot Road through
 the
 District Engineer
 Bellary
 21/10/76
 1772

2-10-76

No 2966
 Public Works Department
 21

PROCEEDINGS OF THE MADRAS GOVERNMENT

UNDER date the 3rd September 1876
 Read the following:—

From District Engr. Bellary (H.L. No. 1422 of 1st Dec 74)
 Chief Engineer's memo No. 25 of 8 January 1875
 District Engr. Bellary (H.L. No. 2665 of 11 Dec 76)
 Chief Engineer's memo No. 10 of 19 Dec 76
 District Engr. Bellary (H.L. No. 2667 of 21 Dec 76)

MR
 2/10

MR

His Grace the
 Governor in Council
 is seriously displeased
 that the District En-
 gineer of Bellary has
 up to this date failed
 to provide such an
 Estimate for opening
 a foot Road through
 the

the Kunnaway hulla
gorge between Loondoor
and Hoodlighee, as
could be approved by
the Chief Engineer.
It was called for by
Government 3 years
ago, and in reviewing
the 1st Estimate sent
in by Colonel Lord
in December 1874, the
Chief Engineer gave minute
instructions as to the
manner in which the
line should be laid
out and the agency
to be employed for the
purpose.

purpose. A simple
erecting of a range
of posts was all that
was necessary.
The work is
one which will afford
relief where it will be
available to many,
and will shorten the
communication for
Carts between Bellary
and the Western Taluk
by a route usually
well watered and
probably even in
the dry season
offering

offering more water and
food than those in
the open country; and
as it is desirable on
all considerations to
strengthen the hands
of the Public Works
Executive in the Bel-
lary District, the
District Engineer will
arrange for relieving
Supervisors and conductors
from charge of
the Pennakonda Range
as soon as possible
and will place him
in charge of the work
oh

of opening the funna-
way hulla Pass to
wheel traffic; authori-
zing him to employ
labour on it as soon
as he shall have
satisfied himself of
the correctness of his
tracks; a credit of
Rs 15,000, according
to the Chief Engineer's
rough Estimate, being
made available for
the purpose, and
debited to Famine
Relief Funds, —
Imperial

Imperial. Mr.
 Power will supply
 the Chief Engineer with
 Survey and Estimate
 of his work in due
 course; and the Dis-
 trict Engineer will
 meanwhile see to
 provision of Tools
 including steel jammers
 and powder for blasting
 of which there will
 be a good deal.

To supply Mr. Power's
 place permanently
 in the Pennakonda
 Range, Sub Engineer
 Syed

Cir 2-10-76.

This will be
 better than
 sending the
 Engineer
 to the
 District

Syed Ghousef will be
 directed by the District
 Engineer, Trichinopoly
 to join with all ex-
 -pectation, his place
 being taken by As-
 sistant Engineer Evans,
 already attached to
 that District for
 general duty.

G.M.W.

L. D. Trichinopoly Extract dated 3.11.76
 .. Bellary & M S dated - 4-11-76
 Exr. J. K. Accto
 Linc. Departt
 Rev. Departt
 Dated - 10-11-76

x. att.

7/15/87
7/28/87
7/22/87

Govt. of 1876 Madras.
PUBLIC WORKS.

To
The D. B. Trichinopoly

Dated

Issued

Recd

Encl.

G. O. 2nd Div. 1876, No. 2966

Nos. 77/5

11-11-87
11-11-87

Commencement of the
work as a famine relief
work -

Cut Road through the Cume
- gradually for the London
Valley, Bellary Dist -

Expressing displeasure at
the delay of the Dist Engr in
forwarding a suitable for
opening out the — and
making certain arrange-
ments for the early com-