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MADRAS RECORD OFFICE.

Government of Madras.

Revenue Board DEPARTMENT.

G.O. No. 827	Press Mis.
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Dated 31-3-	1864.

Not to be folded or roughly handled

I

Proceedings of the Madras Government, Public Works Department, 31st March 1864.

No. 568. Read the following letter from Major General S. O. E. LUDLOW, Consulting Engineer for Irrigation and Canal Company, to Colonel C. A. ORR, R. E., Secretary to Government, Department Public Works, dated Kurnool, 2nd March 1864, No. 159:—

SIR,

1. I have the honor to submit for the consideration of Government Plans and an Estimate amounting after revision to Rupees 4,81,800 for ten miles and twenty-eight chains of the Canal between Adamapilly on the Pennaur river and the Cuddapah tank forming the tenth section (or the first portion of the tenth section) of the Main Canal.

2. This portion of the scheme includes an Anicut with head works across the Pennaur, and its submission presupposes the final adoption by the Chief Engineer of the south bank of the Pennaur for the course of the Canal after it leaves the Kundaur valley.

3. In my report, dated 29th October 1862, I stated my reasons for preferring the north to the south bank of the Pennaur for the course of the Canal below the Kundaur valley. An examination of the two Banks was subsequently made by Mr. Latham, one of the Company's Engineers, and a report was drawn up by him showing the comparative cost and advantages of the two lines.

4. Mr. Latham in his report, which though not communicated officially I have had an opportunity of perusing, confirms in an engineering point of view the opinion which I entertained in favour of the south bank of the river for the Canal course. He says: "It will be seen that "notwithstanding the great amount of drainage and difficult ground encountered on the north "route a lac of Rupees would be saved by adopting it, and two Anicuts entailing occasional "danger and stoppage to navigation and a great chance of expense in maintenance would be "avoided. Ten miles of length would also be saved. The traffic from the famous Cotton Districts "of the Kundaur valley and the north and from the Suggilair Hills on which is the tree jungle "nearest the coast of any upon our Canal will be facilitated on the above accounts. In fact the "heavy and bulky goods for which the Canal would be adopted in preference to the Kundaur "valley Railway would get a cheaper, shorter and more certain route on the north than on the "south side of the Pennaur."

5. The traffic from the Suggilair valley would find its way to the Canal whichever side of the river it ran along; the saving in cost of construction I consider of little importance; that of ten miles in the length of the Canal is of more consequence, but the main advantage gained would be the dispensing with the two Anicuts the use of which to complete the line of navigation must always be attended with serious delays and inconveniences.

6. On the other hand if the north bank were adopted, the communication with Cuddapah and the large amount of traffic falling into the Canal in that rich, extensive, and central valley must be sacrificed; a large field of irrigation in the same valley would have to be abandoned and the supply of water which would be pitched up at Adamapilly from the Pennaur for irrigation and navigation as far as Somaiswaram would be lost.

7. These considerations, and they must be allowed to be of great weight, have induced the Chief Engineer, notwithstanding the engineering advantages held out by the north line, to give the preference to that along the south bank of the river.

8. Assuming therefore that all idea of adopting the northern bank of the Pennaur has been finally abandoned, I proceed to remark upon the Estimates for the course along the south bank including those herewith forwarded.

9. The last Estimates submitted to Government and by them sanctioned were for the eighth portion of the Canal as far as the 146th mile. Those for the thirty odd miles of the Canal forming the ninth section, that is between the termination of the eighth section and the Adamapilly Anicut, have not yet been received, neither has that for the portion between Cuddapah and the Guindy spurs where the Canal will begin to skirt the Pennaur on leaving the Cuddapah valley; but there are no particular difficulties in those two portions and the Plans and Estimates for them, which are in a forward state, may be shortly expected.

10. Below the Guindy spurs the course of the Canal for some miles has been laid out, but I cannot learn that it has yet been determined how it is to be taken across the Cheyaur and how the formidable difficulties above that river are to be overcome. It seems however to be desirable that the whole scheme between Adamapilly and Somaiswaram should be submitted in a complete form before ground is actually broken in the Cuddapah valley.

11. These Plans and Estimates for the tenth section were returned by me to the Chief Engineer for correction and modification. The nature and extent of the alterations which I considered to be necessary are shown in my letter No. 25, dated 3rd February 1864. The Chief Engineer as appears by his No. 30, dated 25th idem, in re-submitting them has adopted all the most important modifications which I suggested.

12. With respect to the wells under that part of the body of the Anicut which stands on sand, although I concur with the Chief Engineer in thinking that the stability of the wall depends on the incompressibility of the sand, I yet consider wells or blocks to be necessary to admit of the foundations being carried through the superficial stratum of sand which is *generally loose and compressible and liable to disturbance to some depth by currents sweeping along the face of the work.* I would not therefore dispense with them, and if used they should be of sufficient area to give proper support to the base of the wall.

13. Experience will prove whether or not the Aqueducts require any better flooring than has been allowed. The velocity over them is certainly not great, though more than double of what it is in other parts of the Canal. Hand rails 3 or 3½ feet high I consider to be necessary; the parapet of 1½ feet high now allowed in the case of the Boogah Aqueduct is insufficient for safety. In the revised Estimate Sluices to carry irrigating Channels under the stop bank have been provided, and the modifications deemed necessary by the Superintending Engineer for the security of existing irrigation have been adopted, and that Officer has furnished the certificate on that point required by Government.

14. The Chief Engineer has promised to forward an Estimate for an additional bridge in lieu of a ferry for the old Kurnool road. This is the only work wanting in the opinion of the Collector and myself to complete the means of passage across the Canal.

15. Estimates for irrigating Sluices will be furnished hereafter when the necessary surveys have been made.

16. The Chief Engineer's letter and the accompanying Plans describe sufficiently the nature and form of the works. The head works consist of the Anicut (with two sets of under-sluices) Lock and head Sluice. The Anicut is 2,400 feet in length and has its crest eleven feet above the deep bed of the river. It will rest through about one-third of its length on rock, two-thirds on sand, the section in each case being adapted to the particular foundations. A retaining wall built on the rock and extending to the end of the apron will separate the two portions on the lower side, the under-sluices at each extremity are inserted to prevent deposits in front of the Locks and head Sluices, and will allow of as much water as may be required below being passed down the river. The north Lock which will drop the navigation from the Kundaur valley into the basin formed by the Anicut does not appear in this Estimate, but will be included in that for the ninth section.

17. The Canal will have a breadth at bottom of 50 feet with a depth of 5 and side slopes of two to one. Its surface breadth will therefore be 70' except over the Aqueducts, where it is reduced to 25 feet. The total fall in the ten miles is one foot or 1·2 inches per mile, and it is calculated to carry a supply of water of 30,000 cubic yards per hour.

18. The Canal in its course passes clear of the Cantonment, but intersects a suburb of the Town of Cuddapah where however the houses which will have to be removed are of no great value.

19. As the works for which this Estimate provides are in my opinion suitable for the intended purpose and the rates sufficient, I beg to recommend it for the sanction of Government.

Proceedings of the Madras Government, Public Works Department,
31st March 1864.

No. 569. ORDER THEREON, 31st March 1864, No. 889.

1. The Estimates submitted with this letter provide for all the works required between Adamapilly, on the Pennaur river, and the Cuddapah tank, forming the first portion of the tenth section of the Company's Main Canal. The Estimates for the ninth section, and for the remainder of the tenth, are not yet before the Government, but the Consulting Engineer states that they may be shortly expected.

2. The Government agree with Colonel Ludlow that it is highly desirable that the whole scheme between Adamapilly and Somaiswaram should be submitted in a complete form before ground is actually broken in the Cuddapah valley. They accordingly resolve to defer sanctioning the Estimates now before them.

(True Extract.)

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

To the Consulting Engineer Irrigation and Canal Company.
„ Agent for do. do.

Exd. T. Dunn.

No. 159

Consulting Engineer's Office
Irrigation & Canal Company
Kurnool 2d March 1866

From,

Major General S.O.E. Ludlow
Consulting Engineer for I & C Co.

To,

Colonel C. A. Orr R.E.
Secretary to Government D.P.W.
Madras

Sir,

1st I have the honor to submit for the consideration of Government plans and an Estimate amounting after revision to Rupees 481,800 for 10 Miles and 28 Chains of the Canal between Adamapilly on the Pennaur River and the Cuddapah Tank forming the 10th Section (or the first portion of the 10th Section) of the Main Canal.

2 This portion of the Scheme includes an Annicut with Headworks across the Pennaur and its submission presupposes the final adoption by the Chief Engineer of the South Bank of the Pennaur for the course of the Canal

Canal after it leaves the Kundaur Valley.

3 "In my Report dated 29th October 1862
I stated my reasons for preferring
the North to the South Bank of the
Pennaur for the course of the Canal
below the Kundaur Valley an examin-
=ation of the 2 Banks was subsequently
made by Mr. Latham one of the
Company's Engineers and a report was
drawn up by him shewing the com-
=parative cost and advantages of the
two lines.

4. Mr. Latham in his report
which though not communicated
officially I have had an opportunity
of perusing confirms in an Engineering
point of view the opinion which I
entertained in favour of the South
Bank of the river for the Canal course
He says- "It will be seen that not-
"withstanding the great amount of
"drainage and difficult grounds
"encountered on the North Route
"a Lac of Rupees would be saved
"by adopting it and two Annicuts
"entailing occasional danger and
"stoppage to Navigation and a great
chance

"chance of expense in maintenance
"would be avoided. Ten miles of length
"would also be saved. The Traffic from
"the famous Cotton Districts of the
"Kundaur Valley and the North and
"from the Sugglalair Hills on which
"is the tree jungle nearest the Coast
"of any upon our Canal will be facili-
=tated on the above Accounts. In
"fact the heavy and bulky goods for
"which the Canal would be adopted
"in preference to the Kundaur Valley
"Railway and obtain a cheaper shorter
"and more certain route on the North
"than on the South side of the Pennaur"

5. The Traffic from the Sugglalair
Valley would find its way to the
Canal on whichever side of the river
it was along the saving in cost of
construction I consider of little
importance, that is 10 Miles in the
length of the Canal is of more conse-
=quence but the main advantage
gained would be the dispensing
with the 2 Annicuts the use of which
to complete the line of Navigation
must always be attended with

serious

serious delays and inconveniences.

6. On the other hand if the North Bank were adopted the communication with Cuddapah and the large amount of Traffic falling into the Canal in that rich extensive and Central Valley must be sacrificed; a large field of Irrigation in the same Valley would have to be abandoned and the supply of water which would be picked up at Adamapilly from the Pennaur for Irrigation and Navigation as far as Somaiswaram would be lost.

7. These considerations and they must be allowed to be of great weight have induced the Chief Engineer notwithstanding the Engineering advantages held out by the North line to give the preference to that along the South Bank of the river.

8. Assuming therefore that all idea of adopting the Northern Bank of the Pennaur has been finally abandoned I proceed to remark upon the Estimates for the course along the South Bank including those herewith forwarded.

The

9 The last Estimates submitted to Government and by them sanctioned were for the 8th Portion of the Canal as far as the 146th Mile. Those for the 30 odd Miles of the Canal forming the 9th Section that is between the termination of the 8th Section and the Adamapilly Annicut have not yet been received neither has that for the portion between Cuddapah and the Sundy Spurs where the Canal will begin to skirt the Pennaur on leaving the Cuddapah Valley but there are no particular difficulties in those two portions and the plans and Estimates for them which are in a forward state may be shortly expected.

10. Below the Sundy Spurs the course of the Canal for some Miles has been laid out but I cannot learn that it has yet been determined how it is to be taken across the Cheyaur and how the formidable difficulties above that river are to be overcome. It seems however to be desirable that the whole Scheme between Adamapilly and Somaiswaram should

should be submitted in a complete form before Ground is actually broken in the Cuddapah Valley.

11. The Plans and Estimates for the 10th Section were returned by me to the Chief Engineer for correction and modification. The nature and extent of the alterations which I considered to be necessary are shewn in my letter No. 25 dated 3 February 1864. The Chief Engineer as appears by his No. 30 dated 25th Idem in resubmitting them has adopted all the most important the modifications which I suggested.

12. With respect to the wells under that part of the body of the Annicut which stands on sand, although I concur with the Chief Engineer in thinking that the Stability of the wall depends on the incompressibility of the Sand I yet consider wells or Blocks to be necessary to admit of the Foundations being carried through the Superficial Stratum of Sand which is generally loose and compressible and liable to disturbance to some depth by Currents sweeping along the face of the work. I would not therefore dispense with them and

and if used they should be of sufficient area to give proper support to the base of the wall.

13. Experience will prove whether or not the Aqueducts require any better flooring than has been allowed. The velocity over them is certainly not great though more than double of what it is in other parts of the Canal. Hand rails 3 or 3½ feet high I consider to be necessary the parapet of 1½ feet high now allowed in the case of the Boogah Aqueduct is insufficient for safety. In the revised Estimate Sluices to carry irrigating Channels under the Stop bank have been provided and the modifications deemed necessary by the Superintending Engineer for the security of existing irrigation have been adopted and that Officer has furnished the Certificate on that point required by Government.

14. The Chief Engineer has promised to forward an Estimate for an additional Bridge in lieu of a Ferry for the old Kurnool road. This is the only work wanting in the opinion of the Collector and

[illegible] does not propose to [illegible] Wolcott Ludlow [illegible]

and myself to complete the means of passage across the Canal.

15 Estimates for irrigating Sluices will be furnished hereafter when the necessary Surveys have been made.

16. The Chief Engineer's letter and the accompanying plans describe sufficiently the nature and form of the works. The headworks consist of the Annicut (with 2 Sets of under sluices) Lock and Head Sluice. The Annicut is 2400 feet in length and has its crest 11 feet above the deep bed of the river. It will rest through about 1/3 of its length on rock 2/3 on Sand. The Section in each case being adopted to the particular foundations. A retaining wall built on the rock and extending to the end of the Apron will separate the 2 portions on the lower side. The under Sluices at each extremity are inserted to prevent deposits in front of the Locks and Head Sluices and will allow of as much water as may be required below being passed down the river. The North Lock which will drop the Navigation from the Kundaur Valley into the basin formed

and

formed by the Annicut does not appear in this Estimate but will be included in that for the 9th Section.

(13)

17 The Canal will have a breadth at bottom of 50 feet with a depth of 5 and side slopes of 2 to 1. Its surface breadth will therefore be 70' except over the Aqueducts where it is reduced to 25 feet. The total fall in the 10 Miles is 1 feet or 1.2 inches per mile and it is calculated to carry a supply of water of 30000 Cubic yards of water per hour.

18 The Canal in its course passes clear of the Cantonment but intersects a suburb of the Town of Cuddapah where however the houses which will have to be removed are of no great value.

19 As the works for which this Estimate provides are in my opinion suitable for the intended purpose and the rates sufficient I beg to recommend it for the sanction of Government.

I have the honor to be,
Sir,
Your Most Obedient Servant,
J. O. Chudlow Major General
Consulting Engineer for I & Co.

Compd

Quit does not propose to Colonel Ludlow that

No. 889 P. W. D.

Proceedings of the Madras Government
Under date the 31st March 1864

Read the following letter

(Here enter 2nd March 1864 No. 159)

...the Consulting Engineer for ...rigation and Canal Company - Submits for the sanction of ...ernment plans and an Estimate ...mounting to Rupees 481,800, ...10 Miles of the Main ...nal forming the 10th Section.

The estimates submitted with this letter provide for all the works required between Adamapilly, on the Pennaur river, and the Cuddapah tank, - forming the first portion of the tenth section of the Company's main Canal. The estimates for the ninth section, and for the remainder of the tenth, are not yet before the Govt., but the Consulting Engineer states that they may be shortly expected.

The Govt. agree with Colonel Ludlow that

I hardly think that we should take upon ourselves the modification or alteration of the plans of the Engr. of the Company - by so doing we to a certain extent relieve him from responsibility. The consulting Engr. should therefore I think limit himself to suggestions, & should these not be adopted by the Engr. - I do not think that the Govt. should enforce their adoption - in the case of the existing plans unless there is something to show that they are defective in any way & think the Govt. should sanction them.

M

Govt. does not propose to

Pro. 19th Dec. 1862 No. 374-379
Copy in a letter to Engr.
S/26 Mary No. 78 of 64

P. W. 1864 Dept.
No. 889 Cord. of Govt. for Mayor
From Sec. No. 1076

The Consulting Engineer
for Irrig.
The Secretary to Govt.
in the D. P. Co.
Chepauk
Dated 12th March 1864
Rec'd 9 Enclosures 23-
4 letters & 2 abstracts of estimate to be returned & 1 copy of letter & 16 plans returned to Cons. Engr. Rupees 450 of Rs. 8 p.
Submits for the sanction of Government plans & an estimate amounting to Rs. 481,800 for 10 miles of the Main Canal forming the 10th Section.
No. 5080
16th March 1864 R. 21st
No. 887-31st March 1864

it is highly desirable that the whole scheme between Adamapilly & Somaiswaram should be submitted in a complete form before ground is actually broken in the Cuddapah valley. They accordingly resolve to defer sanctioning the estimates now before them.

after a plan in this draft, but wants to have a connected plan of the works in this part of the line (the Cuddapah valley) before ground is broken. This seems to me prudent & proper, as there known to be great engineering difficulties, & Govt has to pay interest on the money expended

Ellis

I think so too - and with regard to the revision of plans & estimates submitted by the Comp^y I may remark that the Contract Sect^n V ⊞ expressly gives the fort the right and therefore I think imposes on them the duty of making

To
The Cons. Engr. I & C Co.
" Agent — do. -

such reasonable alterations omissions or additions" as "may be considered necessary

WB.

28/3

The Consulting Engineer I & C. Comp^y
" Agent — D^o D^o

Desp^d 1st April -
All the enclosures returned to the Cons. Eng^r see C No 450 of 65 8/2/65

or desirable" 17/
JP

Copy in a Letter to Engd
D/ 20: May No: 28 of 1864

P. W. 1864 Dept.
Pro: of Govt for March
No: 887
Pro: of the U Govt
D/ 31 March /64
Cr No: 35 00 of 1864

Estimates for all the Works required between Adampilly on the Pennaur river, and the Cuddapah tank forming the 1st portion of the 10: Sec: of the S. & C. main Canal C. deferred to be sanctioned for the reasons detailed in the Order.

No: 568-569

c. 16th March 1864. R. 21st