

C.S.

PUBLIC WORKS (Bridges).	
No.	588/25

1925.

C.E. "B"

H.E. the Governor.

SUBJECT.

1925.

14th Septbr.

Previous Paper.

PROPOSED ERECTION OF A BRIDGE IN EAST
FALKLAND ACROSS THE ARROYO MALO STREAM.

MINUTES.

O.I.C/C.S.C.,

I attach great importance to an endeavour being made to improve communication by land in these islands and I expressed my views on the subject at a meeting of the Legislative Council which was held on the 23rd of July, 1924, (Gazette 1924, page 91, paragraph 2). Materials for a bridge in West Falkland have already been supplied and I am of opinion that materials for a bridge in East Falkland should be supplied next year in order to encourage bridging work.

2. The stream which presents the chief obstacle on the main track to the farms in the north of the East Island is the "Arroyo Malo." The only description of it, which I can find, is the following which is taken from Captain Moody's despatch No. 14 of the 14th of April, 1842 :

"The Arroyo Malo or Matson River, is another large stream which drains the long valley, described as separating the Simon range from the Wickham Heights. It rises at the foot of Mount Usborne

Subsequent Paper.

and running in an easterly direction falls into an arm of Port San Salvador a distance of 18 miles. It is not navigable and as it is completely a mountain stream it often becomes difficult and dangerous to cross by reason of sudden floods swelling it into a deep and rapid river."

3. There is at present a timber bridge (128 feet span and 4 feet wide) supported on crates filled with stones. It was erected by Mr. Felton, but Mr. Greenshields also assisted in the work as he uses it for driving sheep between Douglas Station and Horse Shoe Bay. The site is about a mile above tidal water and I believe the determining factor in its selection was the protection of the crates from the full force of the stream in floods and that was essential owing to the large quantity of ice which comes down in winter.

4. There are suitable sites where a clear span bridge of 100 feet could be built and after visiting the locality in March last when the stream was low, I wrote privately to Colonel Carmichael, Engineer in Chief in the Crown Agents Office who has had practical experience in India and other countries of difficulties of transport and dependence on unskilled labour in connection with bridging work. A copy of my letter and his reply are attached. *Encls. ① & ②. Drawings*

~~5. I propose to provide 2700 in Estimates for 1926 for a bridge for Arroyomalo, the expenditure to be charged to surplus balances.~~ *Filed in Encl 2.*

5.6. Drawings Z 2273/1 and Z 2273/2 illustrate a common type of bridge which appears worth trying as an experiment in this Country, but I shall be glad to have the views of the Colonial Engineer on the various types of which drawings have been sent.

6.7. If the N type is considered suitable I would suggest that

- (1) 4-ton axleload should be maintained as suggested by Colonel Carmichael seeing that there will be no saving in reducing axleload to 2 tons and there is sure to be corrosion.
- (2) Outrigger bracings to main girders should be dispensed with as suggested. This will reduce cost of materials and length of cross girders.

- (3) Decking should be of Punta Arenas timber in lieu of concrete and Colonial Engineer should specify dimensions of timber which will be required: the girders should be drilled with holes for bolting down decking.

78. With reduction of length^{of} cross girders to 10 feet the weight will be reduced^{to} about 2½ cwts: the main girders will be slightly heavier, approximately 3 cwts, but apparently the heaviest individual member will be the 20 ft. top boom which will weigh nearly 3½ cwts and I assume that these could be sent out in two pieces with joint plates for making a joint in the middle without in any way weakening the bridge. No great difficulty should be experienced in transporting these weights even over swampy ground.

89. Pending decision^{as to} of the best type of bridge, I propose to provide £700 in next year's estimates (to be charged against surplus balances) for a bridge for Arroyomalo.

The estimate is made up as follows :

Steel work	£500.
Freight...	120.
Local Freight, say	...		72.
Decking...	30.
			<hr/> £722. <hr/>

The reduction in length of cross girders and omission of outrigger bracings should effect a saving of more than £22; nothing is allowed in the estimate for the erection of the bridge as I feel certain that the Farmers will undertake the erection themselves as they will appreciate the benefit of it. Moreover the erection of such

a/

*with Colonial Engineer
please check the
figures*

a bridge would afford very valuable experience in bridging work and indicate how existing methods may be improved.

AS

14th September, 1925.

Colonial Engineer,

Referred.

*W. H. V.
O'Connell*

15.8.25 1925

C.I.C./C.S.C.

I have examined drawings No. Z.2119 (Bowstring Type) and Z. 2273 ("N" type), each being for 100' span bridge. Either type is, in my opinion, suitable for erection in the Colony.

2. It will be seen from the Table of Weights, (herewith on separate sheet) that the parts of the Bowstring bridge are more in number, consequently there are fewer heavy lifts than in the case of the "N" type bridge. Weight, in this connexion, is, I think, a great consideration, also the shorter the member the better it is for handling.

3. I note that Colonel Carmichael is of the opinion that the outrigger bracing is unnecessary, but I would venture to say that at times, especially in the winter, the wind force is very great; the gales (locally termed "woolies") do not usually last very long but they are very fierce. In my opinion the outrigger bracing should be provided.

4. From the foregoing I think it will be seen that the advantage, as regards transport, erection and appearance, is in favour of the Bowstring bridge, and for these reasons I am of the opinion that this type would be more suitable than the "N" type.

The Bowstring bridge is nearly three tons lighter, but its first cost is £35 higher. Allowing £9 as a saving on freight the higher first cost is reduced to £24.

This, in my view, would be saved in transport to site

and/

and in the greater facility of erection, as the length and weight of individual members would be less than in the "N" type.

5. A rough estimate of timber, etc., required for roadway in place of concrete or metal is submitted herewith on a separate sheet (marked A).

6. The assembling of this type of bridge is simple if under the charge of a man acquainted with the work, but there would be further expenditure in connexion with gear and material required for work of erection. In the first place timber supports will have to be placed under the ends of the bottom beams, and the timbering will have to be of sufficient strength to carry the weight of bridge until the top beam and stays have been placed in position. Assuming that the height of supports from river bottom will require to be about 8 feet, the estimated cost of material will be about \$4 for each support. Four supports will be required needing, say, \$16 for timbering.

A pole or shear-leg will be necessary to lift and hold the members in position while they are being bolted up. Estimated cost of pole, winch or blocks, rope etc. \$20. Concrete shore ends will be required. Allowing for frontage of 15', height of 12' and length of 3', the estimated cost for materials, i.e. cement, sand and metal, or building stone is \$88.

7. The following is a rough estimate of cost of bridge, exclusive of labour.

Bowstring type.

First cost, f.o.b.....	\$537.
Freight on 22 tons, @ 70/-.....	77.
Landing of " " @ 10/-.....	11.
Freight to Teal Inlet;	
22 tons ironwork, @ 25/-	\$27.10
22 tons timber, etc. "	\$27.10
Timber for decking, etc. (Sheet A)....	71.
" " erection.....	20
" " rigging gear.....	20
Stone etc cement foundations	88

\$879.

Say \$900.

8. I am of opinion that a Fordson Tractor, with trailer, would be of great assistance in the transport of material to site.

9. Drawing Z 2405, in reference to timber bridges, received. These are of the ordinary type which, I think, has been replaced by steel work in countries where timber is not readily obtained at a low cost. The main bearer must be the full length of span, and, in the case of a 30' span, the bearers of, say, 8"x 6"x 30' would be difficult to convey up stream to a place where the width is only 28' to 30'. The approximate weight of such a beam would be 3½ cwt. Personally I am in favour of steel bridging in place of timber.

10. Drawings Z 2119 (Bowstring), Z 2273/1 and Z 2273/2 (N type); Z 2049 (75' span); Z 1895/1 (120' span); Z 1801/1 (50' span); Z 2119 (timber) returned herewith in separate cover.

R. S. S. S. S.
Colonial Engineer.

17th September, 1925.

*G. E. Submitted
G. E. S. S. S.
18 Sept 1925.*

D. L. C. / C. S. O.

I did not go into question of timber for erection as I considered the amount of timber in existing bridge would be available on the spot for the foundation & would require work of transport: in addition to other timber there are 12 or more telephone poles. Additional timber will be needed to require but quantity should be kept down as much as possible.

2. The type of bridge & materials required for erection

With the details later. Meanwhile the map
is included provisionally in appendix A of
Somalia Armyo Gado Bridge #800.

Ind. 1/2
G.M. 1/2
22 Sept 1925

By

22 Sept 1925.

Colonel Engineer,

For info.

G.M. 1/2

Ind. 1/2

23 Sept 1925.

O.I.C/C.S.O.

Thank you, noted and returned.

R. S. S. S. S.

Col; Engineer.

30/9/25.

Note:

1. Mr. G. J. Fellen reported that verbally, by telephone, on 16th October that he had visited the Gado river with the object of endeavouring to find a site for a clear span bridge of shorter length than 100 feet.
2. He had previously seen Colonel Carmichael's letter with the drawing of bridges & had discussed the matter at length with me.
3. Mr Fellen considers that a suitable site

Can be found for a bridge a little higher up the
river than the existing bridge. This entails a
timber bridge being constructed on a pile driving to
make what come in a short distance about existing bridge.
4. At the site selected by Mr. Fulton the stream is
42 feet wide & he suggests a bridge of 80 feet allowing
4 feet flaring each side: there is good ground for masonry
work & banks are about 10 feet high: there
is good river sand in vicinity & also stone.

5. Mr. Fulton suggests that cement should be supplied
in one car drum & should be sent out to the site
in early part of next year so as to permit of ~~work~~ ^{work}
being commenced in March - January.

6. Will Almine Synnott plan and supervise quantity
of best Portland cement in 1 car ^{steel} drums to be
shipped by Egypt 28th November.

By
24 Oct 1925

7. S. Perhaps an inland car to Japan for 80 feet bridge
Bromberg type. By.

Colonial Engineer

For Referred.

W. H. 13
in office

24 Oct 1925.

O.I.C./C.S.O.

Noted.

2. Suggested telegram to Crown Agents:-

Please ship per "BOGOTA" seven tons portland cement packed in one cwt sealed steel drums.

3. As there is no provision on the 1925 estimates for the Malo Bridge, I would suggest that the cement be charged, in the first instance, to the Unallocated Stores Account.

4. Draft indent for confirmation of telegram herewith.

5. My estimate of 17th September provided for cement to be packed in wooden casks of 400 lb each, giving about 5 to the ton. The additional cost for packing in sealed steel drums (20 to the ton) will, I think, be about £20.

R. R. Barclay

Colonial Engineer.

29th October, 1925.

*Y.E. Submitted
W.E. 1/12
O.C./sec
29 Oct 1925.*

O.I.C./C.S.O.

*Will you please telegraph to Crown Agents
as in draft attached.*

*2. I have increased quantity to 8 tons: if
there is any surplus it can be made good
use of for other bridges & improvements of
this track. The whole arrangement can
be sent over to India.*

3. Expenditure should be charged to Materials & Stores account.

In the first instance
30 Nov 1925

Telegram to Brown agents, 30th Oct. 1925. (4.)

Colonial Engineer

For info.

OK 1/12

Office

30 Oct 1925

O.I.C./C.S.O.

Noted.

2. Indent, in confirmation of telegram, submitted
in quadruplicate herewith.

R. S. Basely.

Colonial Engineer.

2nd November, 1925.

Indent no. 420 of 30th Oct. 1925, transferred
to I/89/25.

H.P.S.

Report to Mr. Ind to Sgs in connection with
draft estimate.

2. Indent for map can now be prepared.

SM.

15 Nov. 1925 in the name

P.S. Bituminous solution should be substituted for paint
for steel work.

SM.

15 Nov. 1925

Colonial Engineer - To see, and prepare
Indent

R. S. Basely

16. XI. 25

The Hon. Col. Secy.,

Noted. Draft indent submitted herewith accordingly.

R. R. Saseley.

Colonial Engineer.

17th November, 1925.

The Subject is, of course, new to me but I have scrutinised this paper carefully together with the accompanying drawings. Draft indent is prepared by the Col. Engineer submitted.

[Signature]
40. XI. 25

H.P.S.

The bridge in drawing No 22119 has a reinforced concrete roadway whereas that bridge is to have a timber decking. Colonel Engineer should have drawn attention to this & ~~as~~ he had omitted to do so I did not allow indent to go on.

2. Q. It should be stated in indent that (a) bridge should be designed to carry two axle loads of 4 tons each & a pedestrian load of 45 lbs per square ft.
(b) bridge should have outrigger bracing with main girders
(c) bridge is to have timber decking in lieu of concrete decking: dimensions of

decking should be given & also dimensions of plates
in which it is to be carried.

(d) girders to be drilled with holes for bolting
down deck plates & distance between centres
should be specified. It is most important that
no drilling of girders should be required to be done
when materials arrive on site.

3. Bolts for bolting down deck plates should be rolled
also galvanised spikes for securing decking.

4. Is it desirable to give information in para. 4 of
my minute of 24th Oct. Colonial Engineer should
advise on this.

5. It is clear that all the points that occur here
but Colonial Engineer should give careful attention
to preparation of minute in a form which will enable
Comm. Agents to supply all that is required.

Sp.

28 Nov. 1915

Colonial Engineer

Please note it is minute carefully,
and comply with the instructions
contained therein.

The Hon. Col. Secy.,

Noted.

2. I much regret that I omitted to specify timber decking
in the original indent.

3. I now submit an amended indent which I trust will be
found correct.

4. With regard to the information in para. 4 of His
Excellency's minute of 24th October; I do not think it is

required.

C.S.O. No. 588/25.

Inside Minute Paper.

Sheet No. 7.

required to give this in the indent, as the bearing on the banks as shewn in drawing No. Z2119 is only 2'2".

5. A Financial Requisition in the sum of £500 to cover the estimated cost of the indent is being sent forward through the Treasury.

R. R. R. R. R.

Colonial Engineer.

2nd January, 1926.

H. P. S. Draft Indent Submitted. I approved
I can go forward this mail *H. P. S.*
4/1/26

H. P. S.
Indemnity to go on
H. P. S.
5 Jan 1926
Col. Engineer For action *H. P. S.*
5/1/26

The Hon. Col. Secy.,

Indent in quadruplicate submitted herewith accordingly.

R. R. R. R. R.

Colonial Engineer.

6th January 1926.

Indent No. 435.
M.P. 12/26

7. Financial Requisition ^{No 2/26} for £500

H. P. S. F.R. No. 2/26 for £500 Submitted for
approval *H. P. S.*
11.1.26

H. P. S.
11 Jan 1926

Colonel Engineer
For usual action

Hon. Lt. Treasurer

A.C.
11.1.26

Noted & passed to you

Respectfully,

Lt. Engineer

12/1/26

The Hon. Col. Sec.

filed herein.

F.R. No. 2 withdrawn and copy

W. Thompson
Treasurer.

12/1/26.

Minute from Col. Engineer of 18 Feby. 1926.

7.

G.E. F.R. no. 10/1926 for the sum of £80
Submitted.

A.C.

27.2.26

H.P.S.

Respectfully signed

2. Will you please ask Lt. Engineer furnish
a statement of cost of cement in steel drums landed
showing all charge in detail.

3. He should also report whether the drums are
satisfactory.

H.P.S.

2 March 1926.

Colonial Engineer.

8. F.R. no. 10 here with for
usual action.

2. Please note also J.C. minute
of 2nd inst. paras. 2 & 3 and furnish
required statement and report.

[Signature]
13/26

The Hon: Colonial Secretary.

Thank you, noted.

2. Particulars of cost have not yet been received from the Crown Agents, but from invoice I am of the opinion that the first cost of cement in drums will be 2 1/2 for 100 lbs plus 2/6 for drum with expanding lid giving total of 4/8 per drum of cement.
3. The expanding lid is not satisfactory, unless it is soldered in, as the lid lifts and the cement is lost in transit. The indent required that the drums be "sealed"

[Signature]

Colonial Engineer.

9/3/26.

[Signature] Submitted.

2. The Colonial Engineer is not quite correct in stating that the indent required that the drums be "sealed". Both in the telegram and indent as despatched the word was omitted.

According to Crown Agents Tender form (indent no. 89/25) the Expanding lids ordered by the Colonial Engineer were required by their inspectors. The Crown Agents might be informed for future guidance that in the terms of the Colonial Engineer's criticism? *[Signature]* 10/3/26

H.C.S.

As paper containing indent is put up
(I. 89/25) it will be convenient that question
of packing should be discussed on it: please
see the paper

SH

11 March 1926.

Revised Engineering

Drawing No 2. 2637. 9.

Letter from Crown Agents. 22nd April 1926. 10.

Y.E. Submitted.

SH

Office Sec.

9 Aug. 1926.

Office Sec.

Hon. G. J. Felton has informed me
that he expects to be in Stanley towards
the end of this month. I will then take
the opportunity of discussing this with him.

Bf. 30 Aug.

SH

10 Aug. 1926

Y.E.

Mr Felton is now in Stanley.

SH

Office Sec.

1st Sept 1926.

Office Sec.

Thank you. I showed this to

Mr. G. J. Felton to-day.

Further report from Crown Agents can
now be awaited.

SH

1 Sept. 1926

On 26th August I
showed these papers &
plans to Mr. R.
Greenshield of Douglas
Stn., who is, I understand
to co-operate with Mr.
Felton in constructing this
bridge. Mr. Greenshield had
no objection to offer.

B.

21. XII. 26

Inside Minute Paper.

Note. Provision of the sum of £600 made under
Appendix I of draft Estimates for 1927. *Q.B.*

11 - 12. Letter from Crown Agents, 6th October, 1926.

13. Drawings & Prints received with Encls 11.12

Y.E. Submitted with reference to the
print raised in Lg. Co. on 10.11.26
by the Mr. G. J. Felton to the effect
that he would rather put up a wooden
bridge than the further bridge that was
being obtained.

2. Negotiations in regard to the
supply of material seem to have advanced
some further way, at any rate on paper,
but there is yet no indication of any
probable or possible date of delivery.

3. If Y.E. is prepared to consider
W. Felton's suggestion as to cancellation

vide also M.P. I 2/26
rel 12

of this intent I would suggest is the first
place telegraphing to the C&P enquiring whether
in view of the delay in execution it would be
~~any one give any indication of probable date~~
practicable to cancel the intent
~~of delivery of the material?~~

Just

10. 11. 26.
H.C. I retained this M^r. to discuss the matter
further with Hon. G. J. Felton.

2. It is unfortunate that M^r. Felton did not
make his representations earlier; it is but
six weeks ago that I went carefully thro'
the plans with him (cf. my minute of 1st Sept.)
and he expressed himself as fully satisfied.
I know, too, that before the order was placed
Sir John Middleton discussed the type of
bridge very fully with him.

3. M^r. Felton's arguments for a wooden bridge
are not over convincing - they are that
a wooden bridge is cheaper, and easier to
erect, and is quite good enough for requirements
in this country.

4. An iron bridge was selected after careful
consideration, and was intended to be in the
nature of an Experiment (See para. 5 of Sir
John Middleton's minute of 14th Sept. 1925)
Negotiations are so far advanced that it appears
wise to me to be somewhat late in the day
to withdraw, for even should it prove possible
to cancel the order, considerable expense in
respect of it must have been incurred already.

5. On the other hand, M^r. Felton is to be
responsible for the erection of the bridge

Inside Minute Paper.

and if, as it would now appear, he is doubtful about being able to complete the election of ^{the election of} with an iron structure, we must meet him as far as possible.

6. With some hesitation, I agree that a telegram should go to Crown Agents as proposed.

14. Telegram to C.A.'s dated 18.11.1926. 16 Nov. 1926

y. 28. 11. 26.
le 18. 11. 26.

y. 8. 12. 26.
le 27. 11. 26.

15. Telegram from C.A.'s dated 30. 11. 1926.

y. Subst. Re contractors having actually expended £92 as against

the contract price f.o.b. port of

£ 359 13 2 1 for that it

is late in the day to cancel

the order. Shall I therefore

telegraph the C.A. to proceed.

2. A suitable opportunity

can be taken in due course to inform
W. Filton of action taken.

just

1-12-26

H.S. Please telegraph to Crown Agents
to proceed.

B.

2 Dec. 1926

Telegram to C. A's dated 2.12.1926 16.

Col. Pymis

To see please

2/2/26

just

G. L. Sec.

The Hon. Col. Secy.,

Thank you, seen.

2. I am submitting, under separate cover, a minute containing a list of timber which I suggest should be ordered from Punta Arenas. The list includes requirements for the false work in connexion with the erection of the bridge, also decking for the bridge.

Vide M.P. 640/26.

3. The estimate of cost of the materials for the false work is rather high (£78.9.6), but the wood is of useful sizes and it is thought that practically the whole of it will be purchasable into stock from the Bridge Vote after the work of erection has been completed.

R. B. Baskley

Colonial Engineer.

18th December, 1926.

C.S.O. No. 588/25.

Sheet No. 11

Inside Minute Paper.

Spoke to Mr. J. J. Feltner 20. 4. 27.

Mr. Feltner is very particular of the delay
in the supply of the stevedores & he says
would prefer that the order be cancelled
at once than the position as indicated in
this memo - He fears also difficulty of labour
for erection at considers that other farmers
on the north bank should help with the
labour.

He will probably take a opportunity
when he is back this winter to consult the
engineering department of the C.S.O. & the water.

4. 30. 4. 27.

6. 21. 4. 27.

9. 8.
Paper brought up as directed.

S.R. 123

Or/CSO

30 April 1927

44. To. Let.

If nothing has been received in
this connection for the case of the "Ballers"
rail 1 But that is subject to be then
enquiring as to progress in the delivery of the
material for the bridge.

Jul

2. 5. 27

Note. Informed Mr. [unclear] that an advice
of Shipment had been received in connection
with articles supplied under Indent No 35

It is now clear that the order
has been put in hand and delivery of
the material for the bridge may
be expected in due course

3 May 1927.

Form L7 from Comd Agents d/14 Feb 1927.

Colonel Enquiry.

For info.

2. Will you please with draw for
safe custody in your office the plans.
from the [unclear] in folder in this paper - Red.

La - 9 & 13.

GC L7

OC/Sec

10 May 1927

C.S.O. No. 688/25-

Inside Minute Paper.

Sheet No. 12.

The CIG/CSO.,

Noted.

2. The drawings have been withdrawn and placed in the office safe.

Robt. Barclay.
Colonial Engineer.

16th May, 1927.

Early

Col. Engineer

Please prepare as early as possible an approximate estimate of the total expenditure that is likely to be incurred by Government in connection with the supply and erection of this bridge during the current financial year.

2. You are aware that His Excellency has given the instruction that the bridge should be put up

by your department at the public expense with
the least possible delay.

3. Sincerely you are aware that the
provision for this service under H.P. I. 2. of
the Estimates of the Expenditure for 1927 is
£ 600. i.e. exclusive of the cost of erection.
J.M.
21. 6. 27

The Hon., Colonial Secretary.

Noted.

2. An approximate estimate of the total expenditure for
erection and completion of the bridge will be prepared as soon as
the necessary particulars in respect to hiring of men, cooking,
victualling, etc., and number of labourers to be furnished by the
farms on the north camp have been obtained, Action is being taken
in connection with the above matters.

3. The ironwork and timber staging for erecting has been
shipped by the "Falkland" and arrangements have been made with
Capt Roberts, to land the gear as near the proposed site as possible.

4. I beg to submit herewith F.R. in the sum of £50. to cover
labour in connection with delivery of material to the "Falkland"
and other incidental expenses.

Representing
Colonial Engineer.
23/6/27.

B. G. Mansfield, No 43/27.

18.

Col. Engineer.

Re full provision of £600

under this subject - and more also -

will be spent before 31.12.27. will

it not? In such case it is

preferable to submit the F.R. now in

the total amount.

Truitt

G. G. Lee

The Hon. Col. Secy.,

26.5.27

More than £600 will be required to complete the work.

18.

2. I beg to submit herewith a fresh F.R. accordingly.

3. The following gives the estimated cost of materials delivered at the Arroyo Malo Bridge: The Crown Agents' accounts have not yet been received.

Ironwork, per original shipping advice £360.

Freight from Great Britain..... 50.

Landing charges at Stanley..... 13. £423.

Timber for staging, from P.W.Store..... 162

Freight on timber and ironwork, from Stanley to the Arroyo Malo River..... 70.

Delivery to ship at Stanley..... 20

Total..... £675.

4. When the estimate for cost of erection is prepared the actual charges for the above will probably be known and the further amount required could be included in the S.W. to be issued.

R. B. Barclay
Colonial Engineer.

30th June, 1927.

G. R.

F. R. submitted for signature
of approval.

2. I will ask V. Barclay to
let me have the complete estimate as
early as possible.

How C.S.
Hermitage
A.H.
1/27.

Just

1.7.27

The Treasurer

Please withdraw F. R.
at pass to Col. Engineer.

J. Barclay

q. Col. En

1.7.27

Col. Inguier,
J. Reqn. to 43 withdrawn &
M.P. passed to you.

H. Cher.
to Reas.
6/7/27.

The Hon. Col. Secy.,

I beg to submit the following report in connexion with the erection of the Arroyo Malo Bridge. I have not visited the site nor have I any personal knowledge of the conditions, but I have discussed the matter with Messrs A. Felton, W. Newing (Charge hand, Teal Inlet), D. Fleuret (who was recently on the site to receive cargo) and C. Gleadell. The last named worked near the suggested site for many years..

2. From information received it appears that in the months of August to the middle of October the river usually is in flood, being from 5' to 8' deep with a heavy rush of water and ice. After the snow water has cleared from the mountains the river falls to a depth of from 1'6" to 2' with an occasional rise after heavy rain. The best months for the work of erecting the new bridge are from November to February, when the river is low, the weather better and the hours of daylight longer.

3. The exact position of the site for the bridge does not appear to be known. From Sir John Middleton's minute of 24/10/25 herein the Hon. J. Felton selected a site above the present wooden bridge and also above a tributary of the Arroyo Malo. A further wooden bridge will be required to cross this tributary. I am informed that the tongue of land between the main stream and the tributary is covered with water during times of flood.

4. The materials shipped by the "Falkland" have been landed about a ⁽¹²⁾quarter of a mile below the site.

The Ground/

The ground over which the materials will be taken is rough, but Mr Newing hopes to be able to float the heavy timber (for staging) up the river during flood. The iron work, cement, etc. will go overland.

5. Suitable stone for concrete work, also sand is plentiful in the vicinity of the bridge. Some of the stone may have to be quarried.

6. The Arroyo Malo House is a good 15 minutes walk from the site. It has sleeping accommodation for 10 or 11 men, but cannot provide messing accommodation. A hut, approximately 24'x 12'x 8' walls will be required for sleeping accommodation for the cook and to provide a messing room for 11 men. Another hut, approximately 16'x 8'x 8' (sleigh roof) to provide sleeping quarters for the O/I/C and a store room for the cook will also be necessary. Both these huts will be on the site and the workmen will only require to sleep at the Arroyo Malo House.

7. Both Mr Newing and Mr Fleuret report that the cement shipped to the site in 1926 is practically useless; consequently a further supply will be required.

8. With regard to the wooden trestles to carry the staging. If there is 3' and upwards of water in the river it will not be possible to sink the trestles or to hold them in position as they will float and be carried down the stream. If the work has to be done during the flood period iron trestles will have to be provided.

9. With regard to the skilled and unskilled men who will be taken from Stanley. During the weeks that the men will be away they will have to employ others to plant their gardens and cut their peat. This point has been raised by the men and in my opinion is a reasonable one. I would therefore suggest that the rate of pay be increased by one penny per hour per man during the time the men are employed away from their homes. The estimate for labour given below has been calculated at this rate.

10. Mr W. Newing informed me that every assistance would be given by the Hon. J. Felton in connexion with both horses and men.

He thought/

He thought three men could be lent for work in connexion with the bridge and the farm would pay their wages, amounting to £7 per month. He considered that on work of this nature their wages should be made up by the Government to the same amount as that received by the labourers from Stanley. This is, I think, reasonable and the necessary provision has been made in the estimate.

11. The following is the estimated cost to erect and complete the bridge with the river at summer level.

To material for abutments, cement, etc.....	£120.	
To wages of mason, carpenter, cook, and four labourers, and extra payment to three farm labourers for a period of 70 days, working 88½ hours per week per man.....	£550.	
To fares, messing, fuel and utensils.....	£200.	
To two huts, complete.....	£156.	
To rigging gear, ropes, tackle and tools.	£60	
Unforeseen.....	£100.	£1186.
To additional amount required for bridge materials from England (vide my minute of 30/6/27 herein).....		75
		<u>£1261.</u>

12. It is anticipated that the staging timber will be useful for other work after the bridge is completed (vide my minute of 18/12/26 herein). The huts and rigging gear will also be re-purchasable.

156
60

W. S. Ascher
Colonial Engineer.

18th July, 1927.

G. S.

The estimated cost of the
erection of the bridge for success
my anticipation and / view the

active arrangement proposed without criticism.

2. It is to be noted that Col
Pyman permits & his recommendation that
the work of section should be postponed
until the summer i.e. the month of November
onwards.

3. In any case it will scarcely
be proper to proceed with the work
involving expenditure of such magnitude without the
prior sanction of the J.F.C. at G.S. May wish
to telegraph accordingly sending a despatch in
confirmation

4. Col. Pyman should arrange to visit
the site at an early date so as to acquire
knowledge of the local conditions which will
enable him definitely to select the location of
the bridge or bridges and to determine other
contingent ~~any~~ matters.

J.P.
19.7.27

Spoke 74.2.

~~4. 5. 8. 27~~

12 21. 7. 27.

Spoke 148.

4. 19. 8. 27.

10/5. 8. 27.

4
3. 9. 27.

19. 8. 27.

19. Memo from Colonial Engineer of 1. 9. 27
20-22. Despatch to S.O/S. No. 180 of 13/9/27.

23. 10. 27

6 23. 10 27.

23. Minute from #6 Governor of 17/10/27.
24. Minute from Col. Eng. of 24/10/27.

y.e. - Schtuck. / Rind hat y.e.

may well authorize the immediate putting
in hand of the preparatory work

Secretary, S. G. & L 100 may be

prepared accord.?

Just

24. 10. 27

Hon. C. S.

Please.

$\frac{26}{10}$ 27. A H

Col. Py.

Accordingly please

W. B. S. S.

The Hon. Col. Secy.,

Noted.

2. A Special Warrant is submitted herewith accordingly, 25-26.
for favour of signature.

W. B. S. S.
Colonial Engineer.

28th October, 1927.

Telegram from Secretary of State 28th October 1927. 27.

Minute from H. E. the Governor 29th October 1927. 28.

L. 4. 11. 27

L. 31. 10. 27

4. 14. 11. 27
 0
 1/2 8. 11. 27
 1/2

4. 21. 11. 27
 0
 1/2 10. 11. 27
 1/2

4. 28. 11. 27
 0
 1/2 21. 11. 27
 1/2

- 29 Minute from Col. Engineer of 1/12/27.
 30-34 Memo from Col. Eng. of 14/12/27.
 35 Folder containing Photographs, Plan of Bridge
 Y/E.

Submitted (Roads 30-35.)

Special Warrant submitted
 for signature.

The Col. Engineer was
 instructed to prepare this
 warrant on the 24th of Oct. 1927.
 but it was held up pending
 a report from Mr. Roberts which
 has now been received.

G. J. J.
 for C.S.
 17/12/27

Hon C.S.

Thank you. I approve Site. A. The
 work should be put in hand as soon
 as possible to take advantage of the
 summer months.

10/12/27

CH

Hon. Treasurer

Will you please
withdraw Special Warrant no 39/27
and pass to Col. Engineer
to note H.E.'s minute of the 18th
of Dec. 1927.

G. J. J.
for C.S.
19/12/27

Colonial Engineer.

S. W. 39/27 withdrawn
and papers passed to you.

M. George Sturges
Treasurer

19.12.27.

Hon. Col. Sec.

Noted thank you

C. Roberts
19-12-27.

Hon. Colonial Secretary.

I beg to report that the Acting Colonial
Engineer, with men and materials, left this morning
at 7.0 a.m. on S.S. "Fleurus" for the Arroyo Malo.

L. B. White
for Actg. Colonial Engineer.
25th January, 1928.

Y. 2

SchMed for information.

psd

26. 1. 28.

Hon. C.S.

Please keep me fully informed as to how
the work progresses.

26. 28. 28.

4. 10. 2. 28
12. 27. 1. 28

4. 21. 3. 28
12. 11. 3. 28

35

Folder containing Photographs of Bridge

36-40

Minute from Ag. Col. Engineer of 5th March, 1928.

41-43

Minute from Ag. Col. Engineer of 7. 3. 28

44-45

" " " " of 7. 3. 28.

G.D.

Submitted for information at

S.O. for signature if approved.

2. No excess on the provision

in the Estimate for 1928 is

unavoidable and is attributable to the

fact that it was not found possible

to make much progress with this

work in 1927 in accordance with

The life expenditure is para 5 of vol 20.

3. The preliminary expenditure

already brought to account is 1926 and 1927

totals £ 671 9 11^s so that the net

additional sum of £ 940 19 0^s

expended in 1928 is less than the

figure of £ 1,000 quoted in para 4

of vol 20 in spite of the heavy and

expensive charges amounting to £ 342 5 7^s

to Shet. Ad. Ex. refers.

4. Mr. Roberts at his own desire

gives credit for the thorough and expeditionary

nature in which they have undertaken and

successfully completed this large work which

has been so long outstanding. I find it

difficult adequately to express my appreciation

of Mr. Roberts' energy initiative and resourcefulness.

5 On return I will prepare
the necessary draft to J.F.S.

Just

12. 3. 28

14m C.S.

very satisfactory. Please convey my
congratulations to Mr. Roberts and
his men. Duplicate to S of S, please,
with photographs.

M.

(12. 3. 28.)

H6. Telegram to S of S of 27. 3. 28

Ag. Colonial Engineer,

Special Warrant and Adjustment
Voucher herewith. I regret these have
not been forwarded to you sooner.

S.R.H. 12

Hon: Col. Treasurer.

30. 3. 28 for C.S.

Noted & passed to you.

for C.S.
31/3/28

Hon. Sec. Secretary

S. W. & adjustment Voucher
withdrawn

H. Cher
for measure

31/3/28

Despatch to S. S. Ho 106 of 3. 3. 28
Letter to the Editor, the "Field" of 17/4/28
\$ of \$ Despatch No. 90 of 11th June, 1928.

47-53

54

55

Off 1/2 Sect.

Please file the enclosed

Extract from the "Field" of 21. 6. 28. 56.

2. Col. By. Messrs. to 112.

Ind

10. 9. 28.

Letter from GAs dated 13 July 1928.

57-58.

Col. Engineer,

To see B. for C.S. 14. 9. 28.

Hon. Sec. Secretary

Rev.

17/9/28

59.

Minute from H.E. the Governor of 10/2/30.

A.C.S.

I cannot trace correspondence
regarding the arrangements to
which His Excellency refers.

G.R. 13

10-2-30-

J.P.

While such an understanding
was at the time no doubt
implied
facily I cannot trace in these
papers or ^{remember} ~~remember~~ that it was
ever specifically stated.

2. I will however consult

Col. Eng. in the matter and
ask him for his comments on
the main issue and for any
information that he may have on

to the present condition of the
bridges.

Yours

11. 2. 30.

Mr C. S.

yes, please see Mr G. Roberts.
I have an agreement to this
effect was made.

D. H.

(11/20
2)

Col. Py.

To you please.

Yours

11. 2. 30.

Hon Col Sec.

I am not aware of any written agreement to this effect,
but it was understood by the Farmers that they would
maintain the bridges.

The steelwork of both bridges, should be cleaned and
painted at least once every 3 yrs.

I have no means of knowing the condition of the steelwork
unless I send a man to inspect it would mean 14 days
for the Mails and several weeks for charges. L.C. 12/2/30.
Suggest letter be sent re condition of bridges and

C.S.O. No. 588/25.

Inside Minute Paper.

Sheet No 21.

G. E.

Submitted with a draft

Letter to Mr. S. J. Fulton

and Mr. W. Luxton.

J. W. S.

14, 2, 30.

AM.
14.30.
2

Letter to the Hon. S. J. Fulton, 14/2/30.
to H. Luxton 17/2/30.

Mr. Col. Ey.

To see,

J. W. S.

17, 2, 30

Hon. Col. Sec.

Noted

C. W. Roberts
18/2/30

P. A.
20/2/30

Letter from Hon. W. L. Hutton 9/4/30 (68)

J. E. Schuchel. It looks as

though we were up against the old

difficulty of the lack of co-operation

between the farmers themselves.

2. Before proceeding to further

action, however, it might be as

well to have Mr. J. S. Foster's reply

to me to go. I will send him a

polite reminder.

Yours

30. 4. 30.

Hon. C. S.

Please.

J. E.

30 30
4

63. Letter to Hon. G. J. Pelton 1/5/30.

by 22.5.30

by 2.5.30.

→

Hon. Col. Py.

At what do you

~~to~~ estimate the cost of the materials required, e.g. paint, for

the overhead of these bridges on each occasion?

2. Is there any the

maximum period they can be closed to stand without

attention or could not this

period be extended somewhat
to five years ?

19.5.30.

19.5.30.

Hon. Col. Sec.

Mals bridge £15 for paint
+ £1-10 for brushes
Total £16-10-0.

Charles bridge
£4 paint.
£1 brushes

Total £8.

The question of whether the steelwork
can go 3 or 5 yrs depends on how the
previous coat of paint is weathering.
I am not prepared to recommend
more than 3 yrs for any steelwork in
this country, experience shows that the
time should be less rather than more

C. Roberts.

20/5/30.

C.S.O. No. 588/35

Inside Minute Paper.

Sheet No. 23

y.2. Submitted. With reference
to vol 62 at the f.f. Pether's
verbal representation the actual
cost of the materials estimated
to be required might be allowed
on completion of the work to
the satisfaction of the Mr. Col.
Egner. Mr. Col. Egner might
also report on the condition
of the bridge when convenient
opportunity offers, say, during
the summer of 1931-1932
at such appropriate date

the first county will pay

Ind

21. 5. 30.

1/4m C.S.
Please find out from 1/4m G. Roberts
approximate amount of paint
required and cost.

21/30
5-30
All.
For Charter Bridge. Mr. Luxton;
For Mayo mld. Bridge. Mr. Fulton;
All

Spoke 17. Only as drafted.

W. 22/5

Letter to Hon. S. J. Fulton. 23 May 1930. 64.

Letter to Hon. W. H. Luxton, 23rd May, 1930. 66.

Hon. Col. Ey.

To see

Ind

23. 5. 30.

RA, 27. 11.30
28.3

Hon. Col. Sec.

noted C. Roberts. 26/5/20.

C.S.O. No. 588/25

Inside Minute Paper.

Sheet No. 24

~~bf 31/7/31~~
~~a. 28 7/4/31~~
~~bf 31/8/31~~
~~a. 28 31/7/31~~
~~bf 14. 8. 31.~~
~~put 31. 7. 31.~~

Hon. D. P. O.

At your convenience will you

please consider this question
of maintaining in proper
condition the Arago No

bridge?

Y. M. H.

14. 8. 31.

Hon. Col. Sec.

Paints and brushes are being sent to Seal Inlet by the first available boat.

I spoke to Mr. Selton on the phone and he is undertaking the painting as he gets men to spare. He states that a start will be made next month and work continued as weather permits.

C. Roberts 28.8.31.

The D. P. W.

Rest you : kindly

report further at a later date

when an opportunity has been

taken of inspecting the work done.

W. H. M.

25-8-31

Hon. Col. Sec.

I had intended to inspect
this bridge during the coming year.

a full report on the bridge generally
will then be furnished

C. Roberts.

29-8-31

P. A. J. J. J.
31-8-31

66. Minute from Hon. S.P.W., 30/8/32.

J.R. Subitted. He understanding
first was that the Govt. would supply
the materials for the bridge and that
Teal Inlet Station would erect and
subsequently maintain it. Govt. actually
has erected the bridge and has
supplied Mr. S. J. Felton with paint etc.,
leaving the Station only the labour
to fix. Mr. S. J. Felton has done
nothing except, where possible, "bidding"
the Govt. for any stores, transport
etc. provided.

2. The bridge primarily benefits Teal

but I do not think that

Govt is justified in expending further money

on it for the public trust. If the bridge

is not worth ~~maintaining~~ Mr. G. J. Pelton's while to

maintain, it had better be allowed to

rot and collapse. In my view we must take

a stand somewhere.

3. ? Reply is the same that the Govt

is not prepared to undertake the work of

painting etc. etc.

J. J.

31. 8. 32

Hon C. S.

Inform Mr Felton - firmly but
politely - regret that understanding
has not been carried out, and that
the P. S. Lafouca on next visit to
Leel Lulet will lift the paint, brushes,
and other materials - if any - and bring
such back to Stanley

J.G.
1-9-32

67. Letter to the Hon. G. J. Felton. 7th ~~3rd~~ September, 1932.

G. J.

Draft letter written

J.G.

Hon C. S.

3. 9. 32

Draft of letter
Approved

J.G.
6. 9. 32

Mr D. P. O.

Please see and
report on the paint and

brushes are returned.

Jul 11/32

7. 9. 32.

Hon. Col. Sec.

noted.

Mc Roberts.

8-9-32.

b. f.

9. 11. 32.

Jul 9. 9. 32

The D. P. W.

Has there been any

development here, please ?

Jul 11/32

9. 11. 32.

Inside Minute Paper.

Hon. Col. Sec.

The materials were returned by the last trip of the "Lafonia" and have been placed in the P.W. Dept. store. Mr. Selton now reports that the South approach to the bridge has been damaged by erosion during the last winter. The bridge could be inspected when making the proposed motor trip over the tracks to Seal Inlet, failing this I would propose to send Mr. Challen out later on.

C. Roberts

12-11-32.

Hon. C.S.
Noted and
Approved
14-11-32
J.G.

J.P. Schmal for Lfman

at for authority so to

proceed.

J.M.S.

12. 11. 32.

~~Mr J.P.H.~~

Please note approval.

~~Mr J.P.H.~~
—

14. 11. 32.

Hon. Col. Sec.

Noted.

C. Roberts.

13-11-32.

F.A.
13/11/32

Hon. Col. Sec.

I beg to report that a trip was made to Seal Inlet and back between the 5th and 7th of Dec 1932, by the 6 wheeled Morris Lorry. The distance travelled being 36½ miles in either direction, the running time taken on the outward journey was 7 hrs 40 min and on the homeward journey 7 hrs. During the outward journey the Arroyo Malo Bridge was inspected, and seeing it has not been painted for 4 yrs I consider the condition of the Steelwork to be good, the paintwork has generally peeled off but there is no sign of actual rust or scaling. The bank to the South approach shows signs of erosion, but the bearers are still 4 ft into the bank. The damage previously reported by the Hon J.G. Felton was very slight, a hole approximately a foot square having been made at one corner, this has been repaired by one of Mr Felton's Shepherds. C. Roberts 13-12-32.

92. Submitted. I endorse Mr. D.P.W.'s report as to the general condition of the bridge. This was my first visit to the bridge and I am glad from personal observation to add a tribute to the fine work performed in this connection by the P.W. dept. under Mr. J. Roberts.

2. I wish also to compliment Mr. D.P.W. and the personnel of the dept. on the successful accomplishment of the trip by motor lorry to and from Teal Inlet, without real difficulty and almost without check.

J.M.S.
—

14.12.32.

Hon C. P.

Wholly admirable!
I note your
compliment to the
Hon G. Roberts and
personnel of D.P.W.

J.G.

15.12.32

Mr. D. P. Works.

Please see.

Just this

16. 12. 32

Hon. Col. Sec.

Noted. Many thanks for
your compliments.

O. Roberts

16. 12. 32.

PMJ

16. 12. 32

Minute from Hon D of P. 1/4/34

(68-71)

Yr. Submitted. I recommend that
the recommendations of the Hon.
Director of Public Works be
approved. The work proposed
should put the bridge in sound
condition

MCH
ag. cs.

4. 4. 34.

C.S.O. No. 588/25.

Inside Minute Paper.

Sheet No. 29.

Hon C.S.

Approved. Please

Convey to Mr. Challen my
appreciation of the thorough manner
in which he has taken up
this matter.

Yours

5.4.34.

Hon. Director of Public Works.
To note approval.

2. Please inform Mr.
Challen of Mr.'s appreciation
as directed above.

MCH

by C.S.

6.4.34

Hon. Colonial Secretary.

Noted and Mr Challen informed please.

Men and materials are leaving by "Lafonia" sailing Monday 9th April 1934. 5 men, as shown on attached copy of letter to Mess^{rs} F.I. Co, are leaving by "Lafonia", and 2 (M. Hardy & E. Ashley) are riding out.

72.

The "Lafonia", on account of being behind time, cannot now call at Arroyo Malo, but the men and materials will go to Seal Inlet.

The Manager of Mess^{rs} F.I. Co's is kindly making arrangements for one of the "Lafonia's" scows to be left behind at Seal Inlet to enable materials to be towed to Arroyo Malo by Hon. G.F. Felton's motor boat. The manager is making no charge for loan of scow, but it is loaned on condition that it is securely moored at Seal Inlet & received back by "Lafonia" in same condition.

Both schooners are out of port just now, and I think they will be away for some time. The Company's charge will be ordinary passage and freight rates to Seal Inlet, so this should be cheaper than hiring a schooner.

Mr Hills will be in charge of the work, and Mr Challen will give him a specification & sketch of the work to be done.

I have spoken to Hon. G.F. Felton re towing of scow, and this will be done in calm weather, early morning or night. I have also informed the occupant of Arroyo Malo house regarding accommodation for the men.

L. White,
for Mr Hills
7-14-34

H. Submitted. The arrangements made appear to be satisfactory.

mch
— ag c.s.
9. 4. 34.

Hon. C.S.

Yes: the matter evidently is well under way. I should like a further report when the work has been completed.

W.D.

10. 4. 34.
Hon. Director of Public Works.
To note.

mch
— ag c.s.
10. 4. 34.

Hon. Colonial Secretary.

I beg to report that the work of repairs to the Arroyo Malo bridge was completed on the 21st April, 1934.

2. Men left Stanley on the morning of the 5th April, 1934 for Teal Inlet and arrived at the Malo on the 11th, when materials were

unloaded from scow, and actual repair work was commenced on the 12th April, 1934.

3. Fairly good weather was experienced, and Mr. Hills reports that the men worked exceedingly well. The work, as described on reds 69 and 68, was carried out and completed on 21st April, 1934 at a cost of approximately \$110, as statement attached. The men arrived in Stanley on Sunday the 22nd April, 1934.

4. The Honourable G.J. Felton went to the Arroyo Hato when the work was nearing completion and expressed himself as entirely satisfied with the work done.

5. Photographs were taken and these will be forwarded when available if required.

R. White

for Director of Public Works.
26th April, 1934.

J.L. Submitted. The P. Works Dept. and particularly Mr. Hills are to be congratulated on successfully carrying out this work in such an expedition manner.

It is satisfactory to note that the Hon. G. J. Felton expressed his satisfaction of the work carried out.

WCH

ay c. s.

27. 4. 34.

M^r. C. S.

I am pleased indeed
at the way in which this
work has been carried out.

Please convey my full satisfaction
to M^r. Hills and to all concerned.

2. I am glad also that
M^r. J. J. Felka is satisfied.

3. I should like to see
the photographs when ready.

Yours
J. J.

Hon. Director Public 27. 4. 34
Works.

To note and to convey
to M^r. Hills and all concerned
M^r's satisfaction.

2. You might kindly
submit photographs when ready.
M. C.

27. 4. 34 as above

Hon. Colonial Secretary.

Noted please, and His Excellency's satisfaction has been conveyed.

4 photographs of the repair work are submitted.

42-75.

L. B. White
for L. B. White
4/5/34.

J. E. Submitted.

mch
—
24 cs.
4. 5. 34.

Hon. C. S.

Thank you: The photographs are clear and explanatory.

J. E.

4. 5. 34.

Hon. Director Pub. Works.

To note.

mch
—
24 cs.

7. 5. 34

Hon. Col. Secretary.

Noted

L. B. White
4/5/34

P. A.
mch
—
8. 5. 34.

GOVERNMENT HOUSE,
FALKLAND ISLANDS.
16th March, 1925.

In an official letter of 30th September, 1924 (126 Z/F.I. 1834) relative to the supply of materials for Chartres river bridge it is stated that you have a Drawing office staff permanently employed upon the design of bridgework and that you have a number of type designs which it is sometimes possible to use with economy. You have also spoken to me several times about the work of the Drawing office which you have established and I should be very grateful for advice on bridgework in this country and an economical type of structure. At the present time there are practically no bridges and streams become impassable when in flood. The streams vary in width/

width from 25 feet to 130 feet. There may be 10 inches to 2 feet of water in summer and anything up to nine or ten feet in a flood. I am told that in a severe winter a lot of ice comes down.

The bridges would be used at first principally for driving sheep and there may be a flock of about 3,000 waiting to cross a stream. All inland travel is done on horseback with pack-horses for transport but other traffic might develop. At the present time there are two or three ford cars and one Kegresse, which Mr. G. J. Felton brought out last year, but they do not travel far as yet. It is quite possible that the use of Kegresse cars or similar vehicles might develop if there were bridges. It may interest General Swinton to know that Mr. Felton took me in his Kegresse car over peat banks and swampy ground where he said it would be quite impossible for a horse to go. On only one occasion did the rubber band come off and that was when the car/

car was being turned at a fairly sharp angle out of a swamp.

The design for the Chartres River bridge prepared in the Colony allowed for 4 spans supported by steel joists (24' x 10" x 4 $\frac{1}{2}$ ") on masonry piers. It was thought that given the width of streams in the country this type could be used conveniently in multiples of 24 feet. The joists are the heaviest load in the material for the bridge and weigh about 5 cwt. There is no difficulty in moving this load at Chartres, the bridge is only a few yards above tidal water and the materials can be brought up in a flat bottomed scow.

Other bridges cannot be so conveniently placed and I have recently seen a stream 125 feet wide where a bridge is much required but where transport of materials is difficult. The depth of water in summer is about 2 feet towards right bank where bottom is rock; towards the left bank the bed of

the stream is gravel and dries in summer. In a flood there is a depth of about 10 feet of water towards the right bank and there is a very strong current for about 20 or 30 feet from that bank. A lot of ice comes down the river in a severe winter. There is no suitable site for a bridge in tidal water and the materials would have to be transported about a mile by light horses, over swampy ground. A load of 5 cwt presents considerable difficulty even if a suitable trolley with broad wheels could be devised.

The attached cutting giving particulars of a portable bridge has been taken from the catalogue of Messrs Jones, Burton & Co., Ltd. Have you any experience of this or any similar type of bridge the materials for which could be easily transported? From the information given it is not easy to arrive at cost. Type I in triangular sections seems the least expensive but it would be necessary to have a roadway of not less than 7 feet wide and no obstacle at side of roadway lower than 4 feet 6 inches. I should be very glad to have any information/

ation which is available about "Portable bridges" or any type of bridge of simple construction for which materials can be fairly easily transported over swampy ground. The bridge would have to be erected by unskilled labour.

All sizes of timber suitable for bridging can be obtained from Punta Arenas comparatively cheaply and there is a motor schooner there which will carry timber and discharge it at any of the farms at a fairly low freight. This would save cost of handling at Stanley and transshipment which adds very considerably to the cost. All materials have to be taken out from Stanley by sea.

The use of timber has this advantage that it can be floated up the streams when they are in flood. I have seen a ramshackle affair which has two oregon pine beams 40' x 8" x 8" and two 35' x 8" x 8" which are supported by crates filled with stones. These beams were floated up the stream when it was in flood./

hood. I do not know what load the beams are capable of carrying but it cannot be great.

I shall be very grateful for any advice which it may be possible to give as to the best type of bridge to adopt and the Colony will pay any expenditure, to a moderate amount, which it may be necessary to incur in connection with this enquiry or in the preparation of designs of suitable bridges.

ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES,
THE ABOVE REFERENCE AND THE
DATE OF THIS LETTER BEING QUOTED.

TELEGRAMS, "CROWN, LONDON."
TELEPHONE 7730 VICTORIA.

4, MILLBANK,
WESTMINSTER,
LONDON, S.W.

June 22nd, 1925.

Sir John Middleton, K.B.E., C.M.G.,
Government House,
Falkland Islands.

My dear Middleton,

I duly received your letter of the 16th March wherein you ask me to furnish you with information regarding the design and cost of bridges which are likely to prove suitable in the Falkland Islands.

During the past few years we have, at the request of the Nigerian Public Works Department, supplied a number of road bridges suitable for easy transport over country where roads do not exist. These have been specially designed in order that erection may be simplified as much as possible. I enclose blue prints Nos. Z.2049, Z.2119, Z.2273/1 and Z.1895/1 illustrating bridges of from 50 ft to 120 ft span. All these bridges have been designed to carry two axleloads of 4 tons each, and a pedestrian load of 75 lbs per sq. ft. You will note from the drawings that in some cases a reinforced concrete deck has been provided, and in others concrete ~~with~~ filling on trough decking. Either type of decking can, of course, be supplied to any span or if you wish a timber deck could be introduced. I attach an estimate of the cost of supplying f.o.b. the materials required for these bridges.

The heaviest individual member of these bridges is the cross girder, and this, if necessary, can be sent out in two pieces with joint plates for making a joint in the middle. You will note from the drawings that certain of the Nigerian

bridges have outrigger bracings to the main girders, and this bracing increases materially the length of the cross girder. This bracing was introduced at the special request of the Nigerian Public Works Department and, in my opinion, is unnecessary. Some saving would be effected if this is omitted.

The materials for these bridges are shipped piece small and freight is therefore reduced to a minimum. Each bridge is fully erected in this country before shipment and every piece marked and marking drawings sent out to enable the bridge to be easily assembled in the Colony. All connections are made by means of bolts and practically no skilled labour is required for fabrication. I enclose a blue print Z2273/2 illustrating the marking drawing for one of the bridges, from which you will appreciate that little difficulty is likely to arise in the Colony in putting them together.

I am enclosing two designs for the 100 ft span bridge, one with bowstring girders and the other with main girders with a horizontal top boom. Either of these designs can be supplied for any span, and the difference in cost is the small/bowstring being slightly more expensive.

I am also enclosing one blue print No. Z.2405 illustrating designs which we have prepared for a 20 ft span bridge and a 30 ft span bridge in timber. It is, of course, possible to design timber trusses for much bigger spans than these, but I think the examples I am sending you will suffice for the suitability of this form of construction to be considered. Details of the quantities of the materials required for these bridges are attached.

The cutting which accompanied your letter illustrated one of the types of Inglis bridges which were used during the War, but little use has been made of them since owing to their very high cost of manufacture. These bridges can be obtained if ordered in considerable quantities, and recent quotations which we obtained for another Colony are as follows:

Light triangular type with 8 ft bays.....£45 per bay.

Light rectangular type with 12 ft bays.....£165 " "

Heavy rectangular type with 12 ft bays.....£250 " "

The above prices are for the steelwork only without timber decking and are based on the assumption that 50 bays of each type of bridge would be required.

We should like to point out that all the bays of each type of Inglis bridges are identical in sectional area and the material is not economically distributed. As a consequence the carrying power varies inversely with the span and this is, of course, an unsatisfactory feature. Having regard to their carrying capacity the Inglis bridges are a most extravagant type and we do not think the additional cost is justified by any saving which may arise owing to the various parts being interchangeable. The Nigerian standard road bridges illustrated on the accompanying drawings are cheaper than the light triangular type of Inglis Bridge which is only suitable for a foot bridge. For equal spans and equal loads it will be found that the cost of the Inglis bridge will be from two to three times the cost of the Nigerian standard bridge.

At the request of different Colonies, we have considered from time to time various types of portable bridges

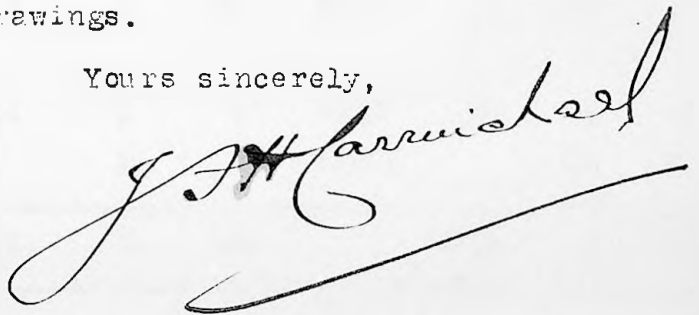
but in no case has their claim for portability justified the additional cost involved. The Nigerian bridges have been specially designed to facilitate transport and ease of erection, and we believe they will be found quite as satisfactory in this respect as any of the so-called "portable bridges".

Possibly, a 4-ton axleload is heavier than your immediate requirements would justify but very little saving in cost would be obtained by reducing the axleload to say 2 tons. The life of the steel bridges should be at least 40 years and it is possible that within this period road rollers may be introduced into the Island which may possess axle loads amounting to 4 tons. The timber bridges on Drg.No.Z.2405 which would doubtless have a shorter life, have only been designed for 2 ton axle loads.

I hope the information I am sending you is what you require, but I shall be happy at all times to go into the matter further, or prepare special designs to your own particular requirements.

I am sending examples of the Nigerian bridges as these seem to most nearly meet your requirements and it is possible to send you details of design without incurring the cost of making new drawings.

Yours sincerely,

A handwritten signature in dark ink, appearing to read "J. H. Harriss". The signature is written in a cursive style with a long, sweeping underline that extends to the right.

Falkland Islands - Road Bridges.

Estimated cost of materials f.o.b.

Materials for 20'0" Timber Road Bridge. (Drawing No.Z.2405).

Description.	cwts.	qrs.	lbs.	Rate.	£.	s.	d.
Angle cleats etc		2	16	18/6		12	0.
Tie Rods.		3	4	30/-	1	3	9
Bolts 3/4" dia.		2	2	28/-		14	6
Ragged bolts.		1	10	30/-		10	2.
	2	1	4		£3	0	5.

(Nett quantity of timber required - 116 cu.ft.)

Materials for 30'0" Span Road Bridge. (Drawing No.Z.2405).

Description.	cwts.	qrs.	lbs.	Rate.	£.	s.	d.
Angle cleats etc	1	3	2	18/6	1	12.	9
Tie Rods	1	2	1	30/-	2	5.	4
Bolts	1.	0	17	28/-	1	12	7.
Ragged bolts		1	10	30/-		10.	2.
	4.	3.	2.		£ 6.	0.	10.

(Nett quantity of timber required - 204 cu.ft.)

Materials for 50'0" Span Road Bridge (Drawing No. 1801/1.

Description	Tog	cwts.	qrs.	lbs.	Rate	£.	s.	d.
Main Girders.	4.	10	3	14)	18/6	155	17	3
Cross Girders))				
& outriggers)	1	19	2	7)				
Stringer joists	1	18	0	7)				
C.I.Bearings & Notice Plates		5	2	21	22/-	6	5	2
Handrailing & Sheet lead.		2	3	21	52/3	7	13	6
Black, turned & Rag bolts & Podger spanner		14	1	0	45/-	32	1	3
Shipment paint			1	0	60/-		15	0
	9.	11.	1.	14.		£203.	2.	2.

Materials for 75'0" Span Road Bridge (Drawing No.Z.2049)

Description.	Tons.	cwts.	qrs.	lbs.	Rate.	£.	s.	d.
Main Girders	9	3	3	14)	18/6	263.	2.	2
Cross Girders	1	13	2	25)				
Stringer & cleats	2	11	1	14)				
Bracing		15	1	22)				
C.I.Bedplates & Notice plates		8	0	0	22/-	8	16	0.
Handrail & gastubes		4	1	0	51/3	10	17	10.
Turned & black bolts.		19	0	21	45/-	43	3	6.
Sheet lead		1	0	24	45/-	2	13	8.
Shipment paint			1	14	60/-	1	2	6.
	15.	17.	1	22		£329.	15.	8

Materials for 100'0" Span Road Bridge (Drawing No.Z. 2119 (Bowstring

Description	Tons.	cwts.	qrs.	lbs.	Rate.	£.	s.	d.
Main Girders	14	0	0	14				
Cross Girders	2	8	0	17				
Stringer & cleats	3	4	0	11				
Bracings		16	1	22				
Bedplate & Notice plates.		9	2	24				
Handrail & gas-tubes.		3	1	7				
Turned & black bolt.		12	2	0.				
Sheet lead.			3	4.				
	21	15	0	15		£537.	0.	0.
						(Lump sum tender)		

Materials for 100'0" Span Road Bridge (Drawing No.Z.2273/1 (N type).

Description.	Tons.	cwts.	qrs.	lbs.	Rate.	£.	s.	d.
Main girders	14	12	1	5)				
Cross girders)				
& outriggers	2	5	2	0)	18/6	402.	4.	1.
Bracing		9	3	7)				
Stringers & cleats	4	7	0	26)				
C.I.Bedplates & notice plates		9	3	26	22/-	11	0.	0.
Handrailing & lead sheets		5	2	10	52/3	14	10	6
Black turned & ragged bolts, spanners etc	1	13	2	14	45/-	73	12	0
Shipment paint			2	0	60/-	1	10	0
	24	4	2	4		£502	16	7.

Materials for 120'0" Span Road Bridge (Drawing No. Z.1895/1).

Description.	Tons.	cwts.	qrs.	lbs.	Rate.	£.	s.	d.
Main girders	19	17	1	23)				
Cross "	2	13	0	9)				
Bracing	1	12	1	22)	18/6	706.	12.	10.
Trough flooring	14	0	3	22)				
C.I. Bedplate & notice plates		9	3	26	22/-	11	0	0.
Handrail & Drain- tubes.		4	1	13	51/3	11	4	6.
Turned & black bolts & wire.	2	3	2	0	40/-	90	7	6.
Sheet lead.		1	1	6	45/-	3	0	0.
Shipment lead.		3	0	12	60/-	9	7	6.
	41.	6.	0.	21.		£831.	12.	4

The above prices are all f.o.b. British Port.

Table showing comparison in weight of members : length
and number of such members to be handled.

Member.	Size & weight per foot.	Bridge Type. Drawing No Z.2273/I.			Bridge Bowstring Drawing No Z.2119		
		Length	No.	Cwts.	Length	No.	Cwts.
Bottom Booms	[9" X 3". 19.37.	24.5'	4.	4.23.	24.5'	4.	4.23.
Ditto.	Ditto.	20.5'	8.	3.54.	21.0'	8.	3.64.
"	"	19.5'	8.	3.37.	18.75'	8.	3.25.
Top Booms.	"	24.5'	4.	4.23.	13.00'	8.	2.25.
Ditto.	"	20.5'	8.	3.54.	10.75'	8.	1.85.
"	"	19.5'	8.	3.37.	10.50'	8.	1.82.
"	"				10.25'	8.	1.78.
"	"				10.00'	8.	1.73.
Cross Girders with strigger.	R.S.J. 12" X 5" 32 ?	10.0'	4.	2.86.			
Ditto.	Ditto. 30 lbs.				10.33'	4.	2.77.
"	"				10.00'	4.	2.68.
"	"				8.58'	4.	2.30.
Cross Girders.	Ditto 32 lbs ? 30 lbs.	13.5'	7.	3.86.	13.16'	4.	3.53.
"							
Overhead Bracings.	R.S.J. 7" X 4" 10 lbs.	13.5'	5.	1.93.			
"	[7" X 3.5". 18.25 lbs.				13.16'	3.	2.14.

Ansley.
Colonial Engineer.

16/9/25.

Estimate of timber required for 100' span Steel Bridge,
with timber roadway in place of concrete or metal.

Plate. Punta Arenas (Sandy Point) timber.

Curb.	3" X 4½" X 12'.	36 lengths.	
	Ditto.	18 "	
		54 "	@ 4/8. 12-12-0.
Decking. P.A.	13" X 9" X 128	133 planks.	@ 6/3. 42- 0-0.
Nails; Spikes. 5"		1 cwt.	2-10-0.
Bolts; nuts; and washers 5/8"		15 doz.	@ 3/- . 2- 5-0.
Dowels ; resin etc.			1-16-0.

60-17-0.

Paint etc for Steel and timber work.

10- 3-0.

71- 0-0.

Anscombe
Colonial Engineer.

17th September 1925.

3.

Page _____

* To correspond with No. and date
at head of first sheet.

W & S, Ltd.

Colonial Engineer.

TELEGRAM.*From* The Colonial Secretary*To* The Crown Agents for the Colonies.*Dispatched* : 30th October, 1925. *Time.* 11.35 a.m.*Received* : 192 *Time.*

CROWN

LONDON

PHUFFROZAW ZARKALUGAP UIVPOYAOKE VUMZATUYUV BYOOZOMUAG

DIMPOOHIXA SIERFEZOAJ UMXOJVRORJ DYNIE

Meaning:

Request arrangements may be made for shipment by Pacific
 Steam Navigation Company's vessel sailing 28th November
 8 tons best quality Portland Cement packed in steel drums
 weighing approximately 1 cwt.

Colonial Secretary.

[INSIDE SHEET.] Charge to ~~XIX MISCELLANEOUS EXTRAORDINARY~~ 4, Arroyo Malo Bridge.

Page _____

Indent No.* _____

Date* 2nd January, 1926.

* To correspond with No. and date at head of first sheet.

Item No.	Quantity.	Description of Articles.	ESTIMATED COST IN ENGLAND.			Remarks.
			Rate.	Total. £ s. d.		
1	1	<p>Girder bridge , bowstring type , to span 80 feet, (10' roadway.)</p> <p>The bridge should be designed to carry two axle loads of 4 tons each , and a pedestrian load of 75 lb per square foot.</p> <p>There should be outrigger bracings to the main girders .</p> <p>The deck will be of timber , which will be obtained locally.</p> <p>The deck planks will be 3" thick and 9" wide .</p> <p>Holes for bolts to fasten timber plate 4"x 6" , on which timber decking is to be laid , should be drilled in the steel joists carrying roadway .</p> <p>The bolt holes should be 3' centres and should be staggered .</p> <p>Galvanized bolts , complete with nuts and washers , should be provided for bolting bearing plate 4"x 6" to the steel joists ; the quantity of bolts to be according to the number of holes in the joists , plus 25%.</p>	430	0	0	<p>The bridge is to be of similar construction to the 100' bridge supplied to the Nigerian Government under Reqn. No. 333 , Drawing No. Z2119 , but with timber instead of concrete roadway .</p> <p><i>Full instructions for erection to be sent together with working drawing.</i></p> <p><i>N.B. The bridge is to be made by unskilled labour +</i></p> <p><i>Note with the immediate difficulty in transporting materials to the site over swampy ground</i></p>
2	1 cwt	Galvanized spikes , 5"	2	10	0	
3	15 gals	Black "Bitumastic" Solution , packed in one-gallon tins .	10/-	7	10	0
		Estimated Freight , etc	£440	0	0	
			60	0	0	
			£500	0	0	
Colonial Engineer.						
Carried forward						

DRAFT.

FALKLAND ISLANDS.

(5)

[INSIDE SHEET.] Charge to: XVIII. P.W. EXTRAORDINARY;
item, Arroyo Malo Bridge.

Page _____

Indent No. *

Date*17th November, 1925.

To correspond with No. and date
at head of first sheet.

Item No.	Quantity.	Description of Articles.	ESTIMATED COST IN ENGLAND.			Remarks.	
			Rate.	Total. £ s. d.			
1	1	Girder bridge , bowstring type , to span 80 feet. (The bridge to be of similar construction to the 100 ft bridge supplied to the Nigerian Government under Requisition No 333 , Drawing No . Z2119) .		430	0	0	
2	15 gals	Black "Bitumastic" Solution , packed in one-gallon tins .	10/-	7	10	0	
		Estimated Freight , etc		437	10	0	
				62	10	0	
				£500	0	0	
<div>Approved by <i>[Signature]</i></div> <div>Colonial Engineer .</div> <div>Carried forward </div>							

FALKLAND ISLANDS.

REQUISITION TO INCUR EXPENDITURE. Triplicate.Original.Duplicate.

HEAD OF ESTIMATE

APPENDIX. 1.

SUB-HEAD

Arroyo Palo. Bridge.

{ Treasurer's

{ No. **10**State, in detail, service or article, &c.,
on which the amount is to be expended.State when amount is
to be paid.

Estimated Cost.

£ s. d.

Purchase of Cement

3 Tons in Steel Drums

62

0

0

Landing & handling

charges Stanley & Teal Inlet

10

0

0

Unforeseen

8

0

0

£ 80

0

0

N/P. 588/25.

N.B.—When this space is
insufficient, sheets should be
attached, but the sum total
shown on this.Vote on
Estimates.

{ £ 650 : :

Expenditure
authorised
to date.

{ £ 500 : :

Balance
available.

{ £ 150 :

Comments of
Treasurer in submitting
to Governor.Signature of
Head of
Department.

Colonial Engineer

Date 19

18th. February

06.

Decision of Governor.

Balance available as stated.

(20) W.A. Thompson

Treasurer, 19/2/26.

Date

2nd March 19

February

26.

(20) J. Middleton

Governor.

10



ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES,
THE DATE OF THIS LETTER BEING QUOTED,
AND THE FOLLOWING REFERENCE: 54 Z/Falkland Is.2427.
TELEGRAMS, "CROWN. LONDON."
TELEPHONE, 7730 VICTORIA.

4. MILLBANK,

WESTMINSTER.

LONDON, S.W. 1.

22nd April, 1926.



Sir,

I have the honour to refer to your Indent No. 435 dated the 2nd January 1926 covering the supply of a girder bridge 80 ft. span.

2. We are sending you by this mail but under separate cover a velograph copy of our Drawing No. Z.2637 illustrating in detail what we are arranging to supply.

3. We note from your indent that it is proposed to deck the bridge with planks 9" wide x 3" thick. We would, however, point out that the stresses produced in timber of this thickness will be excessive for the loads which you specify and we are of opinion that the flooring should be increased from 3" to 4" in thickness and we trust that there will be no difficulty in obtaining locally timber of this thickness. In consequence of the alteration in thickness of the timber we are supplying galvanised spikes 6" long instead of 5" long as specified under item 2 of your indent.

4. Tenders are being invited and we expect to place the contract at an early date. We hope to hear in due course that what we are arranging to supply is in accordance with your requirements.

I have the honour to be,

Sir,

Your obedient Servant,

W. H. Birchall

The Colonial Secretary,
FALKLAND ISLANDS.

for CROWN AGENTS.

PAA



ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES.
THE DATE OF THIS LETTER BEING QUOTED.
AND THE FOLLOWING REFERENCE *142 Z/Falkland*
Islands 2427.
TELEGRAMS, "CROWN. LONDON."
TELEPHONE. 7730 VICTORIA.

4. MILLBANK,
WESTMINSTER,
LONDON, S.W. 1.



6th October, 1926.

Sir,

I have the honour to refer to your Indent No.435 dated 22nd January, 1926 covering the supply of a girder bridge 80 ft. span for Arroyo Malo.

2. We have been in communication with Messrs. The Horsehay Company who are supplying the steelwork for this bridge regarding the method of erection. A scheme has been devised and we are forwarding to you by this mail but under separate cover a white linen print of Drawing No.Z.2817 which we think you will find contains all the information necessary for the erection of the steelwork. The necessary bolts, dogs, etc; for fixing the timber work are being supplied by the contractors.

3. We are also forwarding under separate cover a velograph copy on linen, one white and two blue print copies of Drawing No.Z.2792 giving full details of the concrete these will enable you to go ahead with the sub-structure. abutments, / Further copies of drawing No.Z.2817 will be forwarded to you with the "as-made" drawings at the same time that the bridgework is shipped.

4. With reference to the timber false work for the erection of the bridge we would like to draw your attention to the following points :-

(a) In scheming the falsework all the main timbers are shewn as 12" x 12" as we understand that this size of timber is available in the Colony; where this not so,

/then

Colonial Secretary,
Falkland Islands.

*Received and
placed in
Golden Rule 13
E.B.*

then timbers of approximately half the size would be sufficient for the work.

(b) Seven trestles are shewn for supporting the longitudinals on the assumption that the timber in the Colony is in comparatively short lengths. Should long baulks be available then two or three of the trestles might be dispensed with, as the 12" x 12" timbers are of ample section for carrying the weight if the trestles are arranged in three spans.

(c) If there is a likelihood of a sudden rise in the river it might be prudent to drive a stake at each trestle and add a wire or manilla rope to assist in holding down the trestles.

(d) It will be seen from the drawing that the longitudinal timbers have been arranged to "hit" and "miss" in order to avoid the expense and trouble of cutting them.

(e) We would like to impress upon the erectors of the bridge the importance of starting the erection of the main girders from the centre of the span, then working outwards both ways. In the first instance we would suggest that only one or two bolts are put in each connection until the complete main girders are assembled, then the bolting up can be completed.

(f) As the weight of the heaviest piece of the bridge is only a little over one hundredweight there does not appear to be any need for erection tackle beyond perhaps a pair of blocks.

5. We trust that the information given herein and on the drawings will prove sufficient for the erection of this bridge.

I have the honour to be,

Sir,

Your obedient Servant,

W A Birchbark
for Crown Agents.

DECODE.

588/25.

(14)

TELEGRAM.

From The Colonial Secretary.

To The Crown Agents for the Colonies.

Dispatched: 18th November, 1926. *Time:* 10.40 a.m.

Received: ... 192 *Time:* ...

CROWN

LONDON

Indent No. 435 1926 in view of delay in
execution would it be practicable to cancel supply
of bridgework.

COLONIAL SECRETARY.

DEC. DE.

588/25.

15.

TELEGRAM.

From The Crown Agents for the Colonies.

To The Colonial Secretary.

Dispatched: 30th November, 1926. *Time:* 4 p.m.

Received: 1st December, 1926. *Time:* 1.10 p.m.

SECRETARY

PORTSTANLEY

With reference to your telegram of 18th November referring to Indent No. 435 pattern casting template, etc. made contractors have spent £92 shall we pay and cancel or proceed.

CROWN AGENTS FOR THE COLONIES.

TELEGRAM.

From The Colonial Secretary.

To The Crown Agents for the Colonies.

Dispatched : 2nd December, 192. *Time :* 2.30 p.m.

Received : ... 192 *Time :* ...

CROWN
LONDON

With reference to your telegram of 30th November
Indent No. 435 please proceed.

COLONIAL SECRETARY.

xxx
Falkland Islands 2427/1.

communications to be
addressed to the Crown
Agents for the Colonies,
the above reference and
the date of this letter
being quoted.

17
DUPLICATE.

The Crown Agents for the Colonies present their

compliments to The Colonial Secretary,

Indent No. 435

Falkland Islands.

Dated 2.1.1926

Dept. P.W.

and in connection with the indent noted in the margin have
the honour to enclose the undermentioned papers for the
guidance of the Colonial Authorities.

OFFICE OF THE CROWN AGENTS FOR THE COLONIES,

4, MILLBANK, LONDON, S.W. 1.

14th February, 1927.

ENCLOSURES.

Timber staging for erecting 80 ft. clear span
Arroyo Mulo Bridge.

2 hand made tracings on linen Drawing No. Z.2817.

Working steel list (3 copies).

Drawings placed in Folder. Red. 13

Enclosed herewith.

FALKLAND ISLANDS.

REQUISITION TO INCUR EXPENDITURE.

Implicate

ORIGINAL.

DUPLICATE

HEAD OF ESTIMATE APPENDIX 1.

{ Treasurer's

SUB-HEAD 2, Arroyo Mulo Bridge.{ No. 43 }

State in detail, service or article, &c., on which the amount is to be expended.

Estimated Cost.

£ s. d.

Purchase of materials and transport of
same to the Arroyo Mulo River.

(M.P. 533/25)

Timber for staking and decking.....£160.

Ironwork for bridge (part).....£745.

Freight on timber and ironwork,
from Stanley to Arroyo Mulo River... £70.

Delivery to ship at Stanley.....£20

£600

0

0

N.B.—When this space is insufficient, sheets should be attached,
but the sum total shown on this.

Vote on	{ £600 : : }	Expenditure	{ £711 : : }	Balance	{ £600 : : }
Estimates.		authorised to date.		available.	

Comments of
Treasurer in submitting
to Governor.Signature of
Head of
Department.

Colonial Engineer

Date 30th June 1927.

Decision of Governor.

Balance available as stated.

M. Vaughan Harcourt

Col. Treasurer.

Date 30th June 1927*Russell Holmes*

Governor.

No.

(It is requested that, in any reference to this minute the above Number and the date may be quoted).

MINUTE.

19

1st September 1927

From The Colonial Engineer.

To

THE COLONIAL SECRETARY,

(M.P.588/25)

Stanley, Falkland Islands.

The Hon. Col. Secy.,

With regard to the erection of the Arroyo Malo Bridge. At our interview on the 3rd of August it was decided to allow this matter to stand over until the return of His Excellency.

2. As preparatory work is necessary I should be glad to receive permission to prepare a S.W. in the sum of £1261 (vide my minute of 18th. July, 1927, in M.P.588/25).

R. R. Barclay

Colonial Engineer.

1st September, 1927.

FALKLAND ISLANDS.

No. 180.

GOVERNMENT HOUSE,

STANLEY,

13th September, 1927.

Sir,

I have the honour to refer to Mr. Thomas's despatch, No. 96 of the 15th of October, 1924, approving the expenditure of a sum not exceeding £500 on the erection of a bridge across the Chartres river in the West Falkland, and to your telegram of the 6th of January, 1926, approving the Estimates of the Revenue and the Expenditure for 1926 and inter alia the expenditure under Appendix I. Item 4, of the sum of £600 on the erection of a bridge across ^{the} Arroyo Malo river in the East Falkland, and to inform you that the material necessary for the erection of these two bridges has been obtained and delivered to the sites but that hitherto no move has been made on the part of the farmers concerned to proceed with the work of their erection in accordance with the agreed arrangement to this effect.

2. From enquiries which I have made personally on the spot I fear that the magnitude of the work in either case is considerably greater than that originally contemplated by the farmers and I have grave cause to doubt whether with their comparatively limited resources and lack of technical/

THE RIGHT HONOURABLE

C. M. S. AMERY, P.C., M.P.,

SECRETARY OF STATE FOR THE COLONIES.

technical assistance they will be in a position to undertake it. Furthermore the bridges lie, as you are aware, on main tracks serving to connect a number of stations but the rivers which they are to span run through land on both banks forming part of a single station, in the one instance of the Chartres Station belonging to Luxton and Anson, and in the other of the Teal Inlet Station belonging to the Estate J. J. Felton. Difficulty has arisen in consequence of the unwillingness of the other farmers to join in bearing the cost of a bridge to be erected on one farmer's camp and of the objection of the one farmer to acting as a general benefactor at his own personal expense.

3. In the meantime the danger is real that the material already supplied by the Government will lie to rot into uselessness and the bridges never be built. I have studied the problem in all its aspects and I see no satisfactory solution except that the Government now further undertake with such help as the farmers can afford the erection of the bridges at the public expense. Money is available from the surplus balances accumulated to the credit of the Colony and I feel that the outlay is justified when an account is struck between the sums expended in recent years for the benefit of the inhabitants of Stanley and of the people in the camp from whom considerable revenue is derived principally by means of the export duty on wool.

4. I have caused the Colonial Engineer to prepare a preliminary estimate of the cost of erecting the bridge across the Arroyo Malo river which I would propose first to put in hand. The figure quoted is £1,000 approximately although I trust that it may eventually be found capable of reduction. It has not yet been practicable to arrive at a figure, even approximate, in respect of the Chartres river bridge.

5. I have therefore to ask your sanction in principle to the erection of these two bridges by the Government, and in the event of your sanction being granted that I may be notified by telegram as I am anxious to take every advantage of the finer weather which should shortly obtain for a few months. In this event I would propose to make such progress with the erection of the Arroyo Malo bridge as is possible during the current year and to charge the expenditure incurred under a Special Warrant as an excess against item 2 of Appendix I of the Estimates of the Expenditure for 1927. The amount estimated to be required in 1928 for the completion of this work and for the erection of the Chartres river bridge would then be included similarly under Appendix I for your approval in the Estimates of the Expenditure for that year.

I have the honour to be,

Sir,

Your most obedient,
humble servant,

ARNOLD HODSON.

From His Excellency the Governor

to The Honourable the Colonial Secretary.

Please inform C.E. he must have everything in
readiness to erect the new bridges as soon
as the estimates are approved.

A.H.

17/27
10

Col. Py.

Accordingly please r.s. at the
beginning of 1928.

J. M. L. King
— 4.

17. 10. 27.

No.

(It is requested that, in any reference to this minute, the above Number and the date may be quoted).

MINUTE.

24th October 1927.

From The Colonial Engineer.

To

THE COLONIAL SECRETARY,

Stanley, Falkland Islands.

The Hon. Col. Secy.,

His Excellency's minute of 17/10/27 noted.

2. With regard to the preparatory work. This requires to be put in hand at once and the estimated cost is £216.

3. The expenditure to date under the Arroyo Malo Bridge is £482.11.11, leaving a balance of £117.8.1. A further sum of £100 will be required to enable everything to be ready by the 31st of December, 1927.

I would request permission to prepare a S.W. for this amount.

R. B. Barclay.

Colonial Engineer.

24th October, 1927.

P.S.

His Excellency's minute of 17/10/27 is returned herewith.

R. B. Barclay.

C.E.

FALKLAND ISLANDS.

19²⁷

No. 39/1927.

SPECIAL WARRANT.

Governor.

Date 19th Dec. 19²⁷

To THE HONOURABLE

THE TREASURER.

Whereas it has become necessary, in the interests of the Public service, to incur certain Expenditure, not sufficiently^a provided for in the Estimates, as set forth in the subjoined Schedule,^b in anticipation^c of a vote of the Legislature^d and of the approval of the Secretary of State:—

a. to remain only in case of an excess on a vote.

b. to be struck out if complete authority has been obtained or d if either partial authority has been obtained.

You are hereby, on my personal responsibility, authorized and required to pay from the Treasury the sum of ONE HUNDRED Pounds Shillings and Pence and to charge it to the Heads and Sub-heads of the Expenditure specified in the Schedule.

And for so doing, this, together with the proper Accounts, Certificates and Acquittances, shall be your sufficient warrant and discharge.

Schedule.

Particulars of Service.	To be charged to		£	s.	d.
	Head.	Sub-Head.			
Provision of huts to accommodate men employed on the work of erecting the bridge.	ARRENTS 1.	2. Arrows Walo Bridge.	100.	0	0

Signature of the Officer
submitting the Schedule
for Warrant.

R. B. Aschley
Colonial Engineer.

Date 28th October 19²⁷

(Special warrants are to be prepared in triplicate. One copy to be filed in the Office of the Colonial Secretary, one in the Treasury, and one to be furnished to the Audit).

Date 27th October, 1927.

To

THE HONOURABLE COLONIAL SECRETARY.

I have the honour to apply for a Special Warrant for £ 100 . 0 . 0 .

on Head APPENDIX I.

Sub-head 2, Arroyo Malo River.

The present state of the Vote is as follows :—

	£
Amount provided in Estimates.....	600 .
Special Warrant already issued No.....	• • •
" " " " No.....	• • •
Actual Expenditure to date	482 .11 .11
Outstanding Liabilities incurred	• • •
Balance remaining on vote	117 . 8 . 1
Estimated Expenditure to 31st December.....	700 .

Issue of I. W. approved in
M.P. 588/25
Comments of Treasurer. { M. Souzen Karkheta
27. x. 27.

Eschsch.
Head of Department.
Colonial Engineer.

EXPLANATIONS.

(If general authority has been given for the Expenditure the number of the Minute Paper and the Secretary of State's despatch, if any, should be quoted).

(M.P. 588/25)

To

THE HONOURABLE TREASURER.

Special Warrant No. _____ attached herewith for necessary action.

Colonial Secretary.

DECODE.TELEGRAM.*From* The Secretary of State for the Colonies*To* The Colonial Secretary.*Despatched:* 28th October 1927 *Time:* 1218*Received:* 29th October 1927 *Time:* 1040

GOVERNOR,

PORTSTANLEY.

Red 42-

Your Despatch of 13th September 180 proposals
approved.

SECRETARY OF STATE.

Telephoned to H.S.

30. 10. 27.

From His Excellency the Governor
to The Honourable the Colonial Secretary.

Spoke 1752 Please give instructions For ^{work on} the two bridges to
31. 10. 27 proceed.
Held! 2. which bridge will C.E. cut first?
3.
Done ✓ Inform Farmers interested.
29 27.
10 A.H.

Copy filed in M.P. 325/23. (Charter River Bridge) Recd 33
88.

No.

(It is requested that, in any reference to this minute, the above Number and the date may be quoted).



MINUTE.

1st December 1927.

From The Colonial Engineer.

To

THE COLONIAL SECRETARY,

Stanley, Falkland Islands.

(M.P.588/25)

The Hon. Col. Secy.,

In accordance with instructions received from you by telephone, on the afternoon of the 30th of November, the preparatory work for the erection of the Arroyo Malo bridge has been stopped.

2. The followings drawings, etc. are being returned as requested by Mr Fleuret by telephone this morning.

1 tracing	No. Z 2637/2
1 :	: Z 2637/1
1 :	: Z 2637
1 :	: Z 2817
1 drawing	: Z 2817
1 tracing	: Z 2792
1 blue print	: Z 2792
1 :	: Z 2273/2
1 :	: Z 2273/1
1 :	: Z 2049
1 :	: Z 1801/1
1 :	: Z 2405
1 :	: Z 1895/1

2 copies of Working List of Steelwork for timber staging to Drawing No. Z 2817.

Retained in this office.

1 tracing of	No. Z 2637/2
1 :	: Z 2637/1
1 :	: Z 2817
1 blue print	: Z 2792

1 copy of working list of steelwork to Drawing No. 2817.

P. S. S. S. S.

Colonial Engineer.

1st December, 1927.

No.

(It is requested that, in any reference to this minute, the above Number and the date may be quoted).

MINUTE.

14th December, 1927

From Actg. Colonial Engineer, To

Stanley.

THE COLONIAL SECRETARY,

Stanley, Falkland Islands.

ARROYO MALO BRIDGE.

On instructions received I beg to report that I left Stanley on H.M.C.S. "Afterglow" at 2.0 p.m. Friday 2nd. December, and arrived at Teal Inlet 9 p.m. In company with the Hon. G.J. Felton I left Teal Inlet at 8.30 a.m. Saturday 3rd Decr., for the purpose of selecting site for bridge and taking necessary measurements and levels etc, arriving off the mouth of Arroyo Malo at 10.0 a.m., and after rowing approximately 4 miles landed on site where the steelwork and timbers are stacked.

Two sites were proposed - one (mentioned as Site "A" on photograph and estimate) well up stream and near the existing timber bridge, and the other approximately 280 yards up stream from where the steelwork is landed (Site "B").

I visited the Arroyo Malo house (approximately $\frac{3}{4}$ mile from proposed site "A") and made arrangements for the sleeping only for the men.

Left the Arroyo Malo and arrived back at Teal Inlet 7.0 p.m.; left Teal Inlet 11.0 a.m. the next day and arrived back in Stanley at 5.0 p.m. Sunday 4th December, 1927.

Site "A".

The approximate position where the bridge be built is marked "X" on photograph No. site some good sand is available and quarried and transported for the masonry down stream. The steelwork and timbers for the bridge (shown on No I. photograph)

(2)

approximately $1\frac{1}{2}$ miles from this site and will have to be transported across the camp and carried over the wooden bridge and spit of land (shown on No. 4 photograph)

I was informed that, during the winter when the river is in flood, the low lying spit of land shown on left of No 4 photograph occasionally becomes inundated through the river overflowing its banks. Erosion of the bank is taking place as can be seen on the photograph (marked "A" and "B"), but this will not interfere with the bridge at the proposed site.

Transport of the bridge materials to the site will be a tedious and expensive undertaking, but building the bridge at this site will be more economical both in expense and time than placing it nearer to the spot where the materials are landed, as extra bridge work and extensive concrete work will be necessary, as shown on sketch plan, and it would only be possible to work tide work as can be seen from photographs Nos 2 & 3.

Another bridge will be required to span a tributary running into the Arroyo Malo near the proposed site "A", as sketch "C". The Hon. G.J. Felton has agreed to build this with timber from his old bridge shown on photographs 4 & 5.

Site "B".

3. The distance from shore to shore at this spot is 154 feet. By erecting the bridge at this site the transport difficulty would be minimised as the materials can be landed within 280 yards of the site, but it entails much more work and materials, as the 80 ft steel bridge would have to be lengthened on either side with timber upper work on

concrete piers as shown on plan for Site "B", and it would only be possible to work in the river during tides, as the tide reaches well beyond this spot.

I would therefore recommend that the bridge be erected on Site "A".

4. The estimated time for erection is
8 weeks at Site "A", and
10 weeks at Site "B".

Estimates for erection of bridge at Sites "A" and "B" are attached.

5. In the event of approval being given to erect the bridge at Site "A", the financial provision required for 1928 will be as follows :-

Estimate for the work. £900.

Provision in Estimates for 1928.. £750.

Further amount required..... £150.

The estimated expenditure in 1927 on the cost of steelwork etc. and preliminary works is £600.

Er. Roberts.

Actg. Colonial Engineer.

Enclosures.

Sketch plan.
Two estimates.
Photographs.

I have to-day made tentative arrangements with the Hon. G.J. Felton for transport hire, for transporting the materials over the camp to the proposed site A.

Er. Roberts.

Actg. Col. Engineer.
14/12/27.

ARROYO MALO BRIDGE.

ESTIMATE.

SITE "A".

Cement for concrete abutments. (Sand and stone to be gathered at site). (2 piers).	100. 0. 0.
Wages etc. 9 men for 8 weeks.	396. 0. 0.
Fares, messing, fuel, lodging and utensils.	165. 0. 0.
Tools, rigging gear etc. allow.	40. 0. 0.
Extra materials required for replacement of missing handrail etc.	14. 0. 0.
Transport further materials from Stanley to Arroyo Malo and part return.	62. 10. 0.
Transport up river by motor boat & scow.	12. 10. 0.
Transport materials from mouth of river to site of bridge.	64. 0. 0.
Contingencies.	<u>50. 0. 0.</u>
	<u>2903. 0. 0.</u>

SAY.....2900.

C. Roberts.

Actg. Colonial Engineer
14th Decr. 1927.

ARROYO MALO BRIDGE.

Estimate.

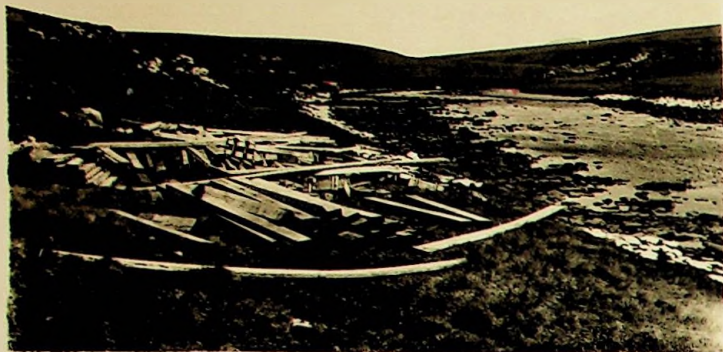
SITE "B".

Cement for piers and abutment (8 No).		188.	0.	0.
Wages etc. 9 men for 10 weeks.		495.	0.	0.
Fares, messing, fuel, lodging, utensils.		194.	0.	0.
Tools, rigging gear etc.	Say.	40.	0.	0.
Extra materials required for missing handrail and extra decking etc. for bridge.		66.	0.	0.
Transport from Stanley to Arroyo Malo and part return.		88.	0.	0.
Transport up river by motor boat and scow.	Say.	18.	0.	0.
Contingencies.		60.	0.	0.
		21,149.	0.	0.

SAY...21,150.

C. Roberts.
Actg. Colonial Engineer.
14th December, 1927.

— Arroyo Inalo Bridge —



No. 1. Photograph showing materials which are landed for bridge approximately 280 yards below Site "B" (marked "X") and $1\frac{1}{2}$ miles below site "A". Shows twisted timbers in foreground which must be replaced. The cement in the drums shown is useless and will have to be replaced.



No. 2. Site "B" at L.W.O.S.T.

TRN/LAN/2#1

- 01
- 02
- 03
- 04
- 05



No. 3. Site "B" at High Water.



Nos 4 & 5. Existing wooden bridge approximately $1\frac{1}{2}$ miles above Site "B". Shows the erosion which is taking place on left bank and the spit of ground which it is reported occasionally floods during Winter. Site proposed for bridge marked "X" on No 4. photograph.

No.

(It is requested that, in any reference to this minute, the above Number and the date may be quoted).



MINUTE.

5th March, 19 28

From Actg. Colonial Engineer, To

Stanley.

THE COLONIAL SECRETARY,

Stanley, Falkland Islands.

ARROYO MALO BRIDGE.

I beg to report that the Arroyo Malo Bridge was commenced on Wednesday 25th January, 1928 and completed and opened on the 29th February, 1928 (5 weeks from commencement to completion).

2. The bridge was ordered for an 80 ft span but the narrowest part of the river where it was possible to erect a bridge is 140 feet wide. It was therefore necessary to lengthen the approaches by 60 feet. This was done by utilising the timber used for the bridge falsework.

3. Adverse weather was experienced during the first 3 weeks which added to the difficulties of transporting the materials upstream.

4. It has only been possible to complete the work in the time by working daily from daylight to dark, Sundays included.

5. I cannot speak too highly of the men; they have worked well, often under very adverse conditions.

6. I attach photographs showing the progress of the work during the five weeks.

A. Roberts

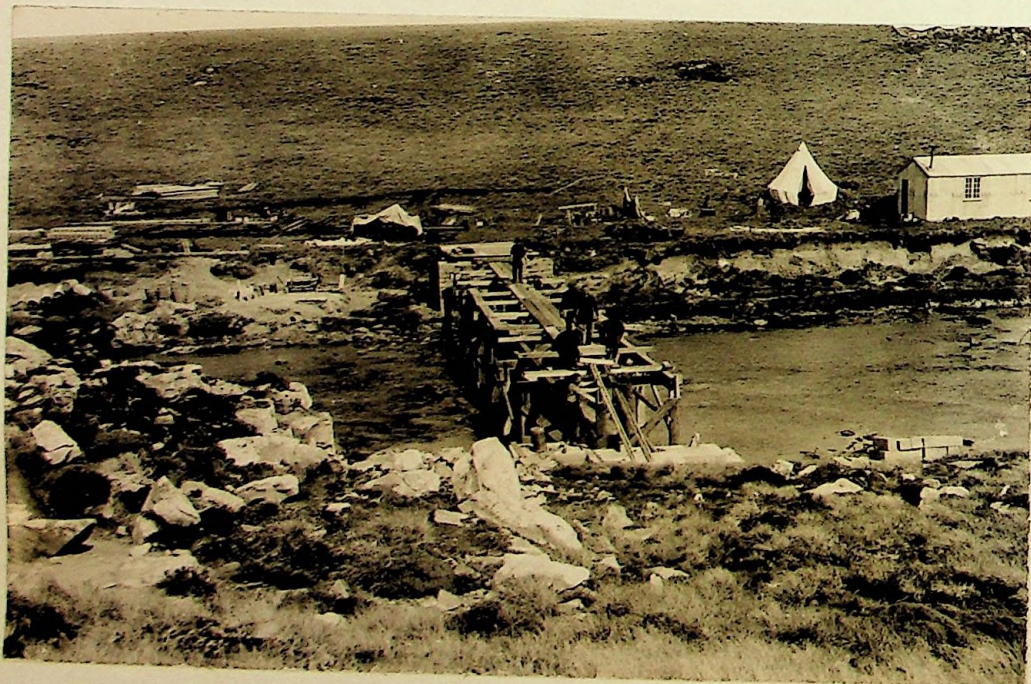
Actg. Colonial Engineer.

TRN/LAN/2#1-17



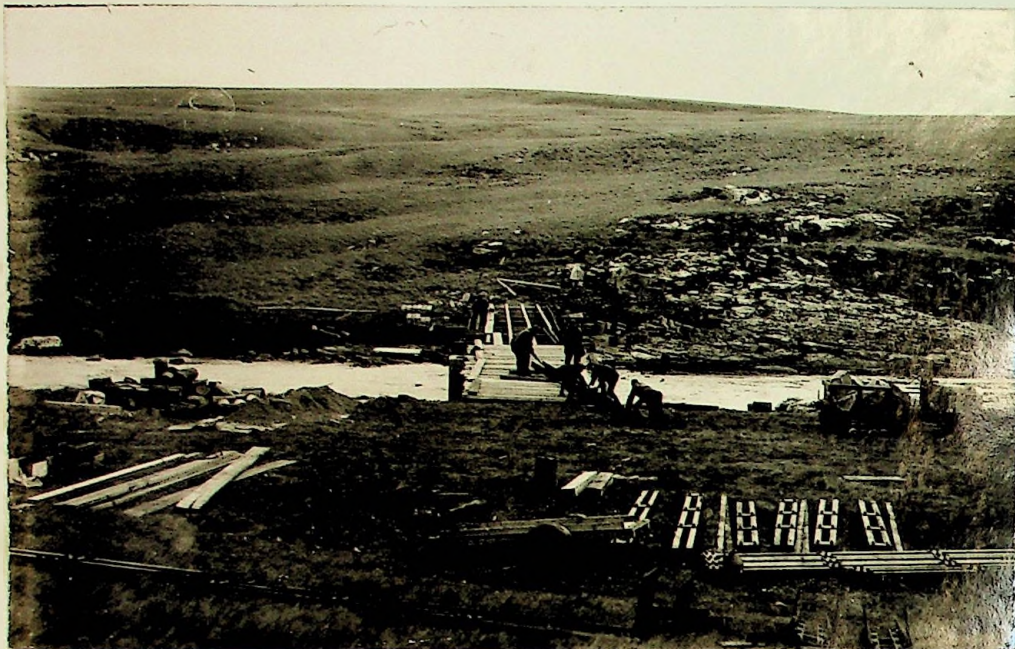
First week.

TRN/LAN/2#1-18



Second week.

TRN/LAN/2#1-19



Third week.

TRN/LAN/2#1-20



Fourth week.

E.R

TRN/LAN/2#1-21



Fifth week.

TRN/LAN/2#1-22



Completion 6th week.

C.R.

TRN / LAN / 2#1 - 23



*Opening of bridge
5th week.*

TRN / LAN / 2#1 - 24



TRN / LAN / 2#1 - 25



First traffic on bridge

TRN/LAN/2# 06



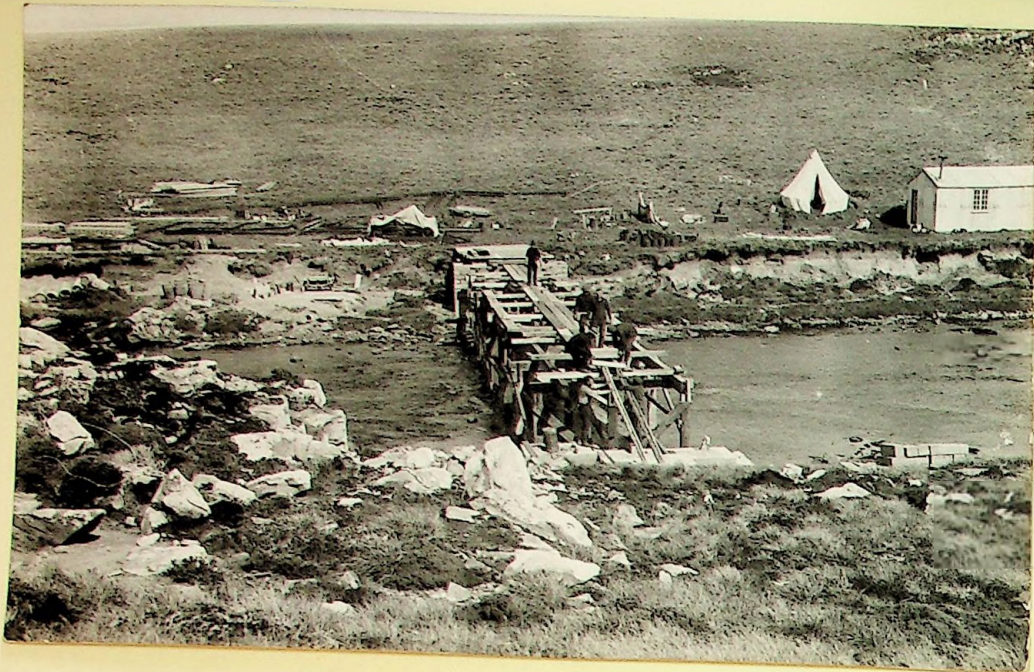
TRN/LAN/2# 1-07



TRN/LAN/2# 1-08



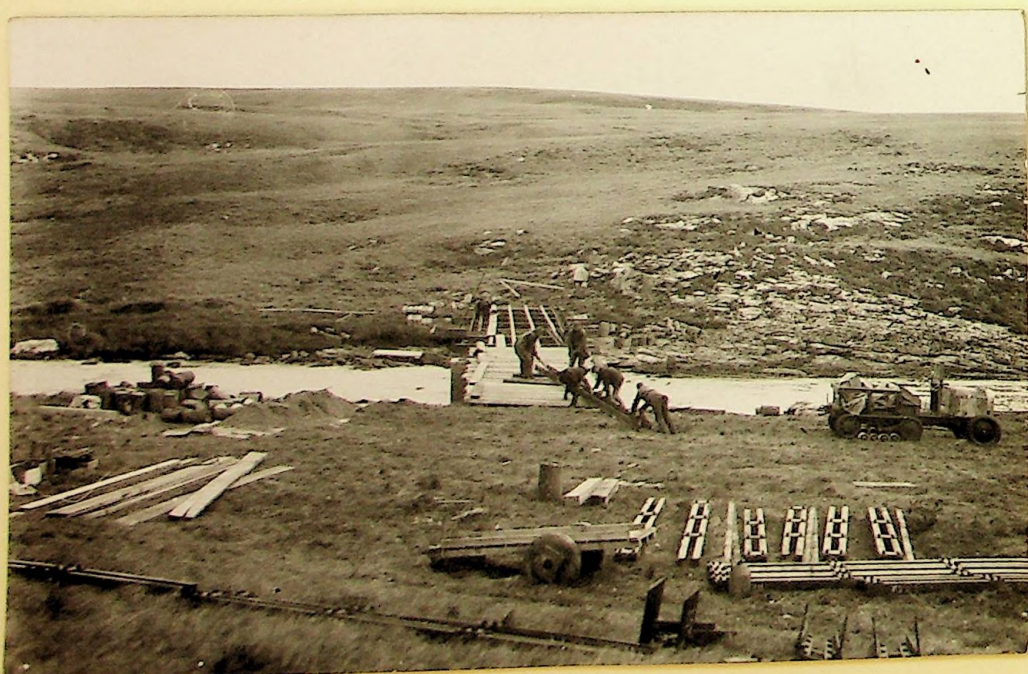
TRN | LAN | 2#1 - 09



TRN | LAN | 2#1 - 10



TRN | LAN | 2#1 - 11



TRN / LAN / 2 # 1 - 12



TRN / LAN / 2 # 1 - 13



TRN / LAN / 2 # 1 - 14



TRN/LAN/2#1-15



TRN/LAN/2#1-16





43

No.

(It is requested that, in any reference to this minute, the above Number and the date may be quoted).

MINUTE.

7th March, 1928

From Actg. Colonial Engineer, To

Stanley.

THE COLONIAL SECRETARY,

Stanley, Falkland Islands.

Appendix I. (2) - Arroyo Malo Bridge.

I beg to apply for a Special Warrant in the sum of £200 to meet the expenses incurred on the above item.

2. I attach a financial statement for this item from which it will be seen that there will be a saving of £28 on the total estimate of £1,650, when all charges are paid.

3. Two large items of expense in 1928 were unforeseen and were not taken up for in my estimate for the erection work of 14th December, 1927., viz.

£161. 8. 0. Value of timbers for false work staging purchased in 1927, sent out that year and not bought out, which necessitated the charge being incurred this year. I was unaware of this and no provision was made in my estimate.

£180. 17. 7. Charge for "Fleurus" transporting men and materials to and from Arroyo Malo.

£342. 5. 7.

4. A Special Warrant is submitted.

C. Roberts.

Actg. Colonial Engineer.

Hon. Colonial Treasurer.

Referred to you, please.

Actg. C.E.

Hon. Col. Sec.

S.W. for £200 submitted. The expenditure in excess of that provided in the Estimates appears to have been unavoidable and is

uplicate

(42)

APPENDIX I. (2) -2 ARROYO MALO BRIDGE.

FINANCIAL STATEMENT.

TOTAL ESTIMATE FOR WORK. £1,650.
PROVISION IN ESTIMATES FOR 1928..... £750.

EXPENDITURE.

Year 1926. 79. 9. 11.
" 1927. 592. 0. 0.
£671. 9. 11.

Year 1928.

Value of timbers purchased in 1927
for staging and not charged
in that year. 161. 8. 0.

Charge for "Fleurus" transporting
men and materials. 180. 17. 7.

Preparations in Stanley and
erection of Bridge.

Hut. 21. 13. 5.
Cement for abutments. 85. 0. 9.
Tools, gear and
materials. 46. 9. 2.
Transport. 125. 7. 8.
Messing, utensils etc. 91. 7. 1.
Labour preparing in
Stanley and on
erection of bridge. 500. 13. 4. 667. 13. 5.

£1,009. 19. 0.

£1,681. 8. 11.

Less credit for 2 timber huts
taken back on charge 1928.

60. 0. 0.

£1,621. 8. 11.

Expenditure 1928..... £950.

Allowed in Estimate for
1928..... £750.

Further amount required
from total estimate..... £200.

Estimated saving on whole of work....£28.

G. Roberts.

Actg. Colonial Engineer.
7th March, 1928.

FALKLAND ISLANDS.

1928

No. 11/1928

SPECIAL WARRANT.

Governor.

Date March, 1928

TO THE HONOURABLE

THE TREASURER.

Whereas it has become necessary, in the interests of the Public service, to incur certain Expenditure, not sufficiently^a provided for in the Estimates, as set forth in the subjoined Schedule,^b in anticipation^c of a vote of the Legislature^d and of the approval of the Secretary of State:—

a. to remain only in case of an excess on a vote.

b. to be struck out if complete authority has been obtained c or d if either partial authority has been obtained.

You are hereby, on my personal responsibility, authorized and required to pay from the Treasury the sum of TWO HUNDRED ----- Pounds ----- Shillings and ----- Pence and to charge it to the Heads and Sub-heads of the Expenditure specified in the Schedule.

And for so doing, this, together with the proper Accounts, Certificates and Acquittances, shall be your sufficient warrant and discharge.

Schedule.

Particulars of Service.	To be charged to		£	s.	d.
	Head.	Sub-Head.			
ARROYO MALO BRIDGE.	Appendix				
	I.	(2).	200.	0.	0.
(Further amount of total estimate required to complete work).					

Signature of the Officer
submitting the Schedule
for Warrant.

C. Roberts
Actg. Colonial Engineer.

Date 7th March, 1928.

(Special warrants are to be prepared in triplicate. One copy to be filed in the Office of the Colonial Secretary, one in the Treasury, and one to be furnished to the Audit).

No.

(It is requested that, in any reference to this minute, the above Number and the date may be quoted).

MINUTE.



7th March, 1928

From Actg. Colonial Engineer, To

Stanley.

THE COLONIAL SECRETARY,

Stanley, Falkland Islands.

Submitted.

Adjustment voucher, 4 copies, for £60, charging Unallocated Stores and Crediting Arroyo Malo Bridge, for 2 huts received back and taken on charge.

Er. Roberts.

Actg. Colonial Engineer.

44

Adjustment Voucher No.....

COLONY OF THE FALKLAND ISLANDS.
HEAD OF SERVICE
UNALLOCATED STORE ACCOUNT.
SUB-HEAD

To the Honble. the Treasurer,

You are hereby authorised to make the following adjustment

Description of Transaction.	
	Charge the above Head with the sum of SIXTY POUNDS, and Credit Head AA. Appendix 1 item 2, Arroyo Malo Bridge, with a similar sum, being value of
	One Framed Hut, new, incomplete, 18' x 8', 8' to eaves. 130.
	One Hut, secondhand, 24'x12', incomplete, 7' to eaves..... 130.
£	60. 0. 0.

By Command,



Colonial Secretary

Date 7th March, 19 28.

DECODE.

325/23.

588/25.

146

TELEGRAM.

From His Excellency the Governor,

To The Secretary of State for the Colonies.

Despatched: 27th March,

192 8. Time: 16.30.

Received:

192 Time:

CHAPELRIES,

LONDON.

Red 32
in MP. 325/23

With reference to your telegram of the 28th October
glad to report Arroyo Malo Bridge successfully built.
Hope to finish Chartres River Bridge within a month.

GOVERNOR.

GOVERNMENT HOUSE,

STANLEY.

4th April, 1928.

FALKLAND ISLANDS.

No. 106.

Sir,

With reference to your telegram of the 28th of October, 1927, conveying approval of the proposals made in my despatch No. 180 of the 13th of September, 1927, relative to the erection of the bridges over the Arroyo Malo river on the East Falkland and the Chartres river on the West Falkland, I have the honour to inform you that the erection of the Arroyo Malo river bridge has now been completed and was opened for traffic on the 29th of February, 1928.

2. I attach a copy of a report with photographs by Mr. G. Roberts from which you will appreciate the magnitude of the work undertaken and performed by him and will see that the period of five weeks only was taken from commencement to completion.

3. I would add that the final cost of the bridge as completed is £1,621. 8s. 11d and I enclose, for your information, a copy of a financial statement showing how this amount has been expended. You will see that the expenditure actually incurred and brought to charge during the years 1926 and 1927 is £671. 9s. 11d so that the additional

expenditure /

THE RIGHT HONOURABLE

L. C. M. S. AMERY, P.C., M.P.,

SECRETARY OF STATE FOR THE COLONIES.

Enclosure I.
Enclosure II.

Enclosure III.

expenditure brought to charge since the date of your approval to proceed with the work totals £940. 19s. 0d and is thus less than the approximate estimate of £1,000 quoted in paragraph 4 of my despatch to which reference has been previously made. Of this amount, however, the sum of £161. 8s. 0d represents the value of timber obtained but not debited in 1927 under the directions of Mr. R. B. Baseley, late Colonial Engineer, a circumstance of which Mr. Roberts was, as he explains, unaware at the time when he drew up his estimate. Furthermore the cost of transporting the necessary material to the site has proved much higher than anticipated. I consider that Mr. Roberts is in all the circumstances greatly to be complimented on having succeeded in completing the bridge within the original figure calculated.

4. On the technical side I wish to pay a strong tribute to Mr. Roberts and his men for the admirable work performed by them in carrying out this large work which has been so long outstanding in so short a time. I find it indeed difficult adequately to express my appreciation of Mr. Roberts' energy, initiative, and resourcefulness. The keen spirit moreover shewn by the men and their untiring labour are worthy of every commendation.

5. Mr Roberts proposes to start the construction of the Chartres river bridge before the end of
the /

the present month and to have it completed also by the beginning of the winter. I shall report further in this matter in due course.

Enclosure IV.

6. I enclose also a copy of an article which has been written by Mr. J. M. Ellis, Colonial Secretary, on the building of this bridge and has been sent by him with my permission for publication, if acceptable, in the "Field" newspaper.

I have the honour to be,

Sir,

Your most obedient,

humble servant,

ARNOLD HODSON.

ENCLOSURE NO. I TO FALKLAND ISLANDS DESPATCH
No. 106 of the 4th of APRIL, 1928.

ARROYO MALO BRIDGE.

I beg to report that the Arroyo Malo Bridge was commenced on Wednesday 25th January, 1928 and completed and opened on the 29th February, 1928 (5 weeks from commencement to completion).

2. The bridge was ordered for an 80 ft. span but the narrowest part of the river where it was possible to erect a bridge is 140 feet wide. It was therefore necessary to lengthen the approaches by 60 feet. This was done by utilising the timber used for the bridge falsework.

3. Adverse weather was experienced during the first three weeks which added to the difficulties of transporting the materials upstream.

4. It has only been possible to complete the work in the time by working daily from daylight to dark, Sundays included.

5. I cannot speak too highly of the men; they have worked well, often under very adverse conditions.

6. I attach photographs showing the progress of the work during the five weeks.

(Sgd.) G. Roberts.

Acting Colonial Engineer.

PIONEER WORK IN THE FALKLAND ISLANDS.

THE BUILDING OF A BRIDGE.

The construction of a bridge over the large stream in the north camp of the East Falkland known by the old Spanish name of the Arroyo Malo has been recently completed by the Public Works Department of the colonial administration. The successful accomplishment of the work marks the beginning of a new era under the progressive governorship of Mr. Arnold Hodson, C.M.G., and it is hoped that before many more years are past this hitherto trackless Colony will be crossed by main arteries between the principal stations which serve as the headquarters of the sheep-farming industry. In the meantime bridges are a primary necessity. It happens at present not infrequently that long detours are necessitated to circumvent unfordable rivers and arms of the sea, or that weary waits are occasioned by sudden floods or by the rise of the tide. A bridge here may mean the saving of many hours to a tired horse and rider or the passage without loss of large flocks of sheep heavy with wool for shearing. It is to meet a need of this description that the Government of the Falkland Islands has built the Arroyo Malo bridge over the river between Teal Inlet and Douglas Station. And at the same time with a wise eye to the future the bridge has been constructed so as to carry motor-traffic such as light lorries or Citroen caterpillar cars the use of which is spreading rapidly in the Colony. As will be seen from our illustration the stream lies in a long deep valley set in the midst of rolling moorland of a rugged beauty peculiarly its own. At the actual point where it is now spanned its width/

width 140 feet and its depth varies from a few inches in times of drought to as many feet after heavy rain. The current is normally rapid and in winter the water often rushes down in tempestuous torrent. The banks are not high seldom rising to more than six or eight feet and during the winter are subject to overflowing. The principal difficulties to be overcome in the construction of the bridge were the transport of materials and the setting of the foundations of the concrete piles. All materials including steelwork, timber, and cement had to be conveyed by raft upstream for a distance of five miles and although the general level of the water was the lowest recorded for several years it was almost impossible to stand and work in the middle of the bed of the river on account of the force of the current. Despite these natural obstacles however the entire work was successfully carried out within a period of five weeks from commencement to conclusion. The bridge itself is a girder bridge of the bowstring type and was designed and supplied by Messrs. The Horsehay Company Limited, Horsehay, Shropshire, with advice of the Engineering Department of the Crown Agents for the Colonies who had had experience with similar bridges erected by the Government of Nigeria in West Africa. The span of the steelwork is eighty feet and the remaining sixty feet between bank and bank have been covered by side approaches made of timber with which material the bridge is decked throughout its length. The construction was undertaken and completed by Mr. G. Roberts, the newly appointed Colonial Engineer, and a team of locally recruited and trained labour, to whom one and all great

credit/

credit is due for the satisfactory issue of their endeavours. The bridge was informally opened for traffic by Mr. Roberts on the 29th of February, 1928, on which day he drove over it in a Citroen caterpillar car. Our second illustration is a near view of the bridge as built.

Romance attaches all the world over to the building of a bridge and our excuse for the inditing of these few lines must be the thrill thus cast upon us even here in this somewhat strewn country by the touch of that ever blithe sprite.

J. M. ELLIS.

588/25.

7th April,

28.

Sir,

I am directed to enclose an article with accompanying photographs written by Mr. J. M. Ellis, Colonial Secretary, on the subject of the construction of a bridge over the Arroyo Malo, East Falkland, in the hope that it may be of interest to you and that in such case you may wish to publish it in your paper.

2. In this case I should be glad if you will cause Mr. Ellis to be supplied with fifty copies of the issue in which the article appears against payment by the Crown Agents for the Colonies on presentation of your account.

3. I would say that Mr. Ellis is acting in this matter with the full knowledge and consent of His Excellency the Governor.

I am,

Sir,

Your obedient servant,



for Colonial Secretary.

The Editor,
The "Field",
Bream's Buildings,
LONDON, E.C. 4.

88/25
DUPLICATE

56

FAULKLAND ISLANDS.

NO 70

DOWNING STREET,

11 June, 1928.



Sir,

*Recd.
47-53*

I have the honour to acknowledge receipt of your despatch No.106 of the 4th of April last relative to the erection of the bridges over the Arroyo Male and the Chertres rivers.

2. I have learned with satisfaction of the completion of the Arroyo Male river bridge and note with pleasure the admirable and economic work performed upon this bridge by Mr. Roberts and his men.

I have the honour to be,

Sir,

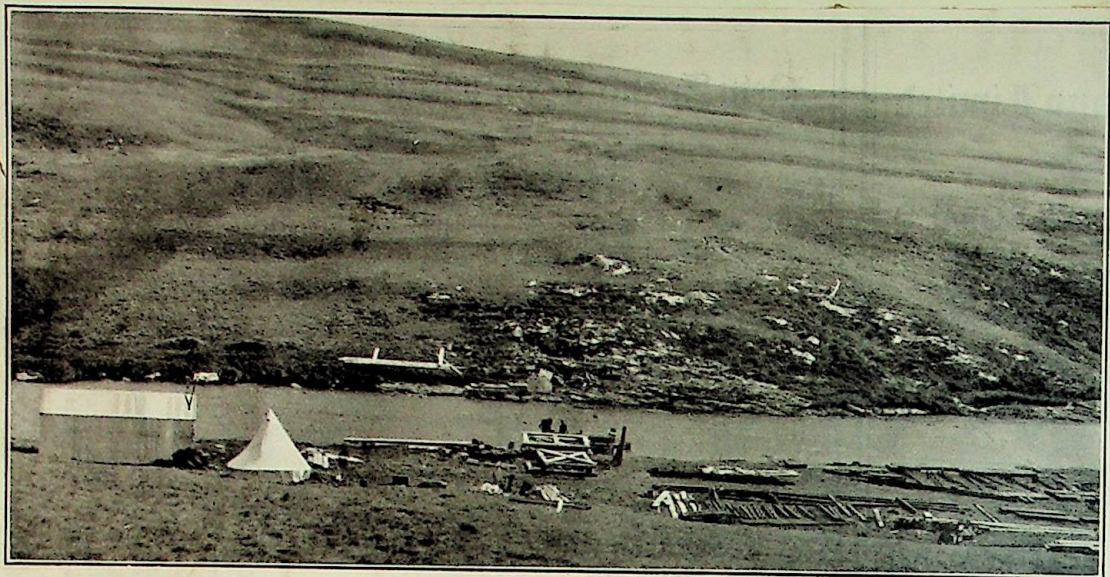
Your most obedient
humble servant,

(Signed) L. S. AMERY

GOVERNOR,

ARNOLD HODSON ESQ., C.M.G.,

etc., etc., etc.,



SITE OF THE NEW BRIDGE IN THE FALKLAND ISLANDS: (1) THE EARLY STAGES OF CONSTRUCTION

BRIDGE BUILDING IN THE FALKLANDS

THE CONSTRUCTION of a bridge over the large stream in the north "camp" of the East Falkland known by the old Spanish name of the Arroyo Malo has been recently completed by the Public Works Department of the colonial administration. The successful accomplishment of the work marks the beginning of a new era under the progressive governorship of Mr. Arnold Hodson, C.M.G., and it is hoped that before many more years are past this hitherto trackless colony will be crossed by main arteries between the principal stations which serve as the headquarters of the sheep-farming industry. In the meantime bridges are a primary necessity. It happens at present not infrequently that long detours are necessitated to circumvent unfordable rivers and arms of the sea, or that weary waits are occasioned by sudden floods or by the rise of the tide. A bridge here may mean the saving of many hours to a tired horse and rider, or the passage without loss of large flocks of sheep heavy with wool for shearing.

It is to meet needs of this description, primarily, that the Government of the Falkland Islands has built the Arroyo Malo bridge over the river between Teal Inlet and Douglas Stations. At the same time, with an eye to the future, the bridge has been constructed so as to carry light motor lorries or Citroen caterpillar cars, the use of which is spreading rapidly in the colony. The stream lies in a long deep valley, set in the midst of rolling moorland. At the point where it is now spanned its width is 140ft., and its depth varies from a few inches in times of drought to as many feet after heavy rain. The current is normally rapid, and in winter the water often rushes down in a tempestuous torrent. The banks are not high, seldom rising to more than six or eight feet, and during the winter are subject to overflowing. The principal difficulties to be overcome in the construction of the bridge were the

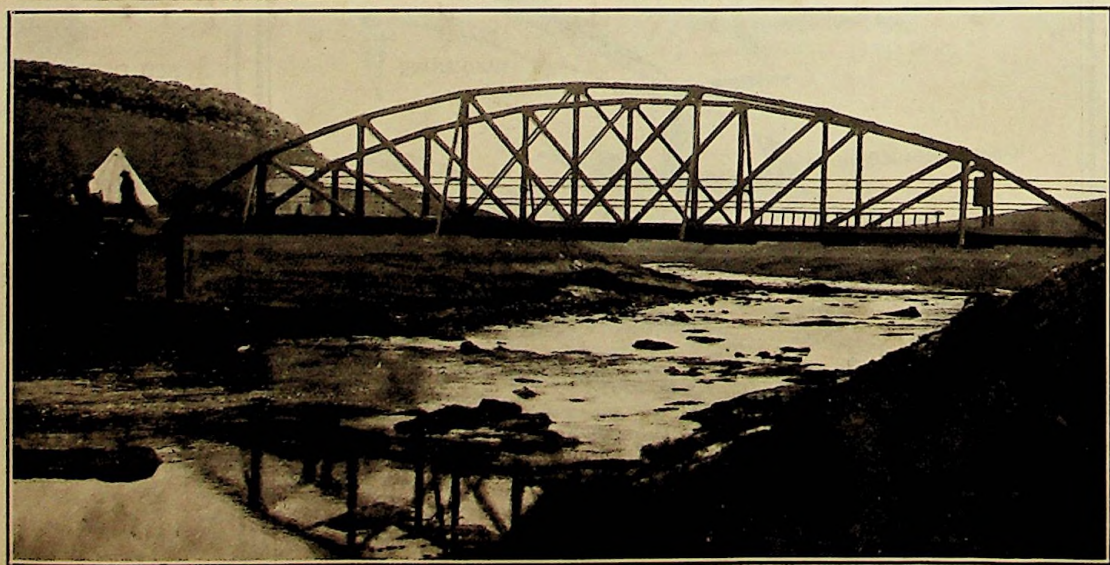
transport of materials and the setting of the foundations of the concrete piles. All materials, including steelwork, timber, and cement, had to be conveyed by raft upstream for a distance of five miles, and though the general level of the water was the lowest recorded for several years it was almost impossible to stand and work in the middle of the river bed on account of the force of the current.

Despite these natural obstacles, the work from start to finish was completed in five weeks. The bridge itself is a girder bridge of the howstring type, and was designed and supplied by the Horschay Company of Horschay, Shropshire, with the advice of the Engineering Department of the Crown Agents for the Colonies, who had had experience with similar bridges in Nigeria. The span of the steelwork is 80ft., the remaining 60ft. between bank and bank being crossed by side approaches made of timber, with which material the bridge is decked throughout its length. The construction was carried out by Mr. G. Roberts, the newly-appointed Colonial Engineer, and a team of locally recruited and trained labour, to all of whom great credit is due. The bridge was informally opened for traffic by Mr. Roberts on February 29th, when he drove over it in a caterpillar car.

Romance attaches all the world over to the building of a bridge, and our excuse for inditing these lines must be the thrill cast upon us even here, in this somewhat strewn country, by the touch of that ever blithe sprite.

Stanley, Falkland Islands. J. M. ELLIS.

EXTRACT FROM "THE FIELD" OF 21ST JUNE 1928.



(2) THE FINISHED STRUCTURE



ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES.
THE FOLLOWING REFERENCE AND THE
DATE OF THIS LETTER BEING QUOTED.

104 P/Misc.Falk.Is.1.

TELEGRAMS: "CROWN LONDON."

TELEPHONE: 7790 VICTORIA.



4, MILLBANK,

WESTMINSTER,

LONDON. S.W. 1.

13th July, 1928.

Sir,

I have the honour to enclose a copy of an account in respect of the supply of 50 copies of "The Field", and to inform you that, in accordance with the terms mentioned in the second paragraph of your letter No.588/25.of the 7th April last, addressed to the Editor of that Journal, we are paying the sum of £3.10.0d. to the Field Press Ltd. from Falkland Islands funds. This amount will appear debited in our account with the Colonial Government in due course.

I have the honour to be,

Sir,

Your obedient Servant,

J. H. Burston

for Crown Agents.

The Colonial Secretary,
Falkland Islands.

P/Misc.Falk.Is.1.

Windsor House,
Breame Buildings,
London.E.C.4.

July, 1928.

The Crown Agents for the Colonies,
4, Millbank,
Westminster.
S.W.1.

Dr. to The Proprietors of "The Field".

1928.

July 2. 50 copies Field June 21 1/- each. £2. 10. 0d.

Postage to Falkland Islands. £1. - -

S/Falkland Islands.

£3. 10. 0d.

From His Excellency the Governor

to The Honourable the Colonial Secretary.

I believe under the conditions we
erected the Bridges for the Hon
J. Fulton & the Hon G. Jackson
they have to paint them &
keep them in good order?
Please find out if this
is being done as otherwise
they will rapidly deteriorate.
That is to say, of course, if
the supposition in para 1 is
correct.

10/30
2

D.H.

M.P. p/2
b. 19/2

588/25.

17th February, 30.

Sir,

I am directed by the Governor to refer to the understanding on which the bridge over the Arroyo Malo river was erected on the property under your management, namely that the Government bore the cost of the erection of the bridge and you became responsible for its subsequent maintenance, and to say that His Excellency trusts that you are taking and will take in the future all such steps as are necessary to preserve the bridge from damage or deterioration.

2. I am to add that the Colonial Engineer states that inter alia the steelwork of the bridge should be cleaned and painted at least once in every three years.

I am,

Sir,

Your obedient servant,

R

Colonial Secretary.

The Hon. G. J. Felton, M.L.C.,
Teal Inlet,
EAST FALKLAND.

588/25.

17th February,

30.

Sir,

I am directed by the Governor to refer to the understanding on which the bridge over the Chartres river was erected on the property under your management, namely that the Government bore the cost of the erection of the bridge and you became responsible for its subsequent maintenance, and to say that His Excellency trusts that you are taking and will take in the future all such steps as are necessary to preserve the bridge from damage or deterioration.

2. I am to add that the Colonial Engineer states that inter alia the steelwork of the bridge should be cleaned and painted at least once in every three years.

I am,

Sir,

Your obedient servant,



Colonial Secretary.

The Hon. W. H. Luxton, M.L.C.,
Chartres,
WEST FALKLAND.

The Chartres

West Falklands

April 9th 1930

Sir

With reference to your letter of Feb 17th No 588/25, I was not aware that I gave the Government my assurance that this Station would be responsible for the maintenance of the Chartres River Bridge. it seems hardly fair that this Station should bear the whole cost of maintenance when other Stations use it. you can be assured that I will do my share towards the upkeep of the bridge.

I might add I inspected the bridge yesterday and there is no sign of deterioration, there will be no necessity for it to be cleaned and painted for at least a year.

I am,

Sir

Your obedient servant

W. S. S. S.

Honourable Colonial Secretary

Stanley

539/25

1st May,

30

Sir,

I am directed by the Governor to refer to my letter of the 17th of February, 1930, regarding the maintenance of the Arroyo Mulo Bridge and to request that you will be good enough to furnish me with a reply at your early convenience.

I am,

Sir,

Your obedient servant,



Colonial Secretary.

M. G. J. Felton telephoned 17.5.30.

*and asked whether, if he supplied
the labour, Govt would supply the
material, viz. paint, for this work.*

Hon. G. J. Felton, M.L.C.,
Teal Inlet,
EAST FALKLAND.

19/5

588/25.

23rd May,

30

Sir,

In furtherance of my letter No. 588/25 of the 17th of February, 1930, and with reference to our recent telephonic conversation, on the subject of the maintenance of the Arroyo Malo Bridge, I am directed by the Governor to inform you that His Excellency will be prepared to assist you in this connection by the refund to you of the cost of the necessary paint, estimated at £15, on each occasion when overhaul of the bridge is required, as to which you will be advised from time to time, and on completion of the work to the satisfaction of the Colonial Engineer.

I am,

Sir,

Your obedient servant,

Colonial Secretary.

Hon. G. J. Felton, M.L.C.,
Teal Inlet,
EAST FALKLAND.

588/25.

23rd May,

30.

Sir,

In reply to your letter of the 9th of April, 1930, on the subject of the maintenance of the Chartres River bridge, I am directed by the Governor to inform you that His Excellency will be prepared to assist you in this connection by the refund to you of the cost of the necessary paint, estimated at £7, on each occasion when overhaul of the bridge is required, as to which you will be advised from time to time, and on completion of the work to the satisfaction of the Colonial Engineer.

2. I am to add that His Excellency is of the opinion that in view of the assistance which will thus be afforded to you it will scarcely be necessary for you to call upon other station managers to share in the upkeep of the bridge.

I am,

Sir,

Your obedient servant,

LS

Colonial Secretary.

Hon. W. H. Luxton, M.L.C.,
Chartres,
WEST FALKLAND.

No.

(It is requested that, in any reference to this minute the above Number and the date may be quoted.)

MINUTE.



30th August. 1932.

From TO

THE COLONIAL SECRETARY,

Stanley, Falkland Islands.

To From

DIRECTOR OF PUBLIC WORKS.

PAINTING ARROYO MALO BRIDGE.

Hon; Colonial Secretary,

I beg to report that the paint and brushes for painting the above bridge were sent to Teal Inlet in August, 1932, Mr Felton then promised to commence the work of scraping and painting within a few weeks.

In conversation with Mr Felton last week I learn that nothing has been done, and he now states that he cannot afford to paint the structure, and requests that the Government might undertake the work.

I submit that the onus for the upkeep of these bridges is on the farms concerned.

Submitted for instructions, please.

C. Roberts,
Director of Public Works.

588/25.

7th September,

32.

Sir,

Red 64.

With reference to my letter No. 588/25 of the 23rd of May 1930, I am directed by the Governor to say that His Excellency is informed that a supply of paint and brushes for painting the Arroyo Malo bridge was sent out to Teal Inlet by the Director of Public Works in August, 1931, on the understanding that the work of scraping and painting the structure would be undertaken by the station.


2. I am also to say that His Excellency further learns that the work has not yet been undertaken and that you now state that the station is unable to afford it and ask that the Government may undertake the work.

3. I am to inform you that His Excellency regrets that the above-mentioned understanding has not been carried out and I am to request you on the occasion of the next visit of the s.s. "Lafonia" to Teal Inlet to arrange for the paint and brushes to be returned to the Director of Public Works at Stanley.

I am,

Sir,

Your obedient servant,


Colonial Secretary.

The Honourable G.J. Felton, M.L.C.,
The Manager,
Teal Inlet Station,
East Falkland.

MINUTE.

3rd April, 19 54

To

THE COLONIAL SECRETARY,

Stanley, Falkland Islands.

From Director of Public Works,

Stanley.

ARROYO MALO BRIDGE.

I beg to submit a report of inspection by Mr. G.L.Challen (General Foreman of Works) on the approaches, south bank and trestle supports of the Arroyo Malo bridge.

2. The approaches are boggy, and Mr. Challen considers that the trestle supports to the bridge on the south side which have sunk through scouring, and the bank on the South side should be repaired to prevent further erosion.

3. It will be necessary to hire a schooner to take men and materials to the site. The charge for this is not known as both schooners are now out of port, but it is estimated at £24, and it is suggested that the crew of the schooner be employed on the work whilst there. Mr. Challen has made arrangements regarding boarding of men and supply of mutton.

4. The estimated cost of the work is :-

MAKING UP APPROACHES.

Wages for 7 men for 1 week.	18. 7. 6.
Board & lodge for 7 men for 1 week	
@ 23/- week.	8. 1. 0
Hire of schooner. (Say).	12. 0. 0.
" of cart horse.	2. 0. 0.
Mutton for 1 week.	15. 0. 0.
5 lengths 2" x 9" S.P. deals.	2. 5. 0.
Spikes, etc.	11. 6. 0.
	44. 0. 0.
Contingencies (Overtime etc).	6. 0. 0.
	50. 0. 0.

Carried forward.

Brought Forward. 50.

REPAIRS TO SOUTH BANK AND TRESTLE SUPPORTS TO BRIDGE.

Wages for 7 men for 1 week.	18. 7. 6.	
Board & lodge for 7 men for 1 week.	8. 1. 0.	
Hire of schooner. Say).	12. 0. 0.	
" " cart horse.	2. 0. 0.	
Mutton for 1 week.	15. 0.	
30 lengths 1" x 9" x 12 ft S.P.		
boards for sheeting.	7. 5. 0.	
15 casks of cement.	15. 0. 0.	
Nails etc.	5. 0.	
	<hr/>	
	63. 15. 6	
Contingencies.	6. 6. 6.	70.

Total..... £120.

5. If approved I would suggest that the work be carried out under XXI. Public Works Extraordinary (17) Improvement of Tracks to the Camp.

L.B. White

for Director of Public Works.

ARROYO MALO BRIDGE - REPAIRS TO APPROACHES ETC.

In accordance with His Excellency's instructions, with the Hon. G.J. Felton I visited the Arroyo Malo bridge on Tuesday afternoon the 27th March, 1934. I left Stanley at 6.30 a.m. on the 27th, and returned on the 28th March, 1934.

APPROACHES.

2. The approaches to the bridge on both sides are bad and very boggy. From the South or Stanley side it is difficult for a horse and rider to get to the bridge. This requires paving with rocks back to a distance of 20 yards by 4 yards wide and covered with shingle from the stream. It will be necessary to extend the decking on the South side another 4'6" to cover the place where the bank has washed away from underneath the timber approach.

3. With regard to the North approach there are some bad peat holes between rocks, and the peat should be dug out and holes filled with rock and levelled off and dressed with shingle.

TRESTLE SUPPORTS TO BRIDGE AND BANK ON SOUTH SIDE

4. The bank on the South side of the bridge has washed away since the bridge was erected back to a distance of 5 feet, leaving less than 4'6" of a bank for the stringers of the wood portion of the bridge to rest on. The two trestle supports between the bank and the main pier of the bridge have sunk 1 inch caused by scouring. This could be stopped with a good slab of rock and concrete with the trestles wedged up to allow the grout to run under them. About 9 cubic yards of concrete would be required for this.

5. The bank could be saved by sheeting around the first trestle support and taken well into the bank at an angle on the upstream side and square

(18)

into the bank on the down stream side, the whole then being filled with rock leaving a space from the sheeting about 6" to face with concrete. About 4 cubic yards of concrete and 24 cubic yards of rock would be required for this.

6. The main piers and the iron bridge itself are quite safe.

7. It will be necessary to hire a schooner to take men and materials for the work.

8. The Hon. G.J. Felton will lend a cart but the Government to supply a cart horse, driver and harness. He will also supply mutton for the men @ 7/6d. per sheep, and arrangements have been made for Mrs MacCallum at the Arroyo Hato house to board and lodge up to 7 men @ 23/- per week each.

G. L. Challen

General Foreman of Works.
3rd April, 1954.

(72)

Public Works Department,
Stanley.

7th April, 1934.

Sir,

With reference to 'phone conversation regarding work at Arroyo Malo bridge, will you kindly reserve accommodation to Teal Inlet in "Lafonia" sailing Monday evening the 9th April, 1934, for:-

Mr. A.H.Hills.
" A. Blyth.
" C.Paice.
" A. Peck.
" M.Campbell.

2. The following packages etc., marked ,
for shipment to Teal Inlet will be sent to your
warehouse on Monday morning:-

14 casks Cement each 400 lbs. nett. (Gross 428 lbs)
18 lengths 1" x 8" x 12 ft. S.P.timbers.
3 " 2" x 4" x 12 fts " "
5 " 2" x 9" x 12 fts. " "
1 bale hay. 4ft x 2 ft. x 1'9".
2 bags Oats, each 36" x 18" x 15".
1 sack containing tools etc. 36" x 18" x 12".
1 bag containing tent 36" x 22" x 12".
1 bundle " tent poles, 72" x 6" x 3".
1 " " shovels etc. 40" x 12" x 12".
1 " " crowbars. 72" x 4" x 4".
1 " " hammers, 36" x 6" x 6".
2 hand barrows tied together, 60" x 22" x 8".
also
1 box containing harness gear. (This is at your
warehouse and belongs to M.Hardy).

3. All charges should be forwarded to this office.

4. It is noted that you are kindly allowing
one of the "Lafonia's" scows to be left behind at
Teal Inlet to allow the materials to be towed by motor
boat from Teal Inlet to Arroyo Malo, for which you are
making no charge, but on the understanding that the
scow is securely moored at Teal Inlet and received
back by "Lafonia" in the same condition.

I am,

The Manager,
Messrs Falkland Islands
Co. Ltd.,
Stanley.

Sir,
Your obedient Servant,

White
for Director of P. Works.

REPAIRS TO THE ARROYO MALO BRIDGE.

1917

STATEMENT OF COST.

		s.	d
Inspection of bridge - hire of horses etc.	2.	18.	8.
Freight on materials to Teal Inlet.	4.	17.	4.
Passages per "Lafonia" for 5 men to Teal Inlet.	4.	14.	10.
Hon. G.J. Felton - Hire of motor boat and 2 men, and 5 sheep @ 7/-.	5.	15.	0.
Materials and tools for work.	21.	9.	4.
Wages repairing bridge.	51.	4.	7.
J. MacCullum - Board and lodge for 7 men at Arroyo Malo House (11th - 21st April).	12.	10.	0.
Hire of motor launch "Dawn" to bring men back to Stanley.	6.	0.	0.
Freight on tools etc. back to Stanley. Say.	1.	0.	0.

TOTAL.....

£110. 9. 9.

*Spent
for repairs
26/4/34*

M.P. 588/25.

PHOTOGRAPHS OF REPAIR WORK CARRIED OUT TO THE
ARROYO MALO BRIDGE.

- (1). Showing shuttering to new pillar built on South or Stanley side of bridge and small extension of decking to bank.
- (2). Showing same pillar from upstream with shuttering up and concrete being made for filling.
- (3). Approach road made on South or Stanley side with rock to new pillar formed. This road was dressed with sandy clay from side of bank.
- (4). Showing depth of the approach road in places.

TRN | LAN | 2#1-26



TRN | LAN | 2#1-27



TRN | LAN | 2#1-28



TRN / LAN / 2#1 - 29

