

2467
Corn Creek
Leupp
Mary Johnston

January 28, 1920.

Mr. H. F. Robinson,

Supervising Engineer,

Albuquerque, New Mexico.

My dear Mr. Robinson:

I have your report of January 14, 1920,
on "Corn Creek Project" near Leupp, Arizona.

I have examined the plans and read with
interest your description of the situation and your
proposed remedy.

I must assume that your canal location is
correct, for without topography there is no possibil-
ity of studying the question in detail and I have no
doubt that, with your intimate knowledge of the field
conditions, you have chosen the most advantageous lo-
cation.

I also feel sure that in the ultimate suc-
cess of the project a diversion dam is also necessary.
The type you have chosen is rather novel and seems to
me should be changed in some features in order to give
hope of success.

In the first place I believe the crest should
have a section near the headgate a little lower than
the other part in order to hold the low flow current at
that place. Probably six inches below the level of the
main crest will be sufficient to accomplish the desired
result. I have indicated this condition on the "elevation"
of the diversion.

The dam is simply a reinforced slab, sitting
on edge. It is not substantially held at the ends and,
although protected on the lower side with rock and brush,

it will undoubtedly have an unequal pressure on the two sides. If the two ends were sufficient to hold against the strains, the whole structure would be in tension and provision would have to be made to meet this strain; however, as you propose to construct, the only means of resisting unequal pressure is that derived from the earth and rock on each side of the slab. This would be sufficient if the material on each side remained in place, but under the conditions that will occur, or at least may occur, the support on the lower side will at least be partly removed during the flows that are greater than can be taken into the canal, and it will be necessary to provide against the overturning or partial overturning of the structure. This could be done by changing the form of the dam and increasing the dimensions to such an extent that overturning would be impossible but this would increase the expense to such an extent as to kill the project from an economical standpoint.

It occurs to me that the conditions are probably such that we can prevent the overturning by using piers of triangular shape (as indicated on the drawing in red); these to be placed approximately 10 feet apart (centers) and tied into the cut-off slab with the reinforcing. They should be cast at the same time the slab is joined, making the whole structure monolithic. This would increase the expense somewhat but would add greatly to its safety and permanency.

I doubt that we should attempt to place the dam at once but consider it advisable to construct the ditch and headgate, providing the Indians will furnish a good part of the man and team labor without cost to the Government.

Congress has stated that there must be cooperation on the part of the Indians; that they must show an interest in the work being done for them and that they must understand that they are to reimburse the Government for money spent in their behalf.

If the Indians are really interested in this project, it seems they should be willing to furnish part of the labor free. I think they should furnish one-third or one-half without pay and receive pay for the other part. Of course, they will have to repay that part at some other time, but for the present they would have the money to live and feed their teams.

The ditch without a dam will take the water except during the very low flow and at such times a small earth dam would suffice.

If the Indians show a disposition to make good use of the project it would then be proper to put in the dam as planned by you and with the additions and changes submitted by me in this communication. I will approve it on these lines.

Very truly yours,



WMR/ELM

Chief Engineer.