Mr. H. F. Robinson,
Supervising Engineer,
Albuquerque, N. M.

Dear Sir:

Pursuant to your instructions I made a trip to Moencopi Wash Project for the purpose of investigating threatened destruction of a part of the ditch by floods in the wash.

I found that conditions are such as to require early attention. About 1600 feet below the diversion dam the bottom of the stream is a series of cascades, making a drop of twenty-five feet in a distance of sixty feet. In flood time the water pours over this cascade and pounds directly against an almost vertical earth bank thirty five feet high. The ditch, running parallel with the stream, is now only fifty feet back from the edge of this bank at the place where the floods cut the worst.

To make matters worse when water is running in the ditch there is a constant seepage softening this high bank and causing a continual sloughing of the bottom into the wash.

It can be but a short time until the ditch is destroyed unless measures are taken to prevent it. I recommend that the following things be done:

First: Building a rock filled crib to deflect flood waters from the high bank.

Second: Lining the ditch with concrete for a distance of 1000 feet to prevent seepage into the bank.

Crib.

Timber for a crib is not nearer than sixty five miles from the place and is expensive and hard to get. In Flagstaff are sawmills. It is believed that sawed timbers will be cheaper in first cost, in are a stronger structure and will facilitate construction. It is therefore on the basis of sawed timbers that the estimate has been made.

The crib is designed to be 16 feet long, 14 feet wide and 16 feet high above the bed of the wash. It is planned to drive 3" x 12" short piling for a coffer dam and excavate the soft mud until a firm bottom is reached. I was unable to make satisfactory soundings to determine the depth to hardpan, but am of the opinion that it is unnecessary to go

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down below firm earth in case hardpan is not close to the surface, as the sheet piling will prevent undercutting by the floods. The bedrock, or hardpan, is a soft shaly sandstone which softens readily under water and erodes rapidly. Being at the foot of the escade it is likely that it has been deeply cut and that to excavate to the rock would cause prohibitive expense.

Ditch Lining.

It is planned to line the ditch upon the same system used in the Laguna Pueblo ditch, using a 2 inch thickness of concrete reinforced with woven wire. Lining will start at the sluice box shown on the sketch and continue 1000 feet. It is believed that length of lining will stop further seepage into the high bank from the di[illegible].

The estimate of cost is as follows:

| | | |
|---|---|---|
| **Crib.** | | |
| Sheet piles, 3000 feet B.M. @ $100.00 | | $300.00 |
| Crib timbers, 15000 ft. B. M. @ $100.00 | | 1500.00 |
| Rock, 125 cu. yds. @ $5.00 | | 625.00 |
| Labor building crib | | 700.00 |
| Excavation | | 200.00 |
| | Total | $3125.00 |
| **Ditch Lining.** | | |
| Cement, 500 sacks @ $3.75 | | $1875.00 |
| Reinforcement | | 120.00 |
| Sand and gravel, 80 cu. yds. @ $3.00 | | 240.00 |
| Labor | | 600.00 |
| | Total | $2835.00 |
| Superintendence, travel, etc. | | $500.00 |
| Total of all work | | $5960.00 |

There are approximately 600 acres under this ditch, making the cost of the proposed work about $10.00 per acre. Of this area the school and agency farms about 250 acres and Indians the balance. I suggest that 60% of the cost be borne by funds of this office and 40% be paid out of some appropriation applicable to school and agency expenses.

A sketch of the locality, section of ditch lining and details of the crib construction accompany this report.

Respectfully,

Geo M. Post

Superintendent of Construction.

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