

Pima-Maricopa Irrigation Project

Education Initiative

2002-2003

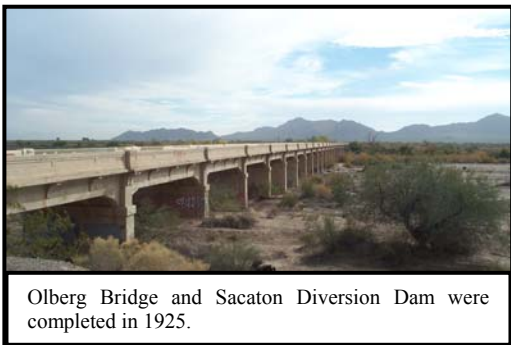


Restoring water to ensure the continuity of the Akimel O’otham and Pee Posh tradition of agriculture

Sacaton Dam and Olberg Bridge: 1916-1926

Part 32

The law authoring Ashurst-Hayden Diversion Dam also approved the construction of Sacaton Dam and Olberg Bridge. The 1916 legislation made \$75,000 available to begin the project and a March 1917 law authorized an additional \$125,000. Sacaton Dam—initially referred to as Santan Diversion Dam—was to compliment Ashurst-Hayden Diversion Dam by catching any remaining floodwater on the Gila River and diverting it into the Santan Floodwater Canal.



The Indian Service had considered building a canal on the north bank of the Gila River to carry water from Ashurst-Hayden Diversion Dam to the reservation. Indian Irrigation Engineer Charles Olberg, however, believed this was too expensive. Construction of an Indian-only diversion dam 3 miles east of Sacaton, Olberg suggested, would better serve the reservation and cost considerably less than an extended canal on the north bank of the river. Olberg argued a dam and bridge were “absolutely necessary.” The bridge was “badly needed both by the Indians and the white people.” The additional cost

of a bridge on top of the dam, Olberg wrote on November 25, 1914, would “be only a small amount more than the cost of a dam alone.” The dam and bridge was estimated to cost \$173,599.

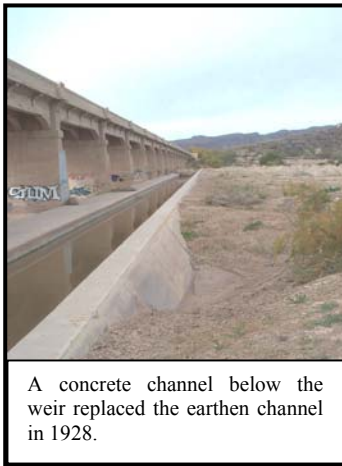
Olberg drafted the preliminary plans and costs of the dam in 1914. The following year, Olberg informed Commissioner of Indian Affairs Robert Valentine that only 3,000 acres of land could be irrigated in the Santan district (under the Sacaton Project) using well water and, unless a diversion dam were built, “but little more land can be brought under cultivation on this project.” Assistant Indian Commissioner Edgar Merritt told the House Indian Affairs Committee, in 1915, that the dam would divert water for use “on the south side of the Gila River to supply eventually about 30,000 acres, of which at present about 5,000 acres are being farmed.” The bridge, Merritt added, was necessary since the nearest crossing was at Florence, 23 miles to the east. During the winter of 1914-1915, “the river was impassable for teams [of horses] for over four months and for automobiles for about nine months.” The Indian Service tried to demonstrate to Congress that an adequate transportation system was in place (or soon would be) to ensure Pima agricultural goods had access to outside markets.

The House Committee on Indian Affairs was particularly interested in the prospects of the federal government being reimbursed for its outlay of money. The general law of funding irrigation projects, Representative Campbell pointed out to Merritt, was to make them reimbursable through “the sale of lands.” While the Pimas had no money to their credit, Merritt informed the Committee, they did have “quite a large reservation.” Whether it could be sold or not was a “question to be determined later.” While he did not advocate the sale of any land, Merritt did believe the Pimas would “ultimately have funds” to reimburse the government. Nonetheless, the Committee refused to exempt the reservation from sale. With Sacaton Dam, would not the Pimas have more land than necessary and could not some of this “surplus land” be sold to pay for the project? Merritt agreed surplus lands would remain and could be sold to reimburse the government—if Congress so chose.

Designing and planning the dam and bridge began in 1917 under the direction of Olberg. In the summer of 1918, Herbert V. Clotts completed the drawings and sent them to Washington DC for

approval. The dam and bridge were to be architecturally similar to Ashurst-Hayden Dam. But while Ashurst-Hayden was 396' across, Sacaton Dam would be 1,250' across. The dam would be anchored to granitic rock on the north bank, but not on the south bank, which consisted of a simple sand and silt embankment 8' high. As with Ashurst-Hayden, Sacaton Dam would be a floating weir. While Ashurst-Hayden was 212' wide, Sacaton Dam was just 73' wide. It included a 15' long upstream apron, a 6' wide main section beneath the weir and a 52' downstream apron. A large expanse of talus (rock apron) protected the downstream side of the bridge from erosion. The concrete was 5' thick under the weir itself (where the water pressure is greatest) and 1.5' thick under the bridge piers.

To prevent erosion around the piers and to slow the rate of percolating water beneath the structure, two rows of wooden pilings covered with a thick layer of concrete were placed under the dam. The first row included pilings 12' deep with the second row 16' deep. These pilings were simply wooden posts sunk into the ground to help hold the weir in place. To prevent erosion on the south bank of the river, Olberg and Clotts designed and built a 1,200' long guide bank made up of earth and large rocks called riprap. This extended upstream at a right angle to the weir to channel water over—not around—the dam. Two 1,300' long dikes were constructed on the south bank to protect the Pima-Sacaton Branch Canal, Olberg Bridge and adjacent lands from flood damage.



A concrete channel below the weir replaced the earthen channel in 1928.

Sluice gates were built on both ends of the dam to flush out silt and sand that was expected to periodically build up. On the south side, six 3x8 gates were built at the canal intake to sluice away silt. Similar gates were constructed on the north side, which was connected to the Santan Floodwater Canal. The original plan for the dam called for a pipe to be built under the dam to convey water from the Pima Lateral to the Santan Floodwater Canal during times of insufficient floodwater. This plan was abandoned and instead an open channel below the weir was constructed to carry water from the Pima Lateral through the Pima-Sacaton Branch Canal to the Santan Canal. Short siphons were built on both ends of the dam and connected to the open channel. Inlet and outlet gates were added to prevent silt from clogging the siphons when they were not in use. The original plan also called for a canal to be built south to convey floodwater to the Little Gila (Casa Blanca) Canal

and thus “enable a double diversion, one on each side of the river.”

Although authorized in 1916, World War One and the Congressional requirement of a landowner’s agreement delayed construction. In 1917, Merritt was prepared to issue a call for bids, but postponed such action due to inflated prices resulting from the war. When bids were finally solicited on September 6, 1918, none was received. A second bid notice was issued in June 1919, with just one bid submitted for nearly \$400,000, more than twice the amount authorized by Congress. The bid was so high, Commissioner of Indian Affairs Cato Sells informed Interior Secretary John Barton Payne, “that it was rejected.” Sells then made the decision to delay construction until post-war inflation softened.

In the meantime, Wendell M. Reed, Superintendent of Irrigation, established an engineering camp on the south bank of the Gila River and began surveying the dam site. The camp included 2 small cottages, a warehouse, an office and a small power and pump plant to produce electricity and water. A road was built from the south and provided the main access to the site. By 1920, \$22,000 had been spent on preliminary surveys, designs and preparatory construction activity.

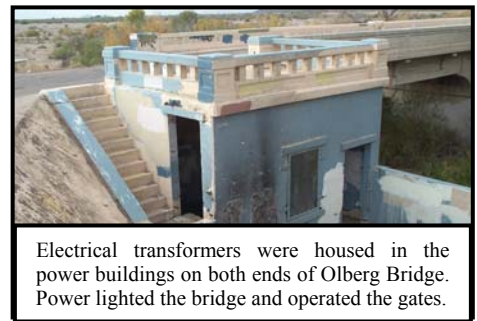
In 1919, Reed went before the House Indian Affairs Committee seeking additional money to complete the project. Reed estimated the revised cost at \$400,000. While the funding request was approved, Congress—and the Reclamation Service—again raised the possibility of constructing a canal on the north bank of the river that would carry water to the reservation from Ashurst-Hayden Dam. The Reclamation Service questioned Sacaton Dam, believing the great width of the river and the alluvial foundation and abutment on the south end made the structure unsound.

Notwithstanding such concerns, the Indian Service continued to push the project, with construction finally beginning in the spring of 1923. Unable to secure a contract for the project, the Indian Service once again chose to build the dam using a force account. Olberg recommended the project employ the same men who had constructed the Florence dam, although in a desire to “retain the better class of skilled workmen” Olberg recommended improved living quarters. Consequently, the construction camp was moved northwest of the rock outcropping on the north bank of the Gila. A new mess hall, two bunkhouses, 12 tents and miscellaneous other shops were constructed at the new site.

As costs continued to escalate, Congress was again asked for additional money. In May of 1924, another \$300,000 was authorized to complete the project. By fall, the pilings were in place and the south embankment was nearing completion. Excavation of the main weir was progressing and the downstream talus was completed. Olberg constructed an on-site rock quarry from the granitic outcropping on the north bank of the river. In October of 1924, Olberg was pulled from the project and detailed to Los Angeles to begin designing San Carlos dam. Engineer Earl Patterson then completed the project.

By the fall of 1924, work was progressing rapidly. Patterson hired 22 Navajos to complete the excavation work, which encouraged more Pima and Papago men to serve on the crews constructing the dam. The concrete work was completed on the dam in February 1925 and work then began on the bridge. The piers were poured first followed by the deck, spans, railing and lampposts. The bridge included 25 concrete piers set 50’ apart. A separate foundation was built for the piers so as to not interfere with, or damage, the dam. As the road from Chandler to Casa Grande neared completion in 1925, the Arizona Highway Department built a small concrete bridge to span the Santan Floodwater Canal on the north bank of the river. A smaller bridge spanned the Pima-Sacaton Branch Canal on the south bank. The dam was completed on June 30, 1925, although there was no public dedication as in the case of Ashurst-Hayden Diversion Dam. A dedication plaque on the dam simply stated the structure was built “with the efficient labor of the Pima and Papago Indians of Southern Arizona.” Commissioner of Indian Affairs Charles Burke christened the structure Sacaton Diversion Dam.

Between January and March of 1926 the final additions were made to the dam. It was then the gates and machinery necessary to operate them was installed. Due to delays in receiving some connecting parts, the project was not fully completed until the fall of 1926. The building housing the transformers needed to electrically operate the gates and provide lighting for the bridge was completed in June 1927. Estimated to cost less than \$175,000, the dam and bridge combined cost \$719,793. Of this amount, \$346,200 was spent on the bridge.



While the bridge was successful as part of the main north-south highway across Arizona—becoming part of the Phoenix, Sacaton, Casa Grande, Tucson and Nogales Scenic Highway—the dam had limited success. The dam was viewed as “a failure so far as diverting water from the Gila River for irrigation purposes is concerned.” Incoming Superintendent Albert Kneale wrote, the structure was “a most excellent dam [and] had there been any water to divert [it] would have demonstrated its serviceableness.”

The open channel designed to convey floodwater into the Santan Floodwater Canal quickly filled with silt and, in 1928, had to be replaced with a concrete conduit built on the downstream side of the dam. With Ashurst-Hayden Diversion Dam—and especially after the 1930 dedication of Coolidge Dam 80 miles upstream—there was little if any water to divert into the Santan Floodwater Canal. The deep, sandy alluvia between Ashurst-Hayden and Sacaton dams meant most of the floodwater that did manage to come past Ashurst-Hayden was absorbed into the riverbed. It wasn’t long before the dam became silted over, leaving the Pimas with little benefit from a costly dam for which Congress expected them to pay.

Teacher Plan for “Sacaton Dam and Olberg Bridge, 1916-1926”

Terms to know and understand

- Reimbursable
- Preliminary
- Siphon
- Inflation
- Weir
- Erosion

Students will be able to:

1. Analyze the role of transportation in the developing reservation irrigation system of the early twentieth century.
2. Chart the basic chronology in the construction of the Sacaton Dam and its role in the larger irrigation system on the reservation.

Objectives

Critical Thinking:

- In the years before the construction of the diversion dams and San Carlos storage dam, and first mentioned by the Army Corps of Engineers in 1914 when it studied the feasibility of a storage reservoir on the Gila River, the Indian Service tried to demonstrate to Congress that if money was available to construct an irrigation system on the reservation, an adequate transportation system existed (or would soon exist). Why might this have been necessary? What does the concern of the Indian Service over a transportation system tell you about its thinking? If the Indian Service was looking at large-scale, modern agriculture and the Pimas were looking at small-scale, traditional agriculture, what potential conflict might exist? Does this have any bearing on the present day Pima-Maricopa Irrigation Project? How can a balance be achieved between both needs?

Activities

- Have students develop a timeline of events for the development of the Florence-Casa Grande Project and the construction of Sacaton Diversion Dam and Olberg Bridge. Extend this timeline back into the 19th century and include information from the years when the Pima and Maricopa were self-reliant and when the reservation was considered to be the breadbasket of the territory.
- The Pima and Maricopa gave up most of their ancestral lands by the mid-19th century. Between the 1870s and the 1910s, the Pima and Maricopa were under pressure to give up more (or all) of their land. Why is it important for you as a Community member to understand this history? What can you do to ensure that your land remains in Community ownership for future generations?
- When Congress makes a law it authorizes the expenditure of funds to carry out the law. This is called the authorization of funds. But, while Congress may authorize funds (any Congressional Committee can draft a bill authorizing funds), a separate law is required to actually appropriate (or make available for use) funds. This bill must begin in the House appropriation committee. Sometimes, a bill becomes law with funds authorized. But no appropriation is made. Other times, funds are authorized with only some of the funds appropriated. Why do you suppose this process is setup as it is?

About P-MIP

The Pima-Maricopa Irrigation Project is authorized by the Gila River Indian Community to construct all irrigation systems for the Community. When fully completed, P-MIP will provide irrigation for up to 146,330 acres of farmland. P-MIP is dedicated to three long-range goals:

- Restoring water to the Akimel O’otham and Pee Posh.
- Putting Akimel O’otham and Pee Posh rights to the use of water to beneficial use.
- Demonstrating and exercising sound management to ensure continuity of the Community’s traditional economy of agriculture.