

# **“Oldest Irrigation Conduit and Dam in the United States”**

**(the Old San Diego Mission Dam)**

**In *Engineering News*, Vol. 75, No. 7  
February 17, 1916**

*(Please note: Images of the article are presented on the next two pages, and starting on page 3 is a transcription of the article. Peggy B. Perazzo)*

This article, which begins on the next page,  
is presented on the Stone Quarries and Beyond web site.

<http://quarriesandbeyond.org/>

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## Oldest Irrigation Conduit and Dam in the United States

On the meadows beside the lower San Diego River, half a dozen miles northeast of the City of San Diego, is the old San Diego mission. Here the Catholic missionaries, working northward from Mexico, established near the end of the eighteenth century one of the first outposts of civilization on the Pacific Coast in what is now United States territory.

In this arid region, with a rainfall averaging only about a dozen inches per annum, all occurring in the

to contend, the building of the old Mission dam and conduit was a remarkable achievement.

The dam, it should be explained, is purely a diverting dam and not a storage dam. The San Diego River in its course of some 50 mi. descends from elevations of 3,000 to 5,000 ft., and the river and its tributaries have eroded deep cañons in the soft rocks of the region. At its flood stages the river carries a very heavy burden of sand and silt, so that the pond back of any dam built across it



FIG. 1. THE OLDEST IRRIGATION DAM IN THE UNITED STATES, BUILT BY THE OLD MISSION OF SAN DIEGO, CALIF.

fall and winter months, irrigation is a prime necessity to agriculture. There still stand in a remarkably good state of preservation the dam and a large part of the conduit by which water was diverted from the San Diego River and carried some miles down its valley to the ranches surrounding the mission. There is little doubt that this dam and conduit are entitled to the distinction of being the oldest irrigation works in the United States, with the exception of course of the more or less primitive works for irrigation carried on by Indian tribes prior to European settlement. When one bears in mind the extreme limitations in means of transportation, in material, labor, and money with which these Catholic pioneers had

is filled full with solid material during the first flood season.

It is of interest in this connection to record that prior to 1859 the San Diego River carried annually vast quantities of silt into San Diego Bay and was rapidly filling up the present harbor of San Diego. It was due to the genius of a distinguished officer of the Corps of Engineers that San Diego harbor was saved for commerce. During the years prior to the Civil War, Lieut. Geo. H. Derby, of the Corps, who was stationed on the Pacific Coast, made himself famous by writing humorous papers which were published under the *nom de plume* of John Phoenix. Lieutenant Derby proved that he was as com-



FIG. 2. VIEW OF OLD MISSION DAM DURING A FLOOD IN THE SAN DIEGO RIVER

petent an engineer as a humorist by diverting the course of the San Diego River at its mouth, so that instead of discharging into San Diego harbor it was made to empty into what is known as False Bay, a shallow body of water located to the north of San Diego Bay and separated from it by a high sand ridge.

The old Mission dam and the conduit, as may be seen by the accompanying illustrations, were built of a curious combination of rough rubble masonry and very large, thin tile. The mortar used was of course lime mortar and must have been burned in kilns established for the purpose near-by. As may be judged from the views of the dam and of the flood which it annually sustains, this lime-mortar masonry has lasted remarkably well. The central opening in the dam, seen in the view, doubtless originally contained a wooden controlling gate which was left open in time of flood and was closed only when it was desired to divert the water into the irrigation conduit, which connected with the dam near its north end.

One reason for the location of the dam at this point is that the river here flows over bedrock at the head of a long cañon, so that all the flow down the valley is intercepted by the dam. In recent years the dam has been used as a river-gaging station by the United States Geological Survey.

From the dam the masonry conduit follows down the north bank of the river about three or four miles to the lands around the old mission. Much of the conduit is still plainly visible from the highway on the opposite bank. The construction of the conduit is shown in the accompanying cross-section drawing. Over a part of its course, however, the conduit was in excavation and appears to have been merely lined with masonry. The size of the tiles used for lining is particularly noteworthy and evidences the considerable ability of these early pioneers in the art of pottery manufacture and in utilizing Indian labor for this more or less technical work.

*Engineering News* is indebted to F. M. Faude, Assistant Manager of the Cuyamaca Water Co., for the accompanying photographs and cross-section drawing of these old irrigation works and for courtesies extended to a member of the editorial staff on a visit to them.

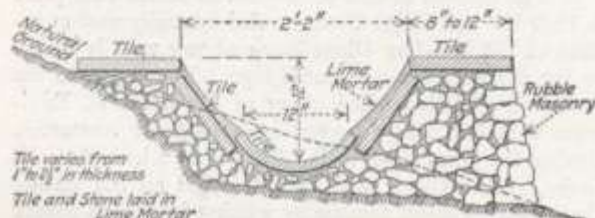


FIG. 3. TYPICAL CROSS-SECTION OF OLD MISSION CONDUIT NEAR SAN DIEGO, CALIF.

**The Expenses of the City Engineer's Department of Providence, R. I., for the year ending Sept. 30, 1915, so far as shown by bills actually paid, were distributed as follows:** Salaries of city engineer and assistant engineers, \$52,516; salaries of clerks, \$4,705; supplies, including drawing materials, \$5,916; carfares, \$1,517; instruments and repairs, \$334; telephone lines, \$238; sundries, \$22; meteorological instruments and repairs, \$10; carriage hire, \$6; total, \$62,374.



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**(at the San Diego Mission)**

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*(Transcription of the preceding article. Peggy B. Perazzo)*

“On the meadows beside the lower San Diego River, half a dozen miles northeast of the City of San Diego, is the old San Diego mission. Here the Catholic missionaries, working northward from Mexico, established near the end of the eighteenth century one of the first outposts of civilization on the Pacific Coast in what is now United States territory.

“In this arid region, with a rainfall averaging only about a dozen inches per annum, all occurring in the fall and winter months, irrigation is a prime necessity to agriculture. There still stand in a remarkably good state of preservation the dam and a large part of the conduit by which water was diverted from the San Diego River and carried some miles down its valley to the ranches surrounding the mission. There is little doubt that this dam and conduit are entitled to the distinction of being the oldest irrigation works in the United States, with the exception of course of the more or less primitive works for irrigation carried on by Indian tribes prior to European settlement. When one bears in mind the extreme limitations in means of transportation, in material, labor, and money with which these Catholic pioneers had to contend, the building of the old Mission dam and conduit was a remarkable achievement.

“The dam, it should be explained, is purely a diverting dam and not a storage dam. The San Diego River in its course of some 50 mi. descends from elevations of 3,000 to 5,000 ft., and the river and its tributaries have eroded deep canons in the soft rocks of the region. At its flood stages the river carries a very heavy burden of sand and silt, so that the pond back of any dam built across it is filled full with solid material during the flood season.

“It is of interest in this connection to record that prior to 1850 the San Diego River carried annually vast quantities of silt into San Diego Bay and was rapidly filling up the present harbor of San Diego. It was due to the genius of a distinguished officer of the Corps of Engineers that San Diego harbor was saved for commerce. During the years prior to the Civil War, Lieut. Geo. H. Derby, of the Corps, who was stationed on the Pacific Coast, made himself famous by writing humorous papers which were published under the *nom de plume* of John Phoenix. Lieutenant Derby proved that he was a competent an engineer as a humorist by diverting the course of the San Diego River at its mouth, so that instead of discharging into San Diego harbor it was made to empty into what is known as False Bay, a shallow body of water located to the north of San Diego Bay and separated from it by a high sand ridge.

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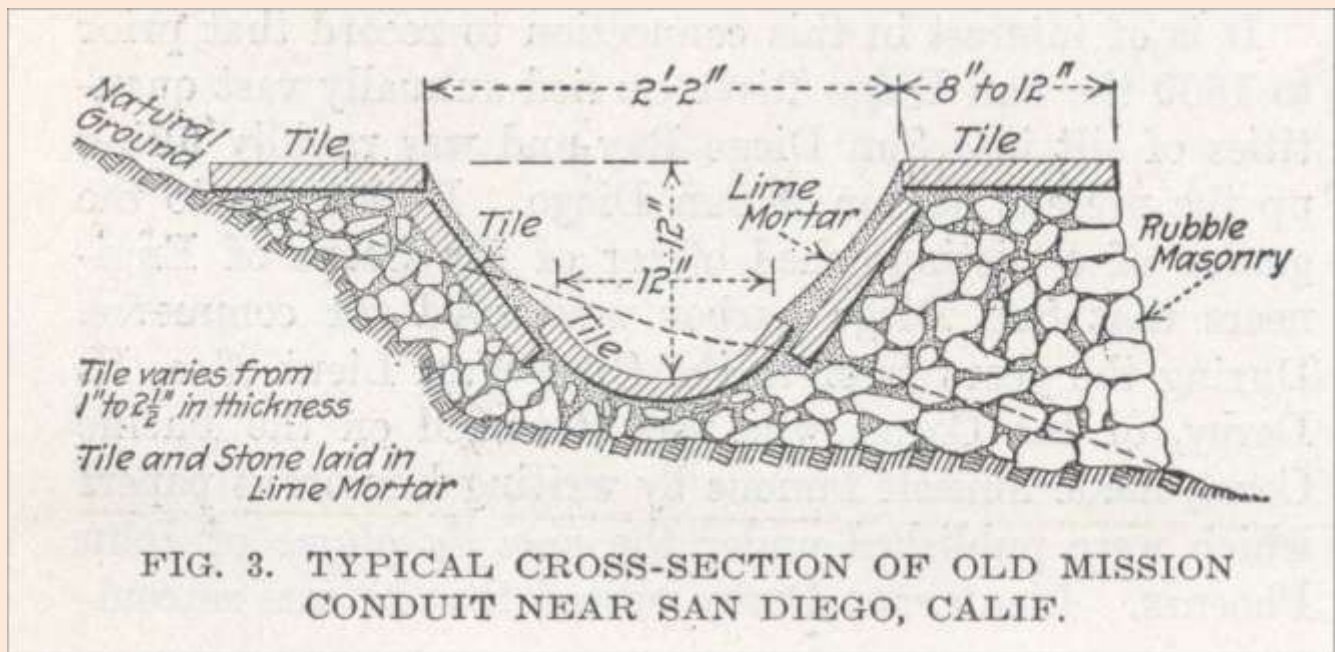
FIG. 1. THE OLDEST IRRIGATION DAM IN THE UNITED STATES, BUILT BY THE OLD MISSION OF SAN DIEGO, CALIF.

“Fig. 1. The oldest irrigation dam in the United States, built by the old Mission of San Diego, Calif.”



FIG. 2. VIEW OF OLD MISSION DAM DURING A FLOOD IN THE SAN DIEGO RIVER

“Fig. 2. View of old Mission Dam during a flood in the San Diego River.”



“Fig. 3. Typical cross-section of old Mission conduit near San Diego, Calif.”

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*(See the next page to view an early postcard photograph of the Old Mission Dam.  
Peggy B. Perazzo)*





**Early postcard photograph of the Old San Diego Mission Dam.**

Today the Old Mission Dam is a part of the Mission Trails Regional Park. You can read more about the Old Mission Dam at the Mission Trails Regional Park web site in the "Visitor Center" section. <<http://www.mtrp.org/index.asp>> Peggy B. Perazzo