

Hoover Dam Bypass Project Uses 25% Fly Ash

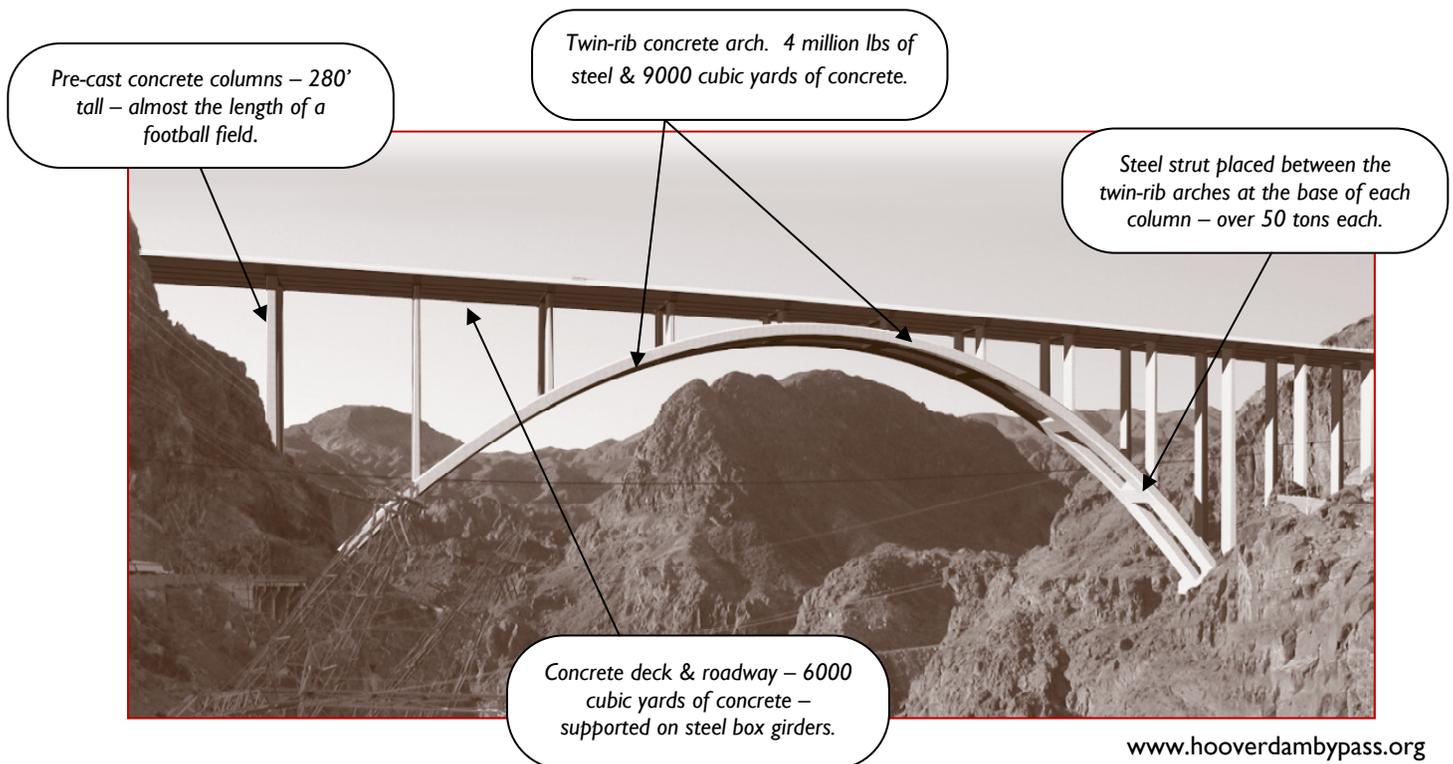
Construction of the Colorado River Bridge, a part of the Hoover Dam Bypass project, began in 2005 and was completed in October of 2010. The 1,900 foot bridge is 1,500 feet south of the Hoover Dam and its 1,060 foot twin archway span is the largest in North America. The \$114 million project was needed to adequately handle the 14,000 vehicles and trucks that cross the river each day and to reduce potential safety threats of having the road across the dam. The roadway is 900 feet above the river and has been named the Mike O'Callaghan – Pat Tillman Bridge, honoring a former Nevada governor and the Phoenix Cardinals player who was killed in Afghanistan.

The project posed a myriad of problems for the concrete design and placement because of the topographical issues, placement during summer months when the temperatures reached 125 degrees, and concrete performance requirements. Because of the unique properties requisite to the structure, local material qualifications were completed two years before the project was bid. Headwaters worked closely with design engineers during the qualifying trials. The archways were precast on site and placed by means of crane towers located at each end of the span. The concrete for the foundations, columns and roadway was pumped into place.

The centerpiece of the Colorado River Bridge is the 1,060-foot twin-rib arch. At the time of completion, it was the longest in the Western Hemisphere. The two arches are comprised of 106 individual segments, 53 in each arch, and were cast 24 feet at a time using a traveling form system. High-strength concrete of 10,000 psi was required to handle the design and construction loads on the arch. Several segments at the ends of each arch, beginning at what is termed the “springing” of the arch at the canyon walls, were completed first; as the traveling form system constructed segments out over the river below, the previously cast arch was supported by cables and a temporary tower. The temporary tower was stabilized by additional cables that secured it back to the canyon rim. Once the arch was complete and self-supporting, the cables and tower were removed. After closing the arch, columns were erected on top of the arch. Cast-in-place concrete caps were constructed on the top of the columns to support the final roadway deck structure.

Ultimately the project team placed over 32,000 cubic yards of concrete that contained 25% fly ash. Design strengths were between 5,000 to 10,000 psi at 56 days, with actual strengths reaching 14,000 psi.

The Colorado River Bridge, part of the Hoover Dam Bypass project, required more than 32,000 cubic yards of concrete that contained 25% fly ash.



www.hooverdambypass.org

For more information or answers to questions about the use of fly ash in specific applications, contact your nearest Headwaters Resources Technical Sales Representative or call 1-888-236-6236.

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