

# AWARDS 2003

## AWARD OF EXCELLENCE: WATER STRUCTURES CATEGORY



### **Arizona Dam Spillway Repair Project**

Arizona

This concrete repair project consists of two spillway structures on a hydroelectric dam site. Due to security concerns after September 11, 2001, the name of the project, exact location and overall photographs are not allowed to be published. It is a significant project due to the remote location, extremely difficult access, and the multitude of materials and processes specified and used. The dam site is in a remote area, about an hour-and-a-half drive from civilization. The spillways are situated on sheer rocky 200 foot (61 m) high cliffs with the only access from the top of the dam. Significant alkali-silica reactivity (ASR) was occurring, causing excessive cracking, leading to corrosion and spalling.

The engineering investigation survey accessed all parts of the structure using a variety of methods, including a specialty rope access contractor, to determine the extent of deterioration. Specifications were written to allow the contractor the option of many different repair materials and processes for the concrete patching. Lithium was used to treat existing ASR as well as prevent new ASR from occurring at the repair areas.

Construction began in the summer with temperatures on the spillway slab of 130 °F (54 °C), continuing through the winter with mild freezing temperatures. With a rope access contractor, scaffolding was constructed off the rocky cliffs accessing all parts of the structure. Concrete material, which was chipped off, had to be hauled away and dumped off-site. Dry process shotcrete was used for the patching repairs, as well as epoxy crack injection, polyurethane foam injection, lithium treatments for the ASR, and epoxy flood coats.

#### **Owner**

An Arizona utility company  
Arizona

#### **Project Engineer/Designer**

Gervasio & Associates, Inc.  
Phoenix, Arizona

#### **Repair Contractor**

Truesdell Corporation  
Phoenix, Arizona

#### **Material Suppliers**

The Euclid Chemical  
Company  
Reno, Nevada  
Sika Corporation  
Lyndhurst, New Jersey

