

# January, 2002



## Concrete Comments

A "cool" parking lot

### Selecting Durable Repair Materials: Performance Criteria—Summary

This is the fourth and final paper in a series describing results of research to develop performance criteria for selection of cement-based repair materials that will be dimensionally compatible with existing concrete substrates. This paper describes attempts to correlate results of the laboratory and field tests to form a basis for development of performance criteria for dimensionally compatible repair materials. Also, a proposed protocol for repair material data sheets is presented. The authors' views on the present and future of concrete repair are expressed in concluding remarks.

### ACI Staff Gathers for Flag Dedication Ceremony

With a renewed sense of patriotism, the U.S. flag is raised at the Headquarters building.

### Strengthening with Shear Collars

Since their development 20 years ago, concrete shear collars have been used successfully for many practical applications where improved load transfer to columns was needed. Shear collars are a simple, economical method for correcting existing structural deficiencies, increasing structural capacity for additional loads, facilitating installation of new floors, improving seismic resistance, and simplifying bridge-bearing replacement. . .

### A Challenge to Concretors

Just because concrete is a highly successful and the most widely used construction material, there is no guarantee that it will continue indefinitely to keep its preeminent position. Life is competitive, and there needs to be continual progress and change. This article is a deliberate provocation to help foster an evolution in concrete practice..

### Masonry Saved This Under-Reinforced Building

A structural investigation was conducted on a condominium built in 1997. The investigation disclosed that some of the main transfer beams supporting load-bearing walls had only about 20% of the required reinforcement. The investigation identified an exceptionally serious problem. In fact, there was some difficulty in determining why the building was still standing! Immediate attention was required to prevent collapse and to

restore the required strength and, in the process, to find out why collapse had not already taken place.

### **RCC Lift-Joint Strength**

Horizontal lift joints in roller-compacted concrete (RCC) structures are planes of weakness subject to leakage, deterioration, and possible failure from tensile or shear stresses. RCC dams may have five times as many lift joints. With more lift joints in RCC, the risk of lift surface deficiency is somewhat greater than it is in conventional concrete dams. These deficiencies may reduce lift-joint tensile (bond) and shear strength.

### **Controlling Temperatures in Mass Concrete**

Specifications generally limit temperatures in mass concrete to prevent cracking and durability problems. Temperature limits are specified to seemingly arbitrary values of 135 F (57 C) for the maximum allowable concrete temperature and 35 F (19 C) for the maximum allowable temperature difference between the center and surface of the mass concrete section. Typically, the contractor must meet all of the specification requirements, but without a good understanding of mass concrete, keeping concrete temperatures within limits can be a difficult task..