ASA Outstanding Shotcrete Project Awards for 2011

The American Shotcrete Association (ASA) has announced the recipients of the 7th Annual Outstanding Shotcrete Project Awards. More information and photos can be found on the ASA Web site at **www.Shotcrete.org/ASA2011 Projects.htm**. The awards categories and recipients are:

Outstanding International Project

Al Ain Wildlife Park and Resort Retaining Wall and Artificial Rocks, Al Ain, UAE

The Al Ain Wildlife Park and Resort covers 2220 acres (900 ha) in the desert outside the city of Al Ain, UAE. The resort—themed "Deserts of the World"—aims to create a commercially and environmentally sustainable attraction. Construction of the project included a 1.86 mile (3 km) retaining wall and over 21,500 ft^2 (2000 m^2) of artificial rocks. Shotcrete was selected for these elements because it met both structural and aesthetic requirements. The concrete mixture was developed for use in an area where temperatures can exceed 113°F (45°C). Regional materials were incorporated, such as Al Ain dune sand, and a variety of surface-finishing techniques were used to match elements to the local geological landscape.

Project credits include: The Zoo and Aquarium Public Institute in Al Ain, Owner; Imagineering, Shotcrete Contractor; HILALCO, General Contractor; EDSA, Architect/Engineer; and UNIBETON Ready Mix, Material Supplier/Manufacturer.

Outstanding Repair & Rehabilitation Project

ODOT U.S. Highway 26 Dennis L. Edwards Tunnel Project, Portland, OR

Lighting and lining repairs for the 70-year-old Dennis L. Edwards Tunnel, 34 miles (55 km) west of Portland, OR, began in January 2011. The repairs had to be completed by that May in time for the start of the coastal tourist season, during which the tunnel sees more than twice the average daily traffic. The original plan was to use shotcrete and rock bolts to support the tunnel before removing the existing lagging; but due to wet weather and unstable ground conditions, that quickly became impossible. Instead, the lagging was left in place and shooting was done between existing sets. Once the new shotcrete reached a suitable strength, the sets were removed, reinforcing bar was installed, and steel fiber-reinforced shotcrete was applied as a final support and liner. Shotcrete was placed up to 18 in. (460 mm) thick with two mats of steel reinforcement. No formwork

Workers place shotcrete for rock formations; Al Ain Wildlife Park and Resort, Al Ain, UAE

Dennis L. Edwards Tunnel, Portland, OR

was required and all construction was performed at night, so the tunnel remained open for traffic during the day.

Project credits include: Oregon Department of Transportation (ODOT), Owner; Johnson Western Gunite Company, Shotcrete and General Contractor; Shannon & Wilson, Lochner Consulting Engineers, Architect/Engineer; and The Quikrete Companies and Cemex, Material Suppliers/Manufacturers.

Outstanding Underground Project

Incline Tunnel—S&S Quarries, Inc., Knoxville, IA

This 1950 ft (594 m) mining tunnel, with a 12% grade and bottom elevation of 210 ft (64 m), runs through a fault zone. The fault area, a 250 ft (76 m) section about 1300 ft (400 m) down the incline, became distorted over time. The tunnel walls had displaced by as much as 2 ft (600 mm) on either side and the original shotcrete lining was cracked. Repairs called for the addition of steel lattice trusses encapsulated in a new lining of steel fiber-reinforced, microsilica-enhanced shotcrete, and the mine had to remain open during construction. The original shotcrete mixture was difficult to pump, so fly ash, water reducers, and plasticizers were added. Vertical thicknesses reached 6 ft (1.8 m) and overhead thickness reached 2 ft (600 mm), so an accelerator was also added to minimize sagging. Over the course of the project, workers were able to place 49 yd^3 (37 m^3) of shotcrete in a 10-hour shift for a total of 1050 yd^3 (800 m^3) placed in 8 weeks. The project was completed by applying shotcrete to the tunnel entrance and high wall to stabilize exposed rock faces.

Project credits include: Bruening Rock Products, S&S Quarries, Inc., Owner; Edwin Brady Construction Co., Inc., Shotcrete Contractor; USC Technologies, LLC, General Contractor; Shannon & Wilson, Inc., Architect/Engineer; and The Euclid Chemical Company, Material Supplier/Manufacturer.

Outstanding Pool and Recreational Project

The Garrison Inn, Garrison, NY

Work at the Garrison Inn was intended to restore this historic building to its original design with a few additions—including a retaining wall to create a plateau for a swimming pool overlooking the Hudson River. Sloped land where the new features were placed created an issue for staging equipment, so the shotcrete process was selected because it allowed the concrete to be pumped long distances. The pool was formed with plywood to reduce form vibration and dry-mix shotcrete was used for easier starting and stopping. The 95 yd^3 (73 m^3) of shotcrete used for the pool were applied over 2 days and water cured during the following 7 days. The pool was put into immediate use.

Project credits include: Shur Shot Gunite, Shotcrete Contractor and Material Supplier/Manufacturer; Group Works LLC, General Contractor; and Rader + Crews, Architect/Engineer.

Outstanding Infrastructure Project

Portage Bridge 2010 Structure Rehabilitation, Ottawa, ON, and Gatineau, QC, Canada

The interprovincial Portage Bridge crosses the Ottawa River between Ontario and Quebec with six traffic lanes, as well as bike and pedestrian lanes. Since it opened in 1973, the bridge had sustained concrete damage from freezing-and-thawing cycles, and rehabilitation was scheduled to be performed using pressure grouting. Once repairs began, however, the damage was found to be more extensive than initially determined. It was then decided that shotcrete was the best option for placing repair concrete. The project used King Packaged Materials' MS-D1 Accelerated Shotcrete to speed the process, as work had to be completed before cold weather set in; the mixture also contained air entrainment and silica fume to help guard against freezing-and-thawing damage and chloride-induced corrosion, respectively. All work was performed from special platforms built between the steel girders beneath the bridge. The platforms prevented shotcrete rebound from entering the river below and gave workers 6 ft (1.8 m) of headroom to work; a movable chair

Incline Tunnel, Knoxville, IA

The Garrison Inn, Garrison, NY

Nozzleman applies shotcrete from movable chair; Portage Bridge, Ottawa, ON, and Gatineau, QC, Canada

developed by the nozzlemen allowed for shorter reaches of 3 to 5 ft (1 to 1.5 m) from nozzle to surface. Altogether, about 9700 ft² (900 m²) was repaired, averaging 4.75 in. (120 mm) in thickness.

Project credits include: Ministry of Transportation Ontario, Owner; Coaster Concrete, Shotcrete Contractor; David S. Laflamme Construction, General Contractor; Genivar and National Capital Commission, Architects/Engineers; and King Packaged Materials Company, Material Supplier/Manufacturer.

Outstanding Architecture Project

Soleri Bridge and Plaza, Scottsdale, AZ

Commissioned by Scottsdale Public Art, the Soleri Bridge and Plaza provides a pedestrian walkway for residents on the northern side of the Arizona Canal to shops and restaurants in downtown Scottsdale, AZ. The bridge and 2 acre (0.8 ha) plaza were designed and inspired by local resident Paolo Soleri, an architect and artist who gained fame for constructing Arcosanti, an urban laboratory, in the 1970s. The bridge includes two 22 ft (6.7 m) tall, hollow pylons that were formed on-site with a one-sided template, a feat that could only be achieved with shotcrete. These pylons, as well as the two larger pylons, are covered with a brushed stainless steel casing. Shotcrete was also used to form structural walls on the canal bank and retaining walls in the plaza. These retaining walls were finished with Soleri's drip method: leftover concrete from the mixer is combined with sand, water, and indigenous earth and then dripped over an angled wall surface.

Project credits include: City of Scottsdale, Owner; Fisher Shotcrete, Inc., Shotcrete Contractor; Howard S. Wright, General Contractor; Douglas Architecture & Planning and Steve Martino & Associates/Gookin Engineers, Architects/Engineers; and Arizona Materials, Materials Supplier/Manufacturer.

Soleri Bridge and Plaza, Scottsdale, AZ

Honorable Mentions

PS #6—Rock Stabilization, Bronx, NY

Project credits include: New York City School Construction Authority, Owner; Moretrench American Corporation & Boulderscape Incorporation, Shotcrete Contractor; CM&E Con Inc., General Contractor; Langan Engineering and Environmental Services, Architect/Engineer; and Jenna Concrete, Material Supplier/Manufacturer.

Blaine Hill Viaduct Bridge—Route 40 Ohio Department of Transportation 248-10, St. Clairsville, OH

Project credits include: Ohio Department of Transportation, Owner; Suburban Maintenance & Construction, Inc., Shotcrete and General Contractor; Tran Systems—Ohio Department of Transportation, Architect/Engineer; and The Quikrete Companies, Material Supplier/Manufacturer.

Entries Now Being Accepted

ASA has opened the awards process for the eighth annual ASA Outstanding Shotcrete Project Awards Program to recognize excellence and innovation in projects in which the application of shotcrete has played a significant role. Winners will be invited to receive their award and present their projects during ASA's Annual Awards Banquet held in conjunction with World of Concrete 2013. For information on submitting entries, visit **www.Shotcrete.org/ASA OutstandingProjects.htm**. The deadline for entries is October 1, 2012.