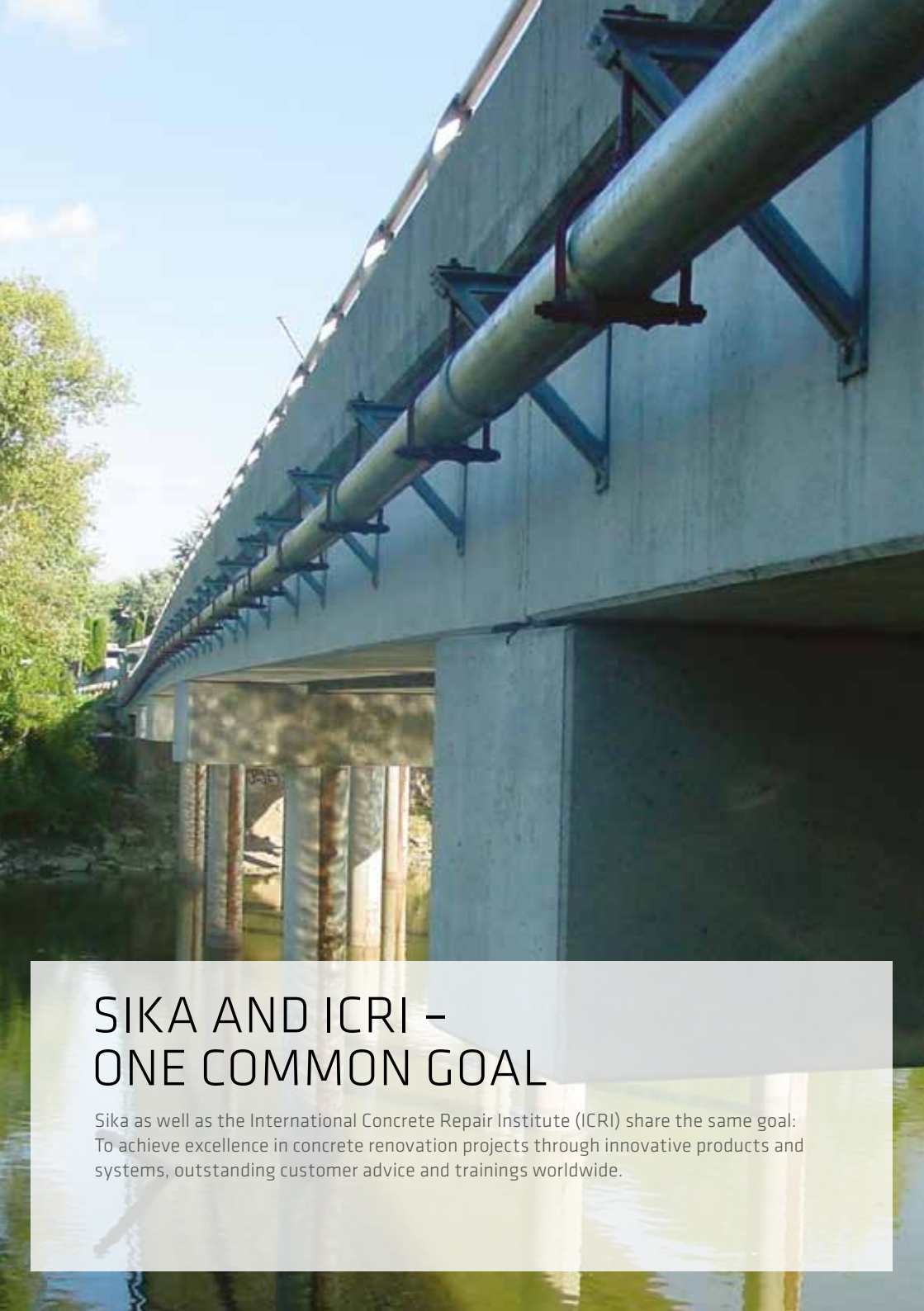
REFURBISHMENT ICRI AWARD-WINNING PROJECTS 1998 – 2013

SIKA – STRIVING FOR EXCELLENCE IN CONCRETE REFURBISHMENT

BUILDING TRUST



SIKA AND ICRI – ONE COMMON GOAL

Sika as well as the International Concrete Repair Institute (ICRI) share the same goal: To achieve excellence in concrete renovation projects through innovative products and systems, outstanding customer advice and trainings worldwide.

CONTENT

ICRI AWARDS PROGRAM

ICRI awards program honors and recognizes outstanding projects in the concrete repair industry since 1997.

INTERNATIONAL CONCRETE REPAIR INSTITUTE

The International Concrete Repair Institute (ICRI) was formed in 1988 as the International Association of Concrete Repair Specialists, by a group of pioneers who raised concerns over the proliferation of unqualified contractors entering the industry and the lack of standards and guidelines for concrete repair.

Since that time, ICRI has grown into a 2000-member strong international association devoted solely to concrete repair and restoration.

ICRI Mission Statement:
THE MISSION OF THE INTERNATIONAL CONCRETE REPAIR INSTITUTE IS TO BE A LEADING RESOURCE FOR EDUCATION AND INFORMATION TO IMPROVE THE QUALITY OF REPAIR, RESTORATION, AND PROTECTION OF CONCRETE AND OTHER STRUCTURES IN ACCORDANCE WITH CONSENSUS CRITERIA.

The philosophy of the group is that if the quality of work is improved, and purchasers of repair services feel that they are obtaining a durable product, the demand for their products and services will increase and the image of the concrete repair industry will be elevated. From its inception, the organization has strived on include the interests of contractors, engineers, and manufacturers in every aspect of its operations. The object is to bring together those who are truly interested in improving the concrete repair industry and use their concerted efforts to bring about meaningful change. Every attempt is made to ensure equitable representation for all in the organization's leadership, committee representation and the dissemination of technical expertise.

Obviously focussed in the North American market, ICRI is nevertheless well known internationally especially in Latin America, Middle East, South East Asia and Pacific. This association like Sika strives to improve the quality of the repair works in the refurbishment business.

Prizes are awarded in the following categories:

- High-Rise
- Low-Rise
- Historic
- Industrial
- Longevity
- Masonry
- Parking Structures
- Special Projects
- Transportation
- Water Systems
- Sustainability (added in 2012)

SIKA TECHNICAL EXCELLENCE

With 84 ICRI awards in 16 years Sika is the company with the most concrete repair projects awarded by the International Concrete Repair Institute (ICRI).

REFURBISHMENT - EXTENDING THE LIFE CYCLE

The built environment is in need of refurbishment. Maintenance and renewal make both economic and ecological sense. Sika has embraced the challenge. Armed with innovative products and new processes, we are well prepared to make ageing buildings and infrastructure facilities fit for the decades ahead.

As a single-source provider for the full range of concrete renovation products, Sika is ideally positioned. Not only do we offer mutually compatible products and systems to meet any particular requirement, we are above all able to provide customer advice and support based on in-depth know-how and more than a century of experience. These are indispensable prerequisites for sustainable solutions on projects.

INNOVATION THROUGH MOTIVATION, INSPIRATION AND TEAM WORK

Our Technology Centre takes global trends and local market needs into consideration when developing technologically advanced products and systems. The goal is to develop successful products for the refurbishment of buildings and infrastructure facilities.

SUSTAINABILITY

Refurbishing a structure is the best sustainable solution when compared to other options. ICRI did recognize this trend as since 2012, they introduced a new category: the sustainability award.

EXPERIENCE ALL OVER THE WORLD

Sika is a globally active company in the speciality and construction chemicals business. It has subsidiary manufacturing, sales and technical support facilities in over 70 countries around the world. Sika is the global market and technology leader in waterproofing, sealing, bonding, dampening, strengthening and the protection of buildings and civil engineering structures.

MEMBER OF
INTERNATIONAL
CONCRETE REPAIR
INSTITUTE

84 AWARDS FOR SIKA SUCCESSFUL IN THE PAST – COMMITTED FOR THE FUTURE

1998
Award of Excellence:
- Municipal

1999
2 Awards of Excellence:
- Municipal
- Special Projects

2000
Honorable Mention:
- Municipal

2001
Project of the Year:
- Special Projects

2 Awards of Excellence:
- High-Rise
- Municipal

2002
3 Awards of Excellence:
- High-Rise
- Longevity
- Transportation

2003
Award of Excellence:
- Water Structures

3 Honorable Mentions:
- High-Rise
- Transportation
- Water Structures

2004
Project of the year:
- Industrial

Award of Excellence:
- Transportation

5 Awards of Merit:
- Historic (3 awards)
- Strengthening
- Water Structures

2005
3 Awards of Excellence:
- High-Rise
- Historic
- Longevity

3 Awards of Merit:
- Longevity
- Parking Structures
- Special Projects

2006
Project of the Year:
- Parking Structures

2 Awards of Excellence:
- Longevity
- Transportation

3 Awards of Merit:
- Historic
- Longevity
- Water Structures

2007
3 Awards of Excellence:
- Low-Rise
- Historic
- Water Structures

5 Awards of Merit:
- Low-Rise
- Transportation
- Parking Structures
- Strengthening
- Special Projects

2008

3 Awards of Excellence:
- Parking Structures
- Strengthening
- Transportation

7 Awards of Merit:
- Historic
- Longevity
- Parking Structures
- Special Projects
- Strengthening (2 awards)
- Water Structures

2009

Award of Excellence:
- Strengthening

5 Awards of Merit:
- High-Rise
- Longevity
- Parking Structures
- Special Projects (2 awards)

2010

3 Awards of Excellence:
- High-Rise
- Special Projects
- Strengthening

2 Awards of Merit:
- Low-Rise
- Water Structures

2011

3 Awards of Excellence:
- High-Rise
- Low-Rise
- Special Projects

Award of Merit:
- Historic

2012

2 Awards of Sustainability incl.
Project of the Year:

5 Awards of Merit:
- High-Rise
- Historic
- Longevity
- Special Projects
- Parking Structures

2013

Award of Sustainability

3 Awards of Excellence:
- High-Rise
- Low-Rise
- Historic

7 Awards of Merit:
- High-Rise
- Low-Rise
- Historic (2 Awards)
- Industrial
- Special Projects
- Parking Structures

AWARDS 2013

AWARD OF EXCELLENCE: HISTORIC CATEGORY

Owner
Ks. Dr Tadeusz Nosek
Cracow, Poland

Project Engineers/ Designers
Sika Poland Sp. Zo.o.
Warszawa, Poland

Repair Contractor
Firma Konstrukcy Jna L. Sobieszek Cracow, Poland

Material Supplier/ Manufacturer
Sika Poland Sp. Zo.o.
Warszawa, Poland

Strengthening the Structure of St. Nicholas Church
Cracow, Poland

St. Nicholas Church, located in Krakow (Cracow), Poland, is one of the oldest monuments in Cracow. The oldest mention of the church dates back to 1229. It was designated as a parish church in 1327. After much redesign and rebuilding over the centuries, the church is currently classified as a baroque and neo-baroque three-nave, three-bay basilica.

The current construction was built on an already-existing foundation from the structure destroyed in the past. The stones used for the foundation and the limestone rock on which the church is located were subjected to washout and karst phenomenon over the centuries, leaving severe degradation. Acid water washout, as well as vibrations caused by increasing traffic–especially on the train track located just behind the church–were other causes of the severe deterioration of the foundation. This all led to the front wall deviating from vertical and falling away from the structural walls.

Cracking was seen in the chancel vaults, main nave, and the aisles, which resulted from a lack of rigid support, receiving the strutting forces through the walls. The original timber framing was not enough to stabilize the structure, so steel framing and braces were installed throughout the attic of the church, hidden to normal visitors. This new reinforcement allowed even transfer of the strutting forces through the walls, and movement of the church was decreased significantly. After the repairs were completed, the building was reopened to the public in 2012.

AWARD OF EXCELLENCE:
High-Rise Category

One Biscayne Tower Facade Restoration and Repair
Miami, Florida

AWARD OF EXCELLENCE:
Low-Rise Category

Reincarnation: The Nylo South Side Hotel
Dallas, Texas

AWARD OF MERIT:
High-Rise Category

Renovation of Soho Beach House
Miami Beach, Florida

AWARD OF MERIT:
Historic Category

Restoration of the Leeper Bridge (Sr 933)
South Bend, Indiana

AWARD OF MERIT:
Historic Category

Liberty Memorial Masonry Repairs
Kansas City, Missouri

AWARDS 2013

AWARD OF MERIT: LOW-RISE CATEGORY

Owner
Farmacéuticos MAYPO S.A. de C.V.Mexico, D.F.Project

Engineer/Designer
Eng. Ma. Del Carmen Saldaña Serrano

Repair Contractor
Quimec S.A. de C.V.Naucalpan, Mexico

Material Supplier/ Manufacturer
Sika Mexicana S.A. de C.V.Querétaro, Mexico

Maypo Office and Laboratory Building Seismic Upgrade
Mexico City, Mexico

The fourstory office and laboratory building was constructed in the early 1980s. Progress in the investigation of soil characteristics in Mexico City and state-of-the-art earthquake engineering have generated new design standards and construction methods that have improved the level of seismic safety of new buildings. However, existing buildings constructed with less stringent design standards present a challenge. Worried about the safety of their building, Maypo initiated a structural assessment and seismic upgrade for the property.

Because original building design information did not exist, diagnostic studies were performed, including planimetry and altimetry surveys to estimate the magnitude of differential settlements, bibliographic research of soil mechanics in the area, concrete excavation for steel reinforcement assessment, extraction of concrete cores, visual inspection, and three-dimensional computer modeling for a dynamic structural analysis. The studies revealed that the nonstructural masonry walls interfered with the free deformation of the main structure; the concrete slabs exhibited cracking, deflections, and excessive vibration; and the beams exhibited shear cracking at their ends. Furthermore, the computer model revealed that the columns were overloaded.

To structurally strengthen and seismically upgrade the building, new steel beams were retrofitted to stiffen the concrete slabs and surface flatness was recovered by installing a reinforced concrete overlay. Beam cracking was epoxy-injected to restore structural stiffness and improve behavior. Carbon fiber-reinforced polymer (CFRP) fabric was installed at beams to increase shear strength and at columns to increase strength and ductility.

AWARD OF MERIT:
Industrial Category

University of Missouri Power Plantconcrete Chimneys Rehabilitation
Columbia, Missouri

AWARD OF MERIT:
Parking Structures Category

One Biscayne Tower Parking Garage Repairs
Miami, Florida

AWARD OF MERIT:
Special Projects Category

Preservation of LSU Tiger Stadium
Baton Rouge, Louisiana

AWARD OF SUSTAINABILITY:

Gold Bar Primary Clarifiers No. 7 and 8: Concrete Beam and Wall Repairs
Edmonton, AB, Canada

AWARDS 2012

AWARD OF MERIT: LONGEVITY CATEGORY

Owner
University of California,
Berkeley, California

Project Engineer/Designer
Degenkolb Engineers
San Francisco, California

Repair Contractor
Valentine Corp.
San Rafael, California

Material Supplier/Manufacturer
Sika Corporation
Lyndhurst, New Jersey

Evans Hall Restoration – 12 Years Later
Berkeley, California

Evans Hall, at the University of California in Berkeley, is a 10-story building that in 1999, after almost 30 years in use with little maintenance done, safety concerns were raised as a result of pieces of concrete falling from the building's facade. Poor initial concrete placement with minimal coverage of reinforcing steel, combined with exposure to CO_2 and moist salty air from nearby San Francisco Bay, led to rapidly accelerated corrosion of the building's reinforcing bars. Because the building sits on a major seismic fault line, the repairs were needed to maintain the structural integrity of the building. The initial work on the building was divided into two phases. In Phase I, hundreds of spall repairs were made to the structure; then, the entire building was re-leveled with polymer-modified mortar with a spray-applied method. Phase II consisted of applying a high-performance, anti-carbonation, crack-bridging, elastomeric wall-coating system for waterproofing and corrosion protection, as well as a much-needed aesthetic upgrade.

Twelve years later, all of the spall repairs are performing well and there are no signs of new spalls occurring. Evans Hall is expected to last another 41 or more years without major repair or restoration. There are no signs of cracks or rust stains on the building, and the custom colors chosen show no signs of deterioration. This coating system seems to have made a significant impact on the building's ability to stay watertight and resist corrosion, which should prevent new corrosion from occurring.

PROJECT OF THE YEAR:
AWARD OF SUSTAINABILITY
Low-Rise Category
The Todd Bolender Center for Dance and Creativity
Kansas City, Missouri

AWARD OF MERIT:
High-Rise Category

Marriott Frenchman's Reef – Ocean Tower and Water Cistern Repairs
St. Thomas, U.S. Virgin Islands

AWARD OF MERIT:
Historic Category

Point Arena Lighthouse Restoration
Point Arena, California

AWARD OF MERIT:
Special Projects Category

Bayshore Boulevard Balustrade Restoration
Tampa, Florida

AWARD OF MERIT:
Parking Structures Category

Rehabilitation of the Jordan Commons Parking Structures
Sandy, Utah

AWARD OF SUSTAINABILITY

Commonwealth Stadium Structural Repairs And Rehabilitation
Edmonton, AB, Canada

AWARDS 2011

AWARD OF MERIT: HISTORIC CATEGORY

Owner
Florida DEP – Office of Greenways & Trails, Tallahassee, Florida

Project Engineer/Designer
Wilson Miller Stantec, Tallahassee, Florida

Repair Contractor
Intron Technologies, Inc.,Jacksonville, Florida

Material Supplier/ Manufacturer
Sika Corporation
Lyndhurst, New Jersey

Rehabilitation of the Missouri/Ohio Historic Bridge
Mile Marker 39.0 of the Florida Keys Overseas Heritage Trail

More than a century ago, Henry Flagler had the desire and vision to connect the East Coast railroad network to Key West. The project started in 1905 and was completed in 1912. The Missouri/Ohio Historic Bridge is one of the many railroad bridges that were constructed as part of this enormous construction effort.

While the railroad initially led to boom years, numerous external factors led to the decline of the railroad economy. The storm of the century (1935) struck the Florida Keys and washed away much of the railroad network. The bridge survived, but the railroad could not afford to rebuild the entire network. The concrete bridges, such as the Missouri/Ohio Historic Bridge, were then widened by placing steel beams across them and encasing them with concrete, opening them to vehicular traffic. In the late 1990s, a new bridge was built to replace the 90-year-old Missouri/Ohio Historic Bridge.

The Florida Keys Overseas Heritage Trail (FKOHT) decided to restore this bridge and make it part of the planned 60 mile (96.5 km) long trail. The steel columns had severely corroded and the structure became a safety concern. Cracks and spalls had to be repaired to restore the structure. Carbon fiber-reinforced polymer rods were embedded in the structure to make it safe. This project represents the ideal example of sustainability in the construction industry—a century-old structure is repurposed after 30 years and, 70 years later, is remodeled once again to serve a new purpose and will be preserved for many more years to come.

AWARD OF EXCELLENCE:
High-Rise Category

Bellaire Tower – The Jewel of Russian Hill
San Francisco, California

AWARD OF EXCELLENCE:
Special Projects Category

A Job That Nobody Wanted
San Francisco, California

AWARD OF EXCELLENCE:
Low-Rise Category

Baylor Cancer Hospital Concrete Strengthening for Collins Family Bridge of Hope
Dallas, Texas

AWARDS 2010

AWARD OF EXCELLENCE: STRENGTHENING CATEGORY

Owner
Camp Verde Sanitary
District of Yavapai County
Camp Verde, Arizona

Project Engineer/Designer
Structural Technology
Consultants
San Diego, California

Repair Contractor
Truesdell Corporation
Tempe, Arizona

**Material Supplier/
Manufacturer**
Sika Corporation
Lyndhurst, New Jersey

Camp Verde Wastewater Treatment Plant Repair
Camp Verde, Arizona

A newly constructed wastewater treatment facility in Camp Verde, AZ, was identified as being under designed when large cracks formed on two of the concrete walls during its initial water test. The 128 x 92.5 ft (39 x 28 m) water treatment tank is a reinforced concrete wall and slab system comprised of 10 individual cells. The concrete is reinforced with steel reinforcement. The walls are 18 ft (5.5 m) tall and some reach an unsupported length of over 90 ft (27.4 m). The large spans result in high bending forces, which must be developed without allowing cracking.

Evaluations of the structure determined that filling the tank would overload the structural walls due to insufficient horizontal reinforcement at the wall intersections. A conventional repair method had been previously developed using reinforced concrete bolsters at all of the intersecting walls and at the wall-to-slab connections. This option was extremely costly and would have resulted in a substantial reduction to the tank's capacity.
A new design build team was tasked with developing an alternate strengthening solution that considered the strength requirements associated with various deficiencies, load conditions, and future operations while maintaining the desired volume capacity of the tank, all with minimal impact to the construction schedule.
After weeks of evaluation and design work, the strengthening project was completed in approximately 2 months. At several junctures, the project was nearly scrapped, and if not for the creative curtailing of the carbon fiber-reinforced polymer and the unique application of bolts and steel plates, combined with the appropriate use of traditional concrete dowels, this project would not have succeeded.

AWARD OF EXCELLENCE:
High-Rise Category

Terminal Tower Facade Repairs
Cleveland, Ohio

AWARD OF EXCELLENCE:
Special Projects Category

SCDNR Marine Resources Research Institute Corrosion Mitigation
Columbia, South Carolina

AWARD OF MERIT:
Low-Rise Category

Repair of the Sea Vista Condominiums
South Padre Island, Texas

AWARD OF MERIT:
Water Structures Category

David L. Tippin Water Treatment Facility Rehabilitation
Tampa, Florida

AWARDS 2009

AWARD OF MERIT: STRENGTHENING CATEGORY

Owner
Instituto Nacional de Vias
Bogota, Colombia

Project Engineer/Designer
Consorcio Camacho Gomez
Bogota, Colombia

Repair Contractor
Noarco S.A.
Cartagena, Colombia

Material Supplier/ Manufacturer
Sika Colombia
Tocancipa, Colombia

Rehabilitation of the Pumarejo Bridge
Colombia, South America

The Pumarejo Bridge is the largest bridge in Colombia, South America. Constructed 35 years ago to allow development to the northern region and to link Barranquilla City with the eastern shore of the Magdalena River, it was considered one of the concrete marvels in the country in 2006 by the Colombian Ready Mixed Concrete Association.

Located at a distance of 12.4 miles (20 km) from the Caribbean Sea, the Pumarejo Bridge has withstood a harsh environment of marine breeze full of chlorides, which has deteriorated the concrete surface little by little. In addition, the strong stream of the Magdalena River (the largest in the country) has eroded the concrete surface of the columns placed in the water.

The damages comprised spalled concrete in longitudinal beams, cap beams, and columns due to the corrosion process inside the structure and a loss of coarse aggregates in the concrete of the columns placed in the water due to the stream of the river.

The rehabilitation procedure included the withdrawal of spalled concretes; the cleaning and protection of the steel reinforcement bars; the addition of repair mortars; steel jacketing of columns; the addition of impregnation corrosion inhibitors; and the application of a protective coating over a surface of 538,196 square feet (50,000 square meters). The total investment was $3 million (U.S.).

AWARD OF MERIT:
High-Rise Category

The LGR Center Renovation of Exterior Facade and Structure
Amherst, Massachusetts

AWARD OF MERIT:
Longevity Category

The Renovation of Cassell Coliseum at Virginia Polytechnic Institute – 11 Years Later
Blacksburg, Virginia

AWARD OF MERIT:
Parking Structures Category

Chapel Hill Street Parking Garage Repair
Durham, North Carolina

AWARD OF MERIT:
Special Projects Category

Arizona Veterans Memorial Coliseum Roof Repairs
Phoenix, Arizona

AWARD OF MERIT:
Special Projects Category

Lake Merritt Boat House Restoration
Oakland, California

AWARDS 2008

AWARD OF EXCELLENCE: TRANSPORTATION CATEGORY

Owner
Florida DOT
Tampa, Florida

Project Engineer/Designer
SDR Engineering Consultants, Inc.
Tallahassee, Florida

Repair Contractor
Intron Technologies, Inc.
Jacksonville, Florida

Material Suppliers/ Manufacturers
Sika Corporation
Lyndhurst, New Jersey
University of Florida
Gainsville, Florida

Sunshine Skyway Bridge Trestle Span Repairs
Tampa Bay, Florida

The Sunshine Skyway Bridge is one of the most recognized structures in the United States. With its signature bright yellow stay cables, the bridge resembles a sailboat, with its towers holding up the triangular sails across Tampa Bay. At the time of construction, it was the world's longest bridge, having a cable-stay main span with an overall length of 5-1/2 miles (8.8 km). The main span is 1200 ft (366 m) and the vertical clearance is over 190 ft (58 m).

Shear cracking was observed during routine inspections of the trestle span girders. The inspection history indicated that the number of cracked beams had increased over time. In addition to the deficient AASHTO girders, cracks were observed in numerous pier caps. In some cases, these cracks were very large and exhibited visible signs of water penetration and damage. The shear cracks in the AASHTO girders and the pile caps were epoxy injected. All spalls were patched using a cementitious repair mortar. All uneven surfaces were filled in with a leveling mortar and all bugholes and smaller cavities were repaired using an epoxy paste. In addition, a clear protective sealer was applied to protect the concrete further from moisture and chloride intrusion.

The deficient girders also needed to be structurally strengthened to carry additional loads. The use of a carbon fiber system was chosen to structurally repair the girders. By planning out the construction sequence and using a well trained work force that had previous experience working with CFRP materials, the job was completed one month ahead of schedule.

AWARD OF EXCELLENCE:
Parking Structures Category

Rehabilitation of 55 E. Monroe Street Parking Garage
Chicago, Illinois

AWARD OF EXCELLENCE:
Strengthening Category

Suny Health & Science Center Brooklyn Parking Structure Restoration
Brooklyn, New York

AWARD OF MERIT:
Historic Category

Restoration of Miami City Hall
Miami Beach, Florida

AWARDS 2008

AWARD OF MERIT: LONGEVITY CATEGORY

Owner
Rose Bowl Operating Company
Pasadena, California

Project Engineer/Designer
Wheeler & Gray
Pasadena, California

Repair Contractor
Western Waterproofing
Anaheim, California

Material Suppliers/ Manufacturers
Sika Corporation
Lyndhurst, New Jersey

The Rose Bowl Stadium Restoration
Pasadena, California

When one thinks of iconic sporting venues in the U.S., there are few that are larger or more historic than the Rose Bowl Stadium in Pasadena, CA. Originally built in 1922, the original capacity for the stadium was 57,000 people. In 1930, the wood bleachers were replaced with cast-in-place reinforced concrete bleachers with wooden benches. Additional rows at the back of the seating bowl were added increasing the capacity up to 80,000 people. Eventually, the total capacity of the stadium was increased to over 100,000 people, but no major repairs were ever made to the concrete structure of the stadium itself.

Over years of use and wear and tear, there were a few issues with the concrete deterioration that needed to be addressed. The repair work, which began in March of 1998, selected a system approach to repair both the damage of the entire concrete surface and the spalls and cracks caused by the corrosion of the steel reinforcing in the concrete risers and treads. 2008 marks the 10-year anniversary of the Rose Bowl Stadium concrete repair project. Over that time, the stadium has continued to be a highly visible, greatly used sports arena hosting major sporting events such as the 1999 women's FIFA World Cup final and the 2002 and 2006 NCAA BCS college football championship games.

After 10 years of use, the repairs that were made to the stadium are still standing up to the test of time and other than dirt pick up, still look as good today as they did when they were made.

AWARD OF MERIT:
Parking Structures Category

Repair and Waterproofing of Parking Deck at UPS
New York, New York

AWARD OF MERIT:
Special Projects Category

Original Philadelphia School Bus Parking and Repair Facility
Philadelphia, Pennsylvania

AWARD OF MERIT:
Strengthening Category

Rehabilitation and Seismic Retrofit of Residencias Galileo
Caracas, Venezuela

AWARD OF MERIT:
Strengthening Category

Strengthening of Two Bridges in Bogota City
Bogota City, Colombia

AWARD OF MERIT:
Water Structures Category

Repairs to the Morris Sheppard Dam and Powerhouse at Possum Kingdom Lake
Graford, Texas

AWARDS 2007

AWARD OF EXCELLENCE: WATER STRUCTURES CATEGORY

Owner
Division of Capital Asset Management
Boston, Massachusetts

Project Engineer/ Designer
Gale Associates, Inc.
Weymouth, Massachusetts

Repair Contractor
Architectural Building & Restoration
Boston, Massachusetts

Material Supplier/ Manufacturer
Sika Corporation
Scituate, Rhode Island

Concrete Restoration of three Underground Water Storage Tanks
Boston, Massachusetts

The water storage tanks, with an approximate capacity of 225,000 galons (851,718l) each, were constructed in the mid-1980s. They are located three stories below-grade beneath a ten-story building in Boston. The tanks consist of concrete walls, base slab, and mid-height level concrete beam grids. Historically, the tanks had been used to store clean water for use by the building's mechanical air conditioning equipment. Each tank was leaking thousands of gallons every day, causing concern about the possible undermining of the structure.
Examination of the tanks revealed delamination of a crystalline parge coat applied during an earlier repair attempt. The coating was flaking off the surface of the concrete. Reflective cracking through the waterproof coating was widespread. Exposed wire mesh reinforcement was observed at column and beam locations. There was widespread cracking of the surface, with multiple spalls and delaminated concrete at structural steel wide-flange columns. A cementitious paste appeared to have leached from the bottom of several wall cracks. Due to the amount of surface loss to the concrete, it was decided to apply resurfacing mortar to the entire surface of the tank interior, overlaid with a fiberglass reinforced epoxy coating.
Access limitations, including "confined access" requirements, presented logistical and manpower issues. A variety of different products required a contractor experienced with several different waterproofing techniques. The success of the project has been highlighted by no loss of water and was only achievable by having a team approach between the engineer, owner, and the contractor.

AWARD OF MERIT:
Special Projects Category

Arizona State University Sun Devil Stadium Repairs
Tempe, Arizona

AWARD OF EXCELLENCE:
Low-Rise Category

Marriott Frenchman's Reef and Morningstar Beach Resort Balcony Repairs
St.Thomas, U.S. Virgin Islands

AWARD OF MERIT:
Low-Rise Category

United States Air Force Harmon Hall Repair Project
Colorado Springs, Colorado

AWARDS 2007

AWARD OF EXCELLENCE: HISTORIC CATEGORY

Owner
Bok Tower Gardens
Foundation, Inc.
Lake Wales, Florida

Project Engineer/Designer
Matco Associates, Inc.
Pittsburgh, Pennsylvania

Repair Contractor
Vector Corrosion Technologies
Winnipeg, Manitoba, Canada

Material Supplier
Sika Corporation
Lyndhurst, New Jersey

Project Partners
Corrosion Specialist
C-Probe Systems, Ltd.
Cheshire, England

Bok Tower Restoration
Lake Wales, Florida

Bok Tower was constructed between 1927 and 1929 and houses a 60-bell carillon (set of tuned bells). The tower is 205 ft (62 m) tall, has seven floors, and is constructed of a masonry-encased steel frame. On August 21, 1972, Bok Tower was listed as a National Historic Landmark and with the National Register of Historic Places.

Cracks developed in the coquina brick, largely in the areas of the spandrel beams. Highly distressed areas showed signs of bowing or displacement from the beam and masonry backup. In some cases the coquina brick had failed completely, creating a dangerous condition.

Corrosion of horizontal structural steel members caused the coquina brick and underlying masonry to separate from the tower. The primary areas of concern for corrosion were the top plate on the horizontal beams and the intersection between the columns and beams. A secondary but still important consideration was the full perimeter of the spandrel beams including the variable corrosion condition of the web and exposed flanges.

To address the corrosion and preserve the appearance of this historic landmark, the coquina brick was stripped and rebuilt around the spandrel beams and an impressed current cathodic protection system was installed using a discrete anode system and advanced network management and control system.

Field work started in early October 2006 and was completed in mid-January 2007 in time for a large concert/convention planned at the facility for February 1, 2007.

AWARD OF MERIT:
Strengthening Category

Leon County Courthouse Parking Garage Repair and Strengthening
Tallahassee, Florida

AWARD OF MERIT:
Transportation Category

Emergency Repair of Sh 183 Bridge on Loop 12
Irving, Texas

AWARD OF MERIT:
Parking Structures Category

Parking Garage Repairs for the Parking Authority of River City
Louisville, Kentucky

AWARDS 2006

PROJECT OF THE YEAR: PARKING STRUCTURES CATEGORY

Owner
Northampton Borough Council Parking & Security Operations
Northampton, UK

Project Engineer/Designer
Structural Healthcare Associates
Manchester, UK

Repair Contractor
Makers UK Limited
Coventry, UK

Material Suppliers/ Manufacturers
Sika Limited
Hertfordshire, UK
C-Probe Systems, Ltd
Cheshire, UK

Mayorhold MSCP
Northampton, United Kingdom

The Royal Institute of British Architects included the parking garage on a list of buildings "worthy of demolition." So-called "X-listing" would give planners powers to refuse change of use and grant beneficial permissions for replacement with a grant fund to "tip the balance in favor of demolition and appropriate replacement in particularly deserving cases."The omens therefore were not good for a repair and enhancement program for this structure. The refurbishment program, however, has completely transformed both the external appearance and the internal functionality and ambience, as well as stabilizing the structure for a revitalized 25-year life.

The parking garage, situated in Northampton and built in 1973, has spaces for 1,100 cars on five levels. The specialty parking contractor worked in partnership with a major facilities management firm to undertake the refurbishment and upgrading works in 2004 and 2005.

Over the years, the condition of the parking garage declined in terms of overall appearance and extent of reinforcement corrosion. Spalling of concrete was evident to both the deck and soffit downstand beams, including ring-anode effects from previous emergency repairs.

The scheme embraces state-of-the-art repair techniques and cutting-edge technology to control corrosion and added new lighting to significantly improve the "feel" and safety of the garage for the customers. The effectiveness of the scheme is managed through Internet access to reporting updated on a monthly basis and annually audited for accredited performance.

AWARD OF EXCELLENCE:
Longevity Category

Hallmark Condominium Balcony Repair
Alexandria, Virginia

AWARD OF EXCELLENCE:
Transportation Category

State Highway 183 Macarthur Boulevard Overpass Emergency Repair
Irving, Texas

AWARD OF MERIT:
Historic Category

Historic Restoration of 330 Stuart Street
Boston, Massachusetts

AWARD OF MERIT:
Longevity Category

Silver Jubilee Bridge Approach Viaducts Repair
Runcorn, United Kingdom

AWARD OF MERIT:
Water Structures Category

Columbine Water Treatment Plant Repair
Thornton, Colorado

AWARDS 2005

AWARD OF EXCELLENCE: LONGEVITY CATEGORY

Owner
PPL Corporation
Allentown, Pennsylvania

Project Engineer/Designer
CTLGroup
Skokie, Illinois
Kline Engineering, PC
Port Washington, New York

Repair Contractor
Pullman Power
Kansas City, Missouri

Material Supplier/ Manufacturer
Sika Corporation
Lyndhurst, New Jersey

Rehabilitation of Two Hyperbolic Cooling Towers
Washingtonville, Pennsylvania

Two hyperbolic concrete cooling towers serving a steam electric generating station were put into service in 1972 and 1973. By 1985, they exhibited significant deterioration, corrosion of embedded steel, and water leakage through the shells. These massive towers, were essential to the plant's operation. They would need major repairs, which could be carried out only during scheduled outages to avoid disruptions in the area's power supply.

Scheduling repairs was only one of the project's challenges. Providing access to the interior and exterior of the towers to allow thorough inspection and repair was difficult. Careful structural analysis was required to maintain the towers' structural integrity while repairs were under way. Repair materials had to be evaluated and selected for their ability to withstand the unusual conditions within the towers.

Using visual inspection, hammer sounding throughout both towers, and laboratory testing of core samples, investigators identified the types and extent of concrete deterioration. In addition to the spalling, corrosion, and leakage already noted, they found cracks in the support columns and ring beams at the bases of the towers. Repair crews removed the deteriorated concrete from the tower shells with pneumatic chipping hammers and filled the created voids with dry-mix shotcrete. They sealed cooling tower interior surfaces with a water- and vapor-proof epoxy coating. They cleaned out cracks in the supporting columns and ring beam and sealed them with epoxy.

Meticulous quality control testing and inspection during repairs helped ensure the project's success. The work accomplished between 1988 and 1990 has demonstrated its durability and significantly extended the towers' service life.

AWARD OF EXCELLENCE:
High-Rise Category

One and Four Longfellow Towers Project
Boston, Massachusetts

AWARD OF EXCELLENCE:
Historic Category

Alcatraz Cellhouse
San Francisco, California

AWARD OF MERIT:
Longevity Category

Baldwin Reservoir Project
Cleveland, Ohio

AWARD OF MERIT:
Parking Structures Category

6Th Street Parking Garage Restoration
Louisville, Kentucky

AWARD OF MERIT:
Special Projects Category

Structural Restoration of Florida's Gulfarium
Fort Walton Beach, Florida

AWARDS 2004

PROJECT OF THE YEAR: INDUSTRIAL CATEGORY

Owner
Holcim (U.S.) Inc.
Florence, Colorado

Project Engineers/Designers
Construction Technology Laboratories, Inc.Skokie, IL
Walker Restoration Consultants, Greenwood Village, CO
Holcim Group Support (Canada), Ltd., Mississauga, Ontario, Canada

Repair Contractor
Structural Preservation Systems, Inc.
Baltimore, Maryland

Material Suppliers
VSL, Hanover, Maryland
Sika Corporation
Lyndhurst, New Jersey

Strengthening of a Reinforced Concrete Preheater Tower
Florence, Colorado

Inspection by plant personnel revealed cracking in the concrete frame of a 7-level preheater tower. A structural engineering consulting firm was retained to evaluate the extent of the problem. The firm mobilized at the site in less than 24 hours and performed an initial structural safety assessment. A comprehensive structural evaluation indicated that the structure required strengthening.

After considering structural capacity and serviceability requirements, durability issues, the high-temperature operating environment, constructability, and an aggressive construction schedule, the team recommended a retrofit consisting of bonded post-tensioning within internal holes drilled in the beams. This solution was quite extraordinary, as it required precision-drilling horizontal holes up to 87 ft long in the beams of the elevated frame structure, without cutting existing embedded reinforcement.

Nondestructive impulse radar testing was used to locate existing embedded reinforcing steel, as well as to monitor the drilled holes' trajectory. This process helped ensure proper tendon alignment and prevent damage to embedded steel. The cored holes served as post-tensioning ducts. The repairs were executed quickly and under challenging circumstances, including working high on the exposed structure through a cold winter with severe wind conditions. The unique retrofit resulted in a structure that is stronger, more serviceable, and more durable than the original tower.

AWARD OF EXCELLENCE:
Transportation Category

Hopkins and Clinton Streets Bridge Rehabilitation
Defiance, Ohio

AWARD OF MERIT:
Historic Category

Renovation of Baltimore's Historic Hippodrome Theater
Baltimore, Maryland

AWARD OF MERIT:
Historic Category

Restoration of the Ca'd'Zan Mansion
Sarasota, Florida

AWARD OF MERIT:
Historic Category

Restoration of Two Historic Stadiums in Lakeland, Florida
Lakeland, Florida

AWARD OF MERIT:
Strengthening Category

Promenade Plaza Rehabilitation and Strengthening
Bethesda, Maryland

AWARD OF MERIT:
Water Structures Category

Sutro Reservoir
San Francisco, California

AWARDS 2003

AWARD OF EXCELLENCE: WATER STRUCTURES CATEGORY

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

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 shear 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.

HONORABLE MENTION:
High-Rise Category

Sugar Top Resort Facade Restoration
Banner Elk, North Carolina

HONORABLE MENTION:
Transportation Category

JTA Skyway Double Tee Beams Restoration
Jacksonville, Florida

HONORABLE MENTION:
Water Structures Category

Rehabilitation of Charlotteburg Reservoir Dam
West Milford, New Jersey

AWARDS 2002

AWARD OF EXCELLENCE: TRANSPORTATION CATEGORY

Owner
Utah DOT
Salt Lake City, Utah

Project Engineer/Designer
University of Utah
Salt Lake City, Utah

Repair Contractor
Gerber Construction
Lehi, Utah

Material Supplier
Sika Corporation
Lyndhurst, New Jersey

QC Inspector
Richards Consulting
Salt Lake City, Utah

Interstate 80 Seismic Upgrade
Salt Lake City, Utah

In spring 2000 a number of bridges in Salt Lake City, built during the 1960's, were repaired. The heart of the project was to strengthen bridge structures that were in danger of collapsing in the event of a large earthquake. All traffic lanes needed to be kept open during construction, even with the additional traffic volume from events leading up to the coming 2002 Winter Olympic Games.

Engineers at the local university were presented with the unique opportunity to conduct full-scale, in-situ tests of the fiber reinforced polymer (FRP) system on similar bridge bents that were scheduled for demolition during new freeway construction in another part of the city. This testing confirmed their design calculations that upgrading these critical bridge locations on I-80 with the FRP system would make them more resistant to the damaging effects of a large-scale earthquake.

A considerable amount of concrete repair was required on many of these 25+ year-old columns prior to the installation of the FRP. Once all of the corrosion-induced concrete damage was repaired, the installation of the FRP was able to move forward. Following the curing and testing of the FRP, it was coated with a textured coating for UV resistance and abrasion protection. Large amounts of testing were conducted on the FRP during the installation to verify strengths, stiffness, fiber volume, resin/fiber ratio, thickness and Tg. Also, long-term testing is being conducted and remotely monitored by engineers at the university to investigate the performance and environmental impacts of the FRP.

AWARD OF EXCELLENCE:
High-Rise

Fermi National Accelerator Laboratory
Wilson Hall Structural Modifications
Batavia, Illinois

AWARD OF EXCELLENCE:
Longevity Category

Pinnacle Port Restoration
Panama City Beach, Florida

AWARDS 2001

PROJECT OF THE YEAR: SPECIAL PROJECTS CATEGORY

Owner
Ohio State University
Columbus, Ohio

Project Engineer/Designer
IC Construction
Akron, Ohio

Repair Contractor
Osborn Architects & Engineers
Cleveland, Ohio

Material Suppliers
Sika Corporation
Lyndhurst, New Jersey
Triventure
Columbus, Ohio

Ohio State "Horseshoe" Renovation
Columbus, Ohio

Nearly 32 million fans have passed through the turnstiles over the stadium's 75-year history. All this activity caused the stadium to be in dire need of repair. The first major renovation project ever done on Ohio Stadium started in 1998.

While modernizing the facility and adding to the capacity, all three decks of the stadium were in bad shape and needed to be removed and replaced. The worst area was the north side of the C deck, where ready-mixed concrete was used as a full-depth repair. In other areas, a polymer-modified repair mortar was hand-applied using shotcrete equipment. During the course of renovation, it was discovered that the existing concrete columns were not properly reinforced. Despite having served its function for over 75 years, the columns needed to be strengthened in order to comply with current building code. An innovative carbon fiber reinforced polymer (CFRP) system was designed and installed in a rapid fashion, allowing the fast-track project to remain on schedule.

The renovation of the stadium was a three-year project: Beginning in December 1998, with work being completed in stages so as not to interfere with the home games of the Ohio State Buckeyes. During the course of construction, much of which took place during the cold winter months, not one home game was cancelled or postponed. To get the stadium ready for both the 2000 and 2001 home openers, the work schedule was accelerated, but milestones were met.

AWARD OF EXCELLENCE:
High-Rise Category

Buchanan House Repair
Arlington, Virginia

AWARD OF EXCELLENCE:
Municipal Category

Joint Water Pollution Control Plant Repair
Carson, California

AWARDS 1998 – 2000

2000 AWARDS
Honorable Mention:
Municipal Category

Ogden Municipal Building
Ogden, Utah

1999 AWARDS
Award of Excellence:
Municipal Category

Dittmer Chemistry Laboratory
Tallahassee, Florida

1999 AWARDS
Award Of Excellence:
Special Projects Category

St. Anne's Courtsurrey,
Surrey, United Kingdom

1998 AWARDS
AWARD OF EXCELLENCE:
Municipal Category

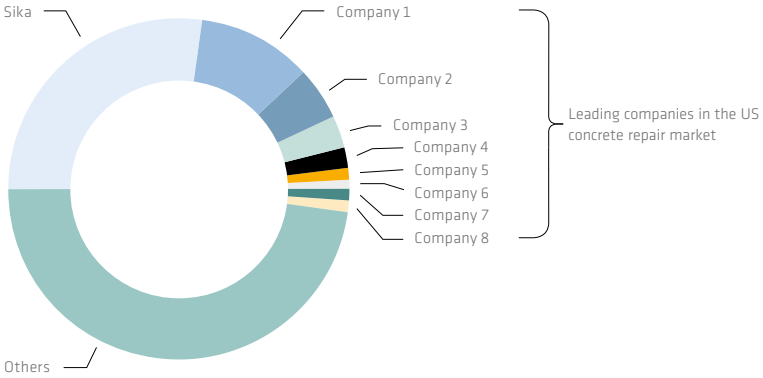
Exterior Renovations to Cassell Coliseum
Lyndhurst, New Jersey

Cassel Coliseum, Lyndhurst NJ

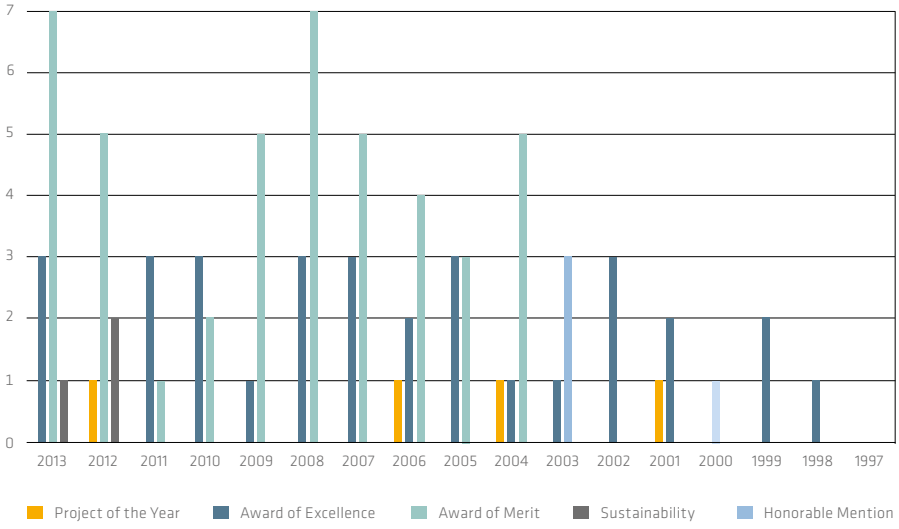
SIKA ICRI AWARDS – STATISTICS

Sika is the number one ICRI award-winning company

Number of ICRI Awards from 1997 to 2013 (305 Awards)



Sika ICRI Awards



Source: www.ICRI.org

FOR MORE REFURBISHMENT INFORMATION

WHO WE ARE

Sika AG, Switzerland, is a globally active specialty chemicals company. Sika supplies the building and construction industry as well as manufacturing industries (automotive, bus, truck, rail, solar and wind power plants, facades). Sika is a leader in processing materials used in sealing, bonding, damping, reinforcing and protecting loadbearing structures. Sika's product lines feature highquality concrete admixtures, specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

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