The Past, Present, and Future of the American Concrete Pavement Association

A CONCRETE LEGACY

By Bill Davenport, Gerald Voigt and Peter Deem
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About the Cover
The cover depicts the U.S. flag against an image of the first slipform paving machine. These images represent the enduring innovative spirit that represents ACPA and its members. Cover illustration by Chris Smith.

About this Publication
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Although every effort was made to capture and express details as factually and accurately as possible, this publication—as with any account of history—relies upon records and personal accounts that may not be complete or flawless.
December 29, 2013

Congratulations on 50 Years of Serving the Pavement Industry

It is my pleasure to congratulate the American Concrete Pavement Association (ACPA) on its 50th anniversary. The U.S. transportation system has changed greatly since ACPA was formed in 1963, but throughout the ensuing decades you and your members have played an important role in helping it grow to meet the needs of the Nation.

Over the years, the American Concrete Pavement Association has worked closely with the U.S. Department of Transportation, particularly the Federal Aviation Administration and the Federal Highway Administration. Your close cooperation with us and with the American Association of State Highway and Transportation Officials, State transportation departments, and other industry associations has been especially valuable in providing research and technical expertise relating to concrete paving materials. All of us in the transportation sector have appreciated ACPA’s dedication to maintaining and improving standards of workmanship, building relationships, and promoting high ethical and technical standards among its members.

Thank you for all that you and your members have done to improve transportation infrastructure, by building, rehabilitating, and preserving the Nation’s highways, airports, roadways, and bridges. I wish you many more years of success.

Sincerely,

Anthony R. Foxx
Congratulations to ACPA on 50 years

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A Concrete Legacy: Prologue
A Concrete Legacy: Prologue

Following what is commonly known as the second industrial revolution of the late 19th century, America charged full speed into the 20th century.

The nation was growing, as evidenced by the doubling of the U.S. population in the first 50 years of the century.¹ At the same time, the country was transforming from an agrarian to industrial society. Many factors are credited with fueling that transformation, including innovation, imagination, and ambition. But the journey would have been impossible without a reliable network of roadways, highways, and airports. Of course, many of those pavements were constructed with concrete, and in fact, concrete remains the pavement material of choice for long-lasting, reliable pavements.

This is the story of the American Concrete Pavement Association, and the role the association, its allies, and its members have had in building and preserving that network. Although our story begins in 1963, it would not be complete without first exploring some of the landmark events that influenced the construction of the nation’s surface transportation infrastructure as we know it today.

The goal of this chapter is not an attempt to capture the complete story of heavy and highway construction in America. Instead, it is a snapshot of the early milestones and people that set into motion the nation’s surface-transportation infrastructure as we know it today.

America’s First Interstate Highway

In 1784, a year after the end of the American Revolutionary War, President George Washington set out on a journey whose purpose was to keep the young nation united. He traveled from his home in Mount Vernon, Va., to the Ohio country, covering 680 miles in five weeks. His goal was to “open a wide door; and make a smooth way for the produce of that Country to pass our Markets before the trade may get into another channel.”

The roadway Washington envisioned would be built along a network of Indian hunting paths called the Nemacolin’s Trail. It took 50 years to convert the trail into the federally-funded “National Highway,” but the 600-mile-long highway eventually traversed six states and connected the Atlantic Ocean with the Mississippi Valley. The highway became U.S. Route 40, one of the first officially recognized highways in the United States.²

First Concrete Pavement

Another milestone event was the placement of the nation’s very first portland cement concrete pavement in 1891. George W. Bartholomew, an inventor who founded Buckeye Portland Cement Company in Bellefontaine, Ohio, in 1886 after learning about cement production in Germany and at the San Antonio Cement Co. of Texas. Bartholomew proposed the pavement to city officials of Bellefontaine, Ohio.³

He believed the cement he was producing in his small laboratory could be used to produce a hard, durable paved surface. After two years spent...
convincing city officials and citizens, he finally received permission to build America’s first concrete pavement. As part of the agreement, he had to donate all the materials. There was one other stipulation: Bartholomew had to post a $5,000 performance bond and guarantee that the pavement would last for five years, according to ACPA’s “100 Years of Innovation.” That $5,000 performance bond in 2013 dollars would equal about $128,000.

According to ACPA archives, the first 8-ft.-wide strip of what was then called “artificial stone” was placed Main Street along the side of Bellefontaine’s Courthouse Square in 1891. The pavement was an immediate success, and in fact, blocks of the original pavement were exhibited at the 1893 World’s Fair. Local business owners petitioned to have the entire block around the square paved with concrete, and so, Court Avenue and Opera Street were paved in 1893. Columbus Avenue and the remainder of Main Street followed in 1894, according to ACPA archives. The 1894 project was built by William T.G. Snyder, a Bellefontaine roadbuilder and America’s first concrete paving contractor. Much of this pavement is still in use today, nearly 120 years after it was put into place!

Undated photo shows a Rex 7-E paver, manufactured by the Chain Belt Company, the forerunner to today’s RexCon LLC.

“Every man owes a part of his time and money to the business or industry in which he is engaged. No man has a moral right to withhold his support from an organization that is striving to improve conditions within his sphere.”

— Theodore Roosevelt, 26th U.S. President, 1910

An undated photo shows a truck traveling along one of the Lincoln Highway Association’s “Seedling Mile” pavement sections.
(FHWA). Central to his efforts, was his suggestion to combine existing roads into a network and recommended that ‘...the most effective lines that could be adopted for this purpose would be an Atlantic and a Pacific Coast line, joined by a continental highway from Washington to San Francisco.’

The Automobile

The appearance of the automobile in the mid-1890s also had a profound effect on roadbuilding. In 1900, Americans owned 8,000 cars, and by 1920, that number grew to 8 million. Henry Ford’s 1908 introduction of the first mass-produced automobile, the “Model T” Ford, revolutionized automobile manufacturing, transportation, and personal mobility. Mass production made the automobile more affordable and accessible, and in fact, the price of the car actually declined. The standard 4-seat open touring car cost $850 in 1909, but by the 1920s, the price had fallen to $260, “because of increasing efficiencies of assembly line technique and volume.”

Based on wage information for the period, a union bricklayer, painter, or plumber in Chicago could purchase one of these cars for less than three months wages.

The Quest for Better Roads

In the late 1890’s, a sort of ‘perfect storm’ was brewing. Farmers were realizing better roads could be leveraged against the hated railroads and their tariffs, while at the same time, bicyclists were enjoying leisure time exploring country roads.

With more automobiles on the road in the early years of the 20th century, attention turned to building better roads, as well as to continue the dream for a transcontinental highway.

At the same time, efforts were underway to improve the quality of roads, which were mostly dirt and macadam, layers of aggregate coated with a binder agent. Although it offered an alternative to dirt and stone, macadam had its drawbacks. “The area of low air pressure created under fast-moving vehicles sucks dust from the road surface, creating dust clouds and a gradual unraveling of the road material.”

In addition to macadam, roadbuilders tried many other materials, including gravel, brick, wood, and even molasses. In the quest for reliable, long-lasting roadways, the use of concrete pavements grew steadily.

In 1909, the first full mile of concrete roadway in the country was paved on Woodward Avenue, between 6 and 7 Mile roads at a cost of $14,000. Today, the roadway is known as M-1 in Wayne County, Mich. In today’s dollars, that would be approximately $330,000.

America’s first concrete street in Bellefontaine, Ohio, is shown in this 1932 photo. (Photo: ACPA archives.)
In 1913, a 23 mile-long, 9-ft.-wide, 5-in.-thick concrete pavement was built near Pine Bluff, Ark. The following year, commissioners from Lee County, Miss., traveled by train to Wayne County, Mich., to view concrete roads, including Woodward Avenue. Upon returning to Mississippi, they authorized construction of 49 miles of rural county roads. By 1914, portland cement concrete had been used to pave 2,348 miles of roadway.

In the early part of the 20th century, roadbuilding associations coordinated road construction projects, and one of the most celebrated was the Lincoln Highway Association’s (LHA’s) “Seedling Mile” object lesson program. The first was built in the fall of 1914, just west of Malta, Illinois. The “Seedling Miles,” were intended “to demonstrate the desirability of this permanent type of road construction” and “crystallize public sentiment” for “further construction of the same character.” Generally, the LHA worked with the Portland Cement Association (PCA) to arrange donations of cement for the seeding mileage.15

Federal Legislation Supports Highways

In 1803 as part of the legislation admitting Ohio to the Union, two % of the revenues from the sale of Federal lands in Ohio were set aside for roads, part of which was used for the National Road from Cumberland to what is today Wheeling, West Virginia.16

There were other federal funding initiatives that were pivotal to the exploration or construction of roadways. In the 1907 case Wilson v. Shaw, the U.S. Supreme Court officially gave Congress the power “to construct interstate highways” under its constitutional right to regulate interstate commerce. In 1912, Congress enacted the Post Office Department Appropriations Bill, which set aside $500,000 for an experimental program to improve the nation’s post roads. Although it proved too small to make significant improvements, the program taught Congress that federal aid for roads needed to go to the states instead of local counties. (Today, the federal-aid system is based on an 80/20 federal/state match.)
In 1916, President Woodrow Wilson signed the first “Federal-Aid Highway Act” directing the federal government to cooperate 50/50 with states in road building. The states needed a professional highway department to be eligible for federal funds and had to maintain the federal-aid road once it was completed.17

Highway and roadway construction changed considerably during the Great Depression (1929-1937) through World War II (1941 to 1945), when the emphasis shifted to putting unemployed people to work and supporting the war effort.18

Although President Franklin Roosevelt supported toll “superhighways,” the vision was not fully realized in the Federal-Aid Highway Act of 1944, due to differences of opinion on a concept known as “excess right-of-way,” which involved selling or renting extra land to help pay for future construction and upkeep.19

The Interstate Highway System

Arguably, the most significant milestone in U.S. transportation-construction history was the nation’s largest highway construction project, the “National System of Interstate and Defense Highways.”

President Dwight D. Eisenhower had two experiences that shaped his perceptions and his goal for creating the Interstate Highway system. The first was a transcontinental troop convoy in 1919, in which then Lt. Col. Eisenhower documented the poor road conditions along the primary route, the Lincoln Highway. The second was his experiences in Europe in the 1930s and ‘40s, where he saw firsthand the advantages of the Autobahn system.20

His predecessors, Presidents Roosevelt and Truman, also were interested in highways, but issues of the day—including the economy and the war—took precedent over plans to develop a highway system. Eisenhower saw the opportunity to implement the system, although the effort was not without resistance and detractors. In early 1954, presidential advisors disagreed about how to finance and construct the interstate system. In April, Eisenhower told his staff he wanted a “dramatic” plan to get $50 billion worth of “self liquidating highways”—highways that would not add to the national debt—under construction. In July, he announced the “Grand Plan” for an articulated highway network.21

Eisenhower signed the “Federal-Aid Highway Act of 1956” into law on June 29, 1956. The bill called for 41,000 miles of Interstate roadways at an estimated cost of $41 billion. After enactment
Congratulations ACPA for 50 years and counting

The ACPA's leadership over the last 50 years has helped all of us create better airports, roads, streets, bridges, parking lots and most importantly, the driveway that welcomes us home. We are proud to have been there since the beginning with ACPA as Dundee Cement and today as Holcim (US). Our shared passion for paving has led to numerous improvements to the industry we love and here’s to the next 50 years!

888.646.5246    www.holcim.us
of the highway bill, and even after leaving office, Eisenhower maintained an abiding interest in the interstate system.\textsuperscript{22}

To honor him for that “personal and absolute decision,” Congress passed a bill in 1990 that changed the legal name of the Interstate System. It is now called The Dwight D. Eisenhower National System of Interstate and Defense Highways.\textsuperscript{23}

The Interstate Era had begun, and as the “Grand Plan” began to take form, another chapter in our nation’s surface transportation infrastructure was about to open.\textsuperscript{24}

“The workers today would not put up with what their forebears did. Many of the early workers slept under their trucks just like the cowboys. Many of the early construction companies ran cookhouses and bunkhouses like the one our company ran until the late 1940s.”

—Irving F. Jensen,

\textit{CONCRETE PAVEMENT PROGRESS, May/June 1999.}
Men and Machines

Editor’s note: One of the greatest dangers of creating an historical account is the inevitability of dreaded exclusions, omissions, and errors. Our intention is to capture examples of machines that transformed the concrete pavement industry versus a complete account of every machine or equipment development.

No historical account of the ACPA’s history would be complete without recognizing the importance of the machines that evolved, beginning in the early part of the 20th century, as well as how the evolution influenced the need for and work of the association.

One of the early advents was the dump truck, first manufactured in 1905. Although motorized vehicles would eventually replace horse-drawn equipment, there were limitations where they could go.

In the early part of the century, most roads were unreliable, and so, transporting concrete was not practical in many locations, especially in rural areas. According to David Howard, P.E., President/CEO of Koss Construction Co., Topeka, Kansas, transporting materials to the rural grade in the 1910s through 1920s typically required the use of trains and specially-built rails. He explained the process typically began with a series of batch cars—each of which had two boxes, one for aggregate, and the other for cement. A locomotive pulled the batch cars to the paving site, where the dry materials were dumped into a “skip.” The skip then raised and deposited the rock, sand, and cement into a mixer. A pipeline was run along the grade to supply the paver water. Once mixed the concrete was deposited between the forms. According to Howard, it would take about 1-1/2 of the typical 10-car trains to transport the equivalent of today’s single batches of concrete.

The early machines were supplied by companies such as the Koehring Machine Company. Thomas E. Miller, President of Metal Forms Corporation, draws the link between the two companies in his book, “Forming the Roadway to Success.” In addition to being the first generation family member involved in the business, Miller’s grandfather, G.H. Miller, was married to Louise Koehring, sister of Philip and William Koehring, founders of the namesake company. G.H Miller served as sales manager for the company.

“Even more excited about the role of concrete in paving, Philip next designed a mobile machine that was able to both mix and lay concrete,” Miller wrote.

Early models of the machine were steam-powered, and bore numerical designations that roughly corresponded to the cubic foot capacity. A 11E had an 11 cu. ft. mixer; a 27E had a 29.7 cu. ft. capacity, and a 34E had a 37.4 cu. ft. mixer.

Countless miles of concrete pavement were built with this equipment, creating the long-life legacy of the product during the 1920s through the 1950s. As concrete paving expanded, so too, did the number, type, and applications of paving machines, as well as other equipment, tools, and apparatus, including paving forms.

“With the 1920’s rolled in and concrete became an acceptable material in paving roads and highways, the large, heavy concrete finishing machines that entered the market rendered existing, lightweight forms useless. This led to the need for more substantial, sturdier steel forms that could support and take the abuse of these bulky new machines,” according to Miller.

When the Interstate highway construction began in the 1960s, there were waves of innovation that changed paving productivity. On the occasion of ACPA’s 25 year anniversary, four individuals and their inventions were recognized by ACPA for their enduring contributions. They are:

- James W. Johnson and the Iowa State Highway Commission for their role in developing the original slipform paver with first experiments conducted in 1947 and 1948. Nicknamed the “JeepSkate,” the gasoline-powered machine had rubber tires, H-beams connected the wheels with the web of each beam to act as the slipform. A pan was suspended as a strike-off and to finish the concrete. In October 1949, the machine was used place a one-mile section of 20-foot wide pavement (two 10-foot passes) on a county road in Cerro Gordo County, Iowa. These early machines are the undisputed first slipform pavers ever developed.
- Glenn Perkins and Bill Dale, Sr. of Quad City Construction Co., Rock Island, Ill. Instead of rubber wheels, the “Quad City” paver had 24-ft. long crawler tracks, driven by chains and sprockets to drive the tracks. Like Johnson’s machine, the Quad City slipform paver employed a pan suspended from a steel frame to strike-off and finish the concrete. All modern slipform pavers are modeled after this machine.
- Cecil W. Hatcher, a Covina, Calif.-road engineer who is credited with developing the “Bump Cutter.” Equipped with almost 100 circular saw blades coated with diamond grit, the machine was first used in 1956 to grind a new concrete runway in Arizona. By the end of the decade, the machine was used to address skid accidents on runways, highways, roadways, and bridge decks. Hatcher later adapted the Bump Cutter to function as a machine to cut longitudinal grooves in pavement.
- Bill Swisher, CMI Corporation, for inventing the dual-lane, automated grader in the mid-1960s. Most concrete paving at the time was limited to about 3,000 ft per day using about a hundred people in the process. The CMI subgrader enabled up to two miles of grade preparation in a single day, significantly increasing productivity and efficiency and allowing unprecedented paving.

Other companies also played a role in the early development of concrete paving equipment, and many of these companies were founded earlier in the century. They include Power Curbers, Inc. (dating back to 1953); Gegenhardt Construction Company (dating back to 1953), Guntert & Zimmerman Construction Div. (1948), A.W. French (1920); Rex Chainbelt, now known as RexCon LLC (1906); Templett Excavator (1900), and many others.

Several companies, including Bidwell, GOMACO, Minnich Manufacturing Co. Inc., and others emerged in the mid-1960s with machines that made grade preparation, paving, texturing, and curing faster, easier, and more cost efficient.

ACPA members will surely recognize and support many of these companies, which along with other manufacturers of machines, tools, and other paving apparatus, continue to carry innovation and technology to new heights.
“Together, the united forces of our communication and transportation systems are dynamic elements in the very name we bear—United States. Without them, we would be a mere alliance of many separate parts.”

—Dwight D. Eisenhower, 34th U.S. President, February 22, 1955
The AASHO Road Test

The results of the American Association of State Highway Officials (AASHO) Road Test in Ottawa, Ill., established the principles used for pavement and bridge design on the Interstate system.

The road test was administered by the Highway Research Board (part of the Transportation Research Board and financed by state highway agencies, the BPR, the Department of Defense, the Automobile Manufacturers Association, the American Petroleum Institute, the American Institute of Steel Construction, U.S. materials and transportation associations, and interests from other countries.

In August 1956, 7 miles of two-lane pavements (six loops and a tangent) were constructed, half in concrete pavement and half with asphalt. The 836 test sections used a wide range of surface, base, and subbase thicknesses, and included 16 short-span bridges. The tangent (straight) portion of the test track was constructed as a four-lane, divided highway, sections of which today are part of Interstate 80.

From October 15, 1958, until November 30, 1960, soldiers drove 81 Army trucks of several axle configurations, carrying various loads of concrete blocks, around the track 18 hours a day. Based on the observed performance (or failure) of the pavement sections, researchers were able to develop equations relating anticipated loading to pavement design.

The test data established the relationships for pavement structural designs based on expected loadings over the life of a pavement. Today, the few remaining sections of the original test track take some effort to find, but the tests themselves have an enduring legacy, which today can be seen in the various generations of AASHTO’s pavement design software, including AASHTO 93 and AASHTOWare Pavement ME Design.31,32

These design models established from this project also were used in ACPA’s pavement analysis software, including today’s WinPAS 12.
Gerald F. Voigt, P.E.,
President and Chief Executive Officer
American Concrete Pavement Association
9450 West Bryn Mawr Avenue
Rosemont, IL 60018

Dear Mr. Voigt:

On behalf of the Federal Highway Administration, I congratulate the American Concrete Pavement Association (ACPA) and its approximately 375 member companies on its 50th anniversary. Throughout my years in transportation, I have seen how the association’s partnership initiatives benefit the country’s infrastructure and the American people.

The ACPA’s leadership, technical expertise, and advocacy helped to advance concrete pavement technology to meet ever changing needs. Since the ACPA’s founding in 1963, the paving industry has evolved as construction shifted from roads at new locations, particularly Interstate highways, to improving existing roads; the growth of recycling beginning in the early 1970s; and the increasing demand for environmentally sensitive construction techniques and sustainability. Through these and other changes, the ACPA’s valuable partnership with Federal, State, and local officials worked to meet America’s needs.

This 50-year history demonstrates that we can rely on the ACPA to continue playing a vital role in the years ahead. We look forward to our ongoing partnership with ACPA.

Sincerely,

[Signature]

Victor M. Mendez
Administrator
The 1960s: The Era Of Change
The 1960s: The Era of Change

At the outset of the 1960s, the nation would see John F. Kennedy, its youngest elected U.S. President, take office during a decade that marked a dramatic change in our social culture and political climate.

In the 1960s, about 70 million children from the post-war “baby boom” became teenagers and young adults. There were tumultuous times, including the Bay of Pigs crisis, the assassination of the President, the start of the Vietnam War, and other events that tested the resolve of the American public.35

There were also bright spots that included the nation’s progress in civil rights, the space race (including the first Americans to walk on the moon), and a greater awareness of women’s rights, the environment, and other social issues.

In the early part of the decade, drive-in restaurants, motor hotels (or motels), and muscle cars continued to appear across the nation, and as the decade progressed, so too, did these symbols of personal freedom and mobility, thanks in large part to the Interstate highway system.

Construction in the 1960s

On the highway

& heavy construction front, former President Dwight D. Eisenhower’s “Grand Plan” for the Interstate highway system was unfolding at a brisk pace. The first reported Interstate contract was awarded August 2, 1956, and so, it’s safe to say the BPR, state departments of transportation, and contractors wasted no time in breaking ground on the Interstate. 36

The largest public works project in U.S. history captured headlines and represented a major focus for roadbuilders, but other highways, roadways, and airports also were being constructed at the same time. Heavy and highway construction was booming, but as we will see later in this chapter, there were major challenges that impacted contractors and agencies alike.

As remarkable as it may seem today, the slipform paver pioneered by James Johnson in the late 1940s, and further advanced by Quad Cities in the 1950s, had not yet gained widespread acceptance in the early 1960s. In the same time frame, concrete shoulders were non-existent,

ACPA’s original articles of incorporation refer to the American Concrete Paving Association, a name later changed to reflect the broadening of contractor-supplied services, notably resurfacing, rehabilitation, and reconstruction.
and the same was true with standards in base/subbase construction, jointing, vibration for concrete consolidation, and other practices, materials, and equipment that are common today. All of this would soon change, but in the early 1960s, the emphasis was on mechanizing concrete paving to increase productivity and to remain competitive.

ACPA: A New Beginning

In the early part of the decade, there was a growing concern that the concrete pavement industry needed to unite around common interests to address challenges and seize opportunities of the day.

The decision to form the association rested on a small group of concrete paving contractors. These industry leaders, along with officials of the PCA and equipment stakeholders had both informal discussions and meetings, and then in 1963, took the first steps to form what was then known as the American Concrete Paving Association (ACPA). ACPA’s first elected Board of Directors are shown in this December 1964 photo. Seated (counterclockwise from left) are: George R. Bathe; J.J. Marcello; A.V. Williams; Sam M. Porter; Harold W. Hartmann; W.E. Swanson; and Charles P. Ballenger. Standing (L-R) are James D. Piper; George D. Williams; Christopher (Kip) Koss; W.L. Harper; L.E. Denton; and Hamilton Strayer. Not present for the photo were R.W. Dial; William H. Tate; and George C. Koss.

by the well-financed associations of the ‘other product,’” recalled Robins Jackson, Jackson Construction Co. (ACPA Chairman-1977).* “Little did I know what I was getting into in 1964 when the late George Koss of Koss Construction Company called me up and asked me to fly into Chicago to attend a meeting of concrete pavers from all over the country that he thought I’d find interesting. I did find the idea of a national pavers’ association very interesting. I agreed to have our firm join at that meeting, thusly becoming charter member number three.”

By piecing together accounts reported in early ACPA newsletters, ACPA staff gleaned that the first contractors to commit to ACPA were Charles

* In the early days of the association, the volunteer leader presiding over the ACPA Board of Directors was known as President; the senior staff member was an Executive Director. Later, the volunteer leader became known as Chairman, and the senior staff member was the President/CEO. For sake of consistency, and because many references are not in chronological order, the volunteer leader of the ACPA Board of Directors is cited as Chairman throughout this document.
The 1960s: The Era Of Change

Historic Court Avenue in Bellefontaine, Ohio, was restored and re-dedicated in 1962.

P. Ballenger, Jr., Ballenger Paving Co. (Greenville, S.C.); George Koss, Koss Construction Co. (Des Moines, Iowa); and Robins Jackson, Jackson Construction Co. (Nevada, Iowa). Other founding members included: Leet E. (Ed) Denton, Denton Construction Co., (Grosse Point, Michigan); W.L. Harper, The Harper Construction Co. (Cincinnati, Ohio); W.E. Swanson, Roberts Construction Co. (Lincoln, Neb.); Sam M. Porter, Foster & Creighton Co. (Nashville, Tenn.); and George D. Williams, T.L. James & Co., Inc. (Ruston, La.).

According to personal accounts, the major impetus for founding the paving association was to counter the growing competitive efforts of the National Bituminous Concrete Association (now the National Asphalt Pavement Association), which the asphalt industry chartered in 1955.

Gordon Ray, PCA (retired), recalled, “When PCA invited the contractors and the concrete paving equipment manufacturers to gather in two separate meetings in Chicago to discuss the formation of a concrete paving association, Harold [Halm] was able to help us convince them that they would profit from such an association…”

With the commitment from eight founding contractor members, word spread quickly that the association was being formed. ACPA was officially incorporated on September 24, 1964. ACPA held its first annual meeting at the Sheraton-Chicago Hotel on December 14 and 15 of the same year. (Incidentally, the hotel is today called the InterContinental Chicago Magnificent Mile, the site of several ACPA mid-year meetings in recent years.)

Just prior to the meeting, a balance sheet showed a total of $28,180 in assets, mostly from dues, as well as $1,680 in registration fees for the first annual meeting. In its first year, the ACPA totaled 43 contractor members and 24 manufacturers and other associate members. In addition to the founders, it is these 67 members that must be thanked today for investing into the fledgling organization and giving it the resolve to persevere through the 50 years ahead.

The association’s first executive director, Harold J. Halm, had been a paving engineer with PCA, which provided some funding and support for the start-up of the new organization. The association provided an opportunity for the industry to focus specifically on the challenges that contractors faced, notably quality construction and marketplace competition. ACPA’s “founding fathers” also recognized both the need to form
relationships at the federal and state levels of government, as well as with other transportation organizations.

In the five decades since, ACPA leaders and members have led the association through major changes; developed and revised business strategies; and at times, even changed the areas of emphasis. Even so, the association has never strayed from the four founding principles, which remain relevant to this day.

**Focus on Relationships, Equipment**

In the early years, the association was forming new relationships and working to identify and prioritize issues, many of them related to construction quality and constructability. Early ACPA newsletters describe many “firsts” in the form of meetings, agreements, research proposals, and other ideas that benefitted the concrete paving community.

It’s worth noting that most of the major technical milestones accomplished within the concrete pavement industry since 1964 have been achieved by the collaborative efforts of ACPA members, staff, affiliates, and agencies/owners working collaboratively.

One such meeting with the BPR focused on “restrictive specifications which affect contractor cost, choice of equipment, and quality of the finished pavement.” From its earliest days, ACPA pushed successfully for changes to specifications that would allow for the array of new equipment to help contractors with quality and productivity.

One of the common practices in the 1960s was for members of the ACPA Board of Directors to visit jobsites around the country. Board members would share information ranging from highlights to more technical empirical analyses of these jobs during ACPA meetings and regional conferences.

Topics appearing in early literature indicate the association was initially focused on supplier-owner-contractor relationships; durability; mixing, placing and finishing of concrete pavement; and construction practices affecting maintenance. As the decade progressed, ACPA and its members were still focusing on these issues, but also were turning their attention to pay items (typically, payment for materials, labor, and for various types of pavements); smoothness.
requirements for mainline and ramp paving; segregation and degradation in stockpiling; pavement type justification; and a range of other topics, many of which are still both relevant and the subjects of discussion, tech transfer, and education today.

Addressing Technical Issues
Curing and coating began to emerge around the mid-1960s as contractors, materials suppliers, and agencies sought ways to apply materials science to accelerate curing. ACPA adopted a policy in favor of membrane curing compounds and began promoting their use in 1966; a year later, the association adopted a similar position on membrane coatings. This is one of the first materials-focused promotion efforts recorded by the association.

Toward the late 1960s, issues such as aggregate polishing, texturing, pavement grinding began to appear in literature. This was a logical occurrence, considering there were an increasing number of concrete pavements placed in the first half of the century that were either nearing or past their 20-year design lives.

ACPA’s first technical publication addressed the growing concerns about polishing of aggregates in concrete pavement. ACPA’s “Technical Bulletin No. 1” focused on “Texturing of Concrete Pavements,” and addressed polishing of pavements placed prior to 1960. Written by John C. Dixon, Rigid Pavements & Concrete Engineer with the Ohio DOT, the bulletin described how the fine texture and skid resistance had been restored on one of the more “treacherous sections” of Interstate in Ohio.

In 1968, ACPA drafted its first concrete paving construction safety manual for adoption by the National Safety Council. Although contractors continued to address construction safety individually, members did not make the topic an association priority until 2012, when the ACPA developed a web-based concrete construction work zone safety training program sponsored by the FHWA.

In 1969, ACPA reorganized its technical committee to provide technical leadership for emerging methods and technology, as well as to address problems, increase quality, and improve performance. Technical subcommittees were formed to address continuously-reinforced concrete pavements; curing and protective coating; federal liaison issues; joints; materials and mix design; mixing, hauling, and placing, new markets; standardization; subbases; and surface properties. These subcommittees worked much the same way as ACPA’s Task Forces do today. Established by the ACPA Strategic Board of Advisors, today’s Task Forces have well-defined goals, which may include completing specific projects or products. When the mission is complete, the task force is disbanded, as were the technical subcommittees of 1969 and the 1970s.

Push for Productivity
Throughout the 1960s, productivity was a major focus for the association and its contractor...
members. Harold J. Halm, ACPA’s first President (then Executive Director), wrote about the imperative of increased productivity in “The 5 Ms: Must Move Men, Machines, and Materials.”

Contractor members set many productivity records, and one crowning achievements of increased productivity was membership in the ACPA “Mile-A-Day Club,” which was reportedly conceived by Heltzel Steel Form & Iron Company. By 1969, the ACPA “Mile-A-Day Club” had expanded to 73 members, and “many of these consistently averaged in excess of a mile in one working day.” This was (and is still today a well-regarded sign of productivity), but there was an even more rarified honor when the two-mile-a-day record was set. On June 18, 1963, during the time of early discussion on the forming of ACPA, Green Construction Co., Oaktown, Ind., paved 10,614 lineal feet to become the first documented “Two-Miles-A-Day” paver. In August 1963, Schultz & Lindsay, Fargo, N.D., placed a then-record 12,091 ft. of reinforced concrete pavement between forms in one day on a job in western North Dakota.

By 1969, there were only four documented cases of contractors who had paved two miles per day, and even with that, they had among them only achieved the milestone on six different occasions, according to “Concrete Paving Construction Innovations—Two Miles Per Day.” (ACPA Technical Bulletin 5, c. July 1969).

This increased productivity was clearly the result of increased mechanization of the paving train (the general term used for the complete assembly of paving equipment and people placing concrete pavement), including the increasing acceptance and use of the slipform paver, central mix plants, and autograders.

ACPA literature shows a slow, but steady increase in the number of state and toll agencies that began accepting the “new” slipform paving machines. The acceptance came from equal measures of advocacy and education by the association and its members.

“We need your help to make a go of it. Let us hear from you about any promotion or construction ideas which you think would be of interest to other members. In this way we will encourage other members to share with you their ideas. After all, ACPA was established to develop a source of information that will assist members in maintaining and improving high standards of workmanship and helpful relations within the industry.”

—First story in the first issue of ACPA’s CONCRETE PAVEMENT PROGRESS newsletter, April 1965.
members, as well as demonstration of the equipment and discussion among agency and industry personnel. As remarkable as this may seem today, many sections of the Interstate were placed using fixed-form paving methods.

In its push for slipform paving equipment acceptance, ACPA approached the FAA, U.S. Army Corps of Engineers (USACE), U.S. Navy, and U.S. Air Force about adopting slipform paving as a construction method in 1968. Later that year, FAA adopted slipform paving on a case-by-case basis, in part based on evidence from ACPA showing superior longitudinal joint performance.

By 1969, as a growing number of agencies accepted slipform paving, ACPA declared this improved paving process as “the accepted method of construction.”

**Research & Technology**

Concrete pavement research also was a focal point, and the association announced its first concrete research program in the mid-1960s. Contractor Ed Denton (ACPA Chairman-1969) represented ACPA in 1965 at a BPR meeting covering “Research and Development of Quality Control and Acceptance Specifications for Materials and Construction Using Advanced Technology.”

Checklist from April 1965 shows the states using slipform paving. Slipform paving gained acceptance in the 1960s and 1970s.
Worker uses an early “bumpcutter” to grind pavement on I-80 in California in 1965.

"In the life of any organization I believe that the first five years are its most crucial. In these five years we have gotten the sinew and muscle that now have formed us into permanency. We have many challenges ahead of us, but the image is now formed and the strength to survive is ingrained."

—Charles P. Ballenger, President, Ballenger Paving. (ACPA Chairman-1968).

In what is believed to be the first cooperative research program in which ACPA participated, “preliminary plans were drawn up for research projects in five states to determine if structurally sound concrete pavement with faulted joints can be ground to its original smoothness at less cost than asphalt resurfacing,” according to an early ACPA newsletter account. “These projects will be carried out with cooperating highway departments or Toll Road Commissions and ACPA members.”

At the midpoint of the decade, concrete shoulders made their first appearance as...
“Zest flows from activity, from doing things with people... It is a by-product of creative thought and discussion, as (ACPA) committeemen experience every year. Your membership in ACPA, like your 1970 car, is for year-round performance. Don’t let it rust for lack of use.”

—Leet E. Denton, President, Denton Enterprises (ACPA Chairman-1969).

**FAST FACTS**

**What’s in a Name?** ACPA wasn’t the only organization to have changed names over time. ACPA started as the American Concrete Paving Association, but changed its name to the present form, American Concrete Pavement Association on March 27, 1979. Here’s a snapshot view of some others whose names changed in the 20th century:

- In 1902, the American Road Makers (ARM) approved its charter, and then, in 1910, changed its name to the American Road Builders Association (ARBA). It wasn’t until 1977, the organization became the American Road & Transportation Builders Association or ARTBA.

- The American Association of State Highway Officials (AASHO) was founded on December 12, 1914. Its name was changed to American Association of State Highway and Transportation Officials on November 13, 1973.

- The Office of Road Inquiry was founded in 1893, and then, went through five name changes before it became the Bureau of Public Roads (BPR), in 1949. On April 1, 1967, the name and functions of the BPR changed to the current organization, the FHWA (FHWA).
CPR drew on California experience with diamond grinding. Photo dates to 1965.

“Why is a contractor interested in two-mile-per-day production? First of all, contractors are gamblers.

Being in what is still America’s most free enterprise and competitive business, he has the urge to do better than his competitors.”—Harold J. Halm, 1st President of the American Concrete Pavement Association, writing in, “Concrete Paving Construction Innovations-Two Miles Per Day.”


“experimental sections,” and ACPA advised members that, “It appears that a substantial market for concrete paving is in the offing with the acceptance of concrete shoulders. You might wish to pursue this with your highway department.”

As the decade progressed, ACPA continued to research and evaluate issues in the field and share findings at regional conferences throughout the United States.

continued on page 31

James Johnson (L) accepts from Charles Ballenger (Chairman-1968), the first of what would eventually become ACPA’s Hartmann-Hirschman-Egan awards.
The 1960s:

**FAST FACTS**

Recognizing Distinguished Service

In addition to the Mile-a-Day and Two-Miles-a-Day recognitions, ACPA presented its first Outstanding Achievement Award to “The Father of the Slip-Form Paver,” James W. Johnson of the Iowa Highway Commission Testing Lab at its fifth annual meeting in New York. The Outstanding Achievement Award would ultimately bear the names of honor of three long-standing officers of the association, beginning when the award’s name was changed in honor of Harold W. Hartmann in 1974. Hartmann served as the association’s Secretary-Treasurer from 1964 until 1974. In 1987, Robert E. Hirschman’s name was added in recognition of his term as the ACPA Chairman in 1967, as well as his tenure as Secretary-Treasurer from 1975 to 1987. In 2007, the name of Edward A. Egan was added in recognition of his leadership and dedication as ACPA’s chairman in 1986, as well as the longest serving Secretary-Treasurer—from 1988 to 2007—in ACPA history. Today, the highly coveted Hartmann-Hirschman-Egan award stands as a pinnacle award that recognizes life-long commitment, passion, and dedicated service to ACPA and the concrete industry.

CMI Autograde subbase trimmer was a key piece of equipment used on the first two-mile-a-day slipform projects in 1969.

“Our great highway program is not costing the Federal Government a single cent. Building these highways has no effect whatsoever on the Federal Budget. We who use the highways pay for them in proportion to our use. The amount of our motor fuel and tire taxes naturally is in proportion to the amount of driving we do. Owners of trucks and buses pay considerably more than most of us. Call the Federal Highway trust fund a “fare box.” It is where you put your motor fuel and tire tax money to pay for the roads on which you ride. You and I, not the Federal Government, are buying and building.”

—Excerpt from an editorial by Bud Kirvan, published in the DUNDEE (Mich.) REPORTER, January 1968. Kirvan was the director of communications/public relations for Dundee Cement Company.
At one such conference, ACPA directors endorsed further research and development based on several concepts:

- The need for stabilized subbases, particularly where slipforming was used.
- One-size course aggregate (1.5 in. maximum size).
- Aggregate gradation based on local materials.
- Mixing times based on BPR research.
- Opposition to automated recording devices for batch plants (to provide flexibility to the contractor to take advantage of new equipment), and
- Standardization of ramp widths and jointing to improve constructability, productivity, quality and performance.

From the earliest discussions that led to the founding of ACPA in 1963 and incorporation in 1964, the association helped members seize opportunities; identified and prioritized technical and research needs; and addressed challenges and opportunities throughout the decade. By the end of the “Era of Change,” ACPA had grown into a larger organization, and was tackling an increasing number of complex issues.

The decade ahead, however, would test the association and its members in ways few would have imagined. ☐

### FAST FACTS

**ACPA Staff Statistics**

According to the association’s records, there have been 82 staff members and numerous consultants who worked with ACPA in both Chicago and Washington, D.C. Although not mentioned in ACPA literature, James W. Johnson, credited with inventing the slipform paver. He was hired as an Advisory Staff Consultant of ACPA in 1969 and assisted as a staff member to solve specific problems related to materials.

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Published in 1969, ACPA’s first technical bulletin covered texturing of concrete pavements.

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**The Appalachian Development Highway System: Then and Now**

In 1960, Presidential candidate John F. Kennedy met with the 10 governors of the Conference of Appalachian Governors. According to 1950s data, one of every three Appalachians lived in poverty and per capita income in the region was 23% lower than the U.S. average. Governors were concerned with the “mountainous portions of their states, which lagged behind the rest of the United States in income, education, health care, and transportation.”

After being elected, President Kennedy created the Presidential Appalachian Regional Commission (PARC), which issued its PARC report in 1963. The Commission concluded isolation of the mountainous regions from the Interstate Highway System significantly contributed to the lagging economies and poverty of rural counties within the states in the region.

President Lyndon B. Johnson continued with Kennedy’s vision, taking the PARC report recommendations to Congress, which passed the Appalachian Redevelopment Act in 1965. This created the Appalachian Regional Commission (ARC) and within the ARC, the Appalachian Development Highway System (ADHS). In response, ACPA issued a statement to members in April 1965: “It is now clear that the Appalachia road building program will be carried out using established federal aid channels... It will be to their advantage to build them of concrete in the interest of maintenance and economy.”

As of mid-2013, the ADHS consists of 3,090 miles of highway designed to connect major interstate highways in the ARC region, which includes 13 states, 420 counties, 205,000 square miles, and stretches from southern New York to northeastern Mississippi containing 25 million people. In June 2013, the ADHS was said to be currently 85% complete.
Gerald F. Voigt
President & CEO
American Concrete Pavement Association
9450 W. Bryn Mawr Ave.
Suite 150
Rosemont, IL 60018

Dear Mr. Voigt and ACPA Members:

I would like to take this opportunity to congratulate the American Concrete Pavement Association for celebrating its 50th anniversary this year. The ACPA has maintained a strong national presence through its leadership, technical expertise, and advocacy on behalf of the concrete pavement industry, making it one of the premier national trade associations for the concrete pavement industry.

The association has advocated on behalf of approximately 375 member companies, as well as cement producers, materials and equipment manufacturers, consultants, and others with a shared interest of building, rehabilitating, and preserving the nation’s highways, airports, roadways, and industrial pavements.

My sincerest congratulations on celebrating the ACPA’s 50th anniversary, and as you move into your second 50 years may you continue to effectively respond to the critical needs of the concrete pavement industry. Best wishes on the continued success.

Sincerely,

Bill Shuster
Chairman
The 1970s: The Pivot Of Change Decade
The 1970s: The Pivot of Change Decade

The 1970s are sometimes called the “pivot of change” decade. Many of the radical social concepts of the 1960s became more mainstream, and as a result, had far-reaching effects on the arts, language, politics, entertainment, and other aspects of our societal fabric. The 1970s saw an international oil crisis emerge as a direct result of a conflict stemming from a Mideast war and the resulting divisiveness among members of the Organization of Petroleum Exporting Countries (OPEC). With the news that supply would be restricted and prices would increase drastically, the United States and other western nations plunged into a financial abyss, which was marked by quadrupling fuel prices, fuel rationing, and long lines at the gas pumps. Inflation rose from about 6% in 1970 to 13.3% by 1979. The prime rate hit 21.5% in December 1980, the highest in history. This period is also known for “stagflation,” a condition of rising inflation and unemployment, which would last into the early 1980s. This was a decade marked by growing opposition to the Vietnam War, which formally ended with the final troop withdrawal in 1975. The resignation of the nation’s 37th President, Richard Nixon, as well as the crisis that came before, had a profound and lasting effect on domestic politics. On the geopolitical front, the Cold War continued, and with it, the continuation of both the arms race and space race between the United States and former Soviet Union.

In the nation’s bicentennial celebration in 1976. The decade also ushered in the lava lamp, Saturday Night Live, personal computers, floppy disks, Earth Day, bar codes, video games, disco, ESPN, and the three-point line in basketball.

“We don’t want you to think we are trying to paint a dark future, because we feel that over the long pull the seventies will be even more fruitful than the sixties have been; but we do feel that they will get off to a slower start. Let’s go forward into the 70’s with the challenge and determination to open up new frontiers that will afford all of us with self-reliance, self-growth, and satisfaction of doing a job well done!”

—Bruce B. Cloud, ACPA Board Member (and Executive Vice President, H. B. Zachry Co.), January 1970.

FAST FACTS
Affiliates Join the Mission
Also, recognizing the interests of individuals other than those working for contractors, materials suppliers, and equipment suppliers, ACPA created an “Affiliates” membership category in 1970, which still today includes friends of the industry who are not directly involved in paving or supplying products used directly in plant or paving operations.

Former President Gerald Ford visits with Harold Halm, and Chairman and Mrs. Norman Wilhelm, during the ACPA annual meeting in 1978.
The pivot of change decade ended quietly and without the drama and controversy that had occurred in the early to mid-1970s. In spite of the highs and lows, or maybe because of them, the nation, and indeed, highway construction, ACPA, and the concrete pavement industry had changed significantly, irreversibly, and forever.

Construction in the 1970s

Although the original plan called for the Interstate highway system to be completed in 1972, construction continued throughout the 1970s and beyond. By 1979, most of the major sections were complete, but work continued through the 1990s. ACPA members and staff were focused on the constructing the Interstate and expanding the acceptance of productivity-enhancing equipment. They were also keenly aware that the Interstate completion was inevitable, and so, they began planning new market opportunities.

Short supplies of fuel and commodities plagued industries and consumers, and ACPA members were among those affected. In addition to the politically-charged shortage of fossil fuels, ACPA dealt with a cement shortage and steel shortage in the early 1970s. So significant were these looming threats to project completion that FHWA Administrator Norbert Tiemann called ACPA and others representing industry and the public sector groups (including the military) to a meeting in December 1973. ACPA leaders and other transportation officials provided actionable solutions for dealing with shortages. (See sidebar, “ACPA Tackles Tough Issue of Shortages.”)

In 1972, ACPA’s First Vice President, Thomas Wilson of Southern Roadbuilders, and Executive Director, Harold Halm, testified before a Price Commission Public Hearing on the Cement Industry in Houston. Halm explained that the cement shortage was causing contractors to seek supplies of cement from sources outside the United States or from remote locations, necessitating large additional freight expenses. Wilson concluded, “It is obvious that the increased costs will eventually be passed on to the taxpayer.”

ACPA: The Transformative Years

Progress can occur in the form of major, sweeping events or smaller, more subtle changes.

FAST FACTS
Famous First

In 1972, ACPA reported the first use of steel fibers in a pavement project, two experimental sections overlaying an existing concrete taxiway at the Tampa International Airport. One was 6 in. thick, 175 ft. long and 75 ft. wide; the other was 4 in. thick, 50 ft. by 50 ft. Each cubic yard of concrete contained 517 pounds (5-1/2 sacks) of cement, 225 pounds fly ash (for improved workability), 200 lbs of steel fibers, 1,200 lbs of coarse aggregate, 1,525 lbs of fine aggregate, 275 pounds water; 3.3 ounces air entraining agent (4% air), and 38.05 ounces set-retarding admixture.
The transformation that occurred with ACPA during the 1970s represented both large and small changes. ACPA established a presence and firm footing in new markets, tackled a host of prioritized technical issues, and stepped up its government affairs efforts at the federal level. Recognizing the challenges of completing the Interstate highway system in an era of shortages, while also facing the eventual wind down of the Interstate construction surge, ACPA news reports reveal that contractors and other members, along with staff, worked together closely, stepping up efforts to develop initiatives in airport, county, and municipal paving throughout the decade.

Airport pavement opportunities were plentiful, as “jumbo” jets made their debut in 1970 with the first commercial flight of Boeing’s 747, followed closely by Lockheed’s L-1011, McDonnell Douglas’ DC-10, and many others since.Recognizing the increased loads and air traffic as a factor in pavement criteria, the FAA in 1975 revised its design criteria to increase pavement thickness from a 12-in. standard to 18-in., 20-in., or even greater thicknesses. Shortly thereafter, through the persistence of ACPA, the FAA’s P-501 specification formally recognized slipform paving, and subsequently, created a modified provision allowing the conditional use of slipform paving equipment. The provision allowed slipform paving equipment “when requested by the engineer… provided that satisfactory mix revision and price reductions have been negotiated,” according to ACPA literature. This breakthrough followed years of work by the association to convince FAA of the viability of slipforming thicker pavements.

ACPA also made strides with USACE in the early 1970s, recommending changes to their specifications and including the use of the slipform method of construction. Other specification changes sought by ACPA included reducing mixing time for central plants; adopting sawed contraction joints versus formed joints; eliminating the requirement to cure with wet burlap; and adopting a price adjustment instead of removal and replacement if as-constructed slab thickness was over ¼-in. deficient.

Technical Service, Tech Transfer

On the highway front, ACPA staff and members focused on a growing list of technical issues stemming from the unprecedented growth in mileage constructed for the Interstate program. A Pavement Advisory Board, comprised of leading state and federal engineers and ACPA members, was formed in 1972 to advise and make recommendations to the association pertaining to technical matters relating to concrete pavement construction.

FAST FACTS
Early Sustainability Efforts

The energy crisis of the late 1970s ushered in a host of new challenges and considerations. ACPA was among the first organizations to consider the sustainability of its product with regard to energy use. In 1978, ACPA published Technical Bulletin 23, entitled “Energy Impact,” which described a study taking into account all of the energy used from manufacture to placement of pavement. The results showed that at that time asphalt pavement required 128,000 Btu’s per square-yard in, compared with 72,000 Btu’s per square-yard in, for concrete pavement.

In the 1970s, ACPA advocated the use of liquid membrane-forming curing compounds.
Among the priorities identified were:

- ACPA's push for less restrictive and method-oriented specifications;
- Simplified ramp designs that were less expensive and easier to construct;
- Non-erodible subbases that did not require trimming;
- Guidance on rain damage; and
- Improvement of joints and jointing practices.
- Recommendations on texturing for improved skid resistance;
- Internal vibration for improved consolidation;
- Requirements for hot- and cold-weather construction; and
- Advocacy against studded tires and the pavement damage they caused.

It bears mentioning that the number and depth of these issues required significant involvement of volunteer leadership and other members, as well as ACPA staff to address. To handle the challenge, a new structure was put into place, with individual subcommittees to address each issue, which resembles the Strategic Board and Task Force Structure in place at ACPA today.

In the early 1970s, ACPA prepared guide specifications for skid resistant concrete.

By 1977, 45 states reported having concrete barriers, and the reported construction rate was 300 miles per year.
The 1970s:
The Pivot Of Change Decade

pavements and published this work as ACPA Technical Bulletin No. 6. The ACPA guide was the catalyst for a broader effort by an AASHO-AGC-ARBA Joint Cooperative Committee in developing “Specifications for Securing More Skid Resistant Pavements.”

ACPA’s technical leadership left a major mark on the matter of pavement damage caused by the first-generation of studded tires. Less than a decade after their debut in 1963, studded tires became the source of controversy, discussion, and study. Damage to U.S. highways eventually led to bans in many states. ACPA was among the first to take a formal position against studded tires in September 1971, and other transportation associations, including the American Road Builders Association and the American Automobile Association followed suit, with the encouragement of ACPA. The association’s position was, in part, a response to several papers presented at the Highway Research Board, according to ACPA literature.

The Story of Econocrete

One of the significant technical (and marketing) milestones of the era was ACPA’s development of econocrete, which was developed in response to serious issues.

With the large scale construction of the Interstate well underway, as well as other construction in the 1960s to early 1970s, the industry was beginning to grapple with the scarcity of acceptable aggregates.

Concrete paving contractors and agencies were in a quandary, because for many years, “large supplies of natural aggregates and crushed stone had been discarded or rejected because of restrictive specifications or other reasons.”

Rising transportation costs, stemming from the energy crisis, as well as greater awareness to conserve natural resources, only made it more challenging to get consistently high-quality prime aggregate on the grade at a reasonable cost.

ACPA’s solution was econocrete. The concept was conceived in 1973 by Harry Curlin, of Southern Roadbuilders, Chairman of ACPA’s Technical Subcommittee on Materials and Mix Design. Curlin had observed the problem first hand with sand that met quality standards on one job, but not another. The ACPA subcommittee pressed into action and advanced the concept of selective use of local aggregates, many of which had previously been rejected or just not considered. They coupled this concept with two-

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FAST FACTS

Recognizing the First “Dean of Concrete Paving”

E.W. Hallett, President of Hallett Construction Company, was presented ACPA’s first lifetime membership by President Glen Perkins in 1972. Hallett Construction Company helped form the ACPA and was a charter member. Hallett was known to many as the “Dean of Concrete Paving,” and at the time, his company was believed to have constructed more square yards of concrete pavement and used more slipforming than any other contractor.

“With the introduction of jumbo jets, coupled with the explosive growth in passenger and cargo traffic, and increased business and private flying, most airports and supporting facilities have been rendered obsolete.”

—Harold J. Halm, Executive Director, ACPA, April 1971.
In 1975, CONCRETE CONSTRUCTION magazine reported, “Paving contractors have now adopted the term ‘econcrete’ to identify concrete mixes designed to use local aggregates that do not necessarily conform to conventional standards. And they have gained the support of the FHWA and local governmental agencies in moving the econcrete concept from the laboratories into the field.

“The concept was not new, merely not of prior consequence to the Interstate construction era. America’s first concrete pavement placed in Bellefontaine, Ohio, used two-course construction with different materials and mix designs in the two layers. The lower layer used large, coarse aggregate that was more porous than the smaller sized, denser aggregate used in the surface course,” the magazine continued.

Econcrete was put forward as a means to building better pavements. At a regional workshop in 1972, panelists—mostly contractors and suppliers—discussed the link between subgrades/subbases and pavement quality and performance. The point was made that smoother subbases lead to smoother pavements. Bruce Parsons of Ballenger Corporation reinforced the point by saying, “After it’s down, don’t mess with it.” Now, as then, this is sound advice.

Econcrete took its greatest hold as a subbase option and ACPA advocated and promoted the use of econcrete for highways, airports and local roads. The concept was so successful that agencies and contractors were soon using econcrete mixtures for a wide range of facilities.

In time, the term ‘econcrete,’ all but disappeared from the literature, largely because of the adoption by agencies of ‘lean concrete’ as a less commercial term. Today, econcrete subbases are generally
referred to as lean concrete subbases, an optional design layer for highway design specifications and a required design layer for major airfields, both by the military and FAA.

**Identifying, Seizing Market Opportunities**

As the decade progressed, the shift was toward developing market opportunities. Contractors and suppliers sought to control their own destinies through collaborative efforts to define and pursue new opportunities. In fact, the theme of the 1976 ACPA annual meeting, “Blueprint for Marketing,” emphasized the importance of market development.

ACPA formally recognized the opportunities to pave county roads, and ACPA members and staff worked together on tech service, education, outreach, and promotion of these facilities, often linking with state associations like the Iowa Concrete Paving Association (ICPA). The “County Market for Concrete Pavements” was the subject of ACPA’s 2nd technical bulletin, which became a foundation tool for this promotion.

As a natural progression, the association also increased its efforts in the area of “city paving” with the formation of a Municipal Paving Committee in early 1972. Panels made up of city and county engineers, contractors, and equipment manufacturers discussed municipal paving programs, as well as challenges and opportunities. ACPA’s first hardbound booklet “Municipal Concrete Pavement Manual” was

“**We feel that it’s high time that we as contractors have an opportunity to bring forth some ideas which will improve concrete paving. We have ideas that we are unable to put across in any other manner except by constructing a piece of pavement, donating it to somebody and let it lie there for everybody to inspect for years and years.”**


**FAST FACTS**

**Auf Wiedersehen!**

In June 1973, ACPA sponsored the first-ever U.S. tour of concrete pavement construction in Europe in conjunction with the Second European Symposium on Concrete Roads in Berne, Switzerland. ACPA was hosted by the Permanent International Association of Road Congresses (PIARC). In 1977, ACPA President Harold Halm would also represent the industry on a 21-day inspection tour in Europe.

This event was arranged by People to People, Inc., an organization founded by the nation’s 33rd U.S. President, Dwight Eisenhower, in 1956. The same year he signed the highway bill that established the Interstate Highway system.

These events were the ACPA’s earliest—but not the final—international missions aimed at technical fact-finding, technology transfer, and goodwill. The familiar farewell of German-speaking countries, *Auf Wiedersehen*, or “until we meet again,” would prove to be prophetic in later years.

As the decade progressed, ACPA promoted concrete pavement shoulders, as well as barrier walls and curbs, emerging opportunities that were made possible because of changes in equipment technology, as well as advocacy efforts. ACPA literature reported drastic reductions in highway fatalities attributable to concrete barriers, which rapidly displaced collapsible steel guardrails, which had previously been used in center medians. ACPA was instrumental in educating contractors and agency personnel on both the merits and the technical details associated with constructing both. By 1977, concrete median barriers were being built at the rate of 300 miles per year, and 45 states reported having built concrete barriers.

The Pave-Ins
The culture of the 1960s and 1970s permeated the association which borrowed the phrase “rap sessions” for its 1970s-era meetings. These were meetings where contractors and other members had open forums, similar to open forums in the current era of ACPA meetings.

The term, “Sit-In”-a popular term of the era-was turned to “Pave-In,” a wildly successful ACPA creation. In 1970, ACPA’s Board of Directors approved an ambitious plan to stage the first Pave-In during the Midwestern Regional Workshop in April 1971. The idea was to bring together ACPA contractors and material suppliers to demonstrate how to upgrade light-trafficked county roadways using concrete. The first Pave-In was held in Kankakee, Illinois, on April 29, 1971. The event involved paving a mile of road, conducting an

Addressing Fuel Shortages and Natural Resource Conservation
At a December 1973 meeting with FHWA Administrator Norbert Tiemann (1973-77) ACPA and other highway organizations, the FAA, USACE, and other agencies, discussed ways to cope with the critical shortage of fossil fuels and construction materials for pavements.

The contractor organizations all agreed that the fuel shortage by far is the most critical problem.

In the mid-1970s, and at the urging of ACPA, the contractors and agencies further agreed to:

1. Consider alternate pavement designs when reinforcing steel cannot be obtained.
2. Consider the use of admixtures, such as water reducers, to conserve cement.
3. Seek permission to use Type 1-P cement in concrete pavements.
4. Consider the use of fly ash in concrete mixes for pavements.
5. Broader use of imported cements which are compatible with local aggregates, and
6. Incorporate more realistic cement factors in concrete mix designs for pavements.

At about the same time, Dundee Cement started manufacturing a cement with bottom ash from power plants, along with clinker.

ACPA also pointed out that the shortage of reinforcing steel was a more serious problem than the cement shortage. The association continued reporting shortages of steel and fuel and volatile pricing throughout the decade.

Interestingly, the National Asphalt Pavement Association reported, “Aside from a generally low supply of petroleum products, causes of asphalt cement shortage included newly enacted restrictions on sulphur content and developments in coking facilities and hydrocracking.”56
educational workshop, and then, turning the roadway over to the county, free of charge. ACPA’s plan was a success, as evidenced by the more than 500 industry and public agency officials who participated. The event was filmed and a silent movie with a read-aloud script was subsequently shown all over the country. None of this would have been possible without more than 50 ACPA members contributing, materials, equipment, and personnel to the Pave-In construction.

Two more Pave-Ins were conducted, Pave-In II in 1977 (on the campus of North Central College, Naperville, Ill.) and Pave-In Southern Style in 1978 (on the campus of North Alabama University in Mobile, Ala.). Together, the three Pave-Ins garnered significant, positive attention for the ACPA and concrete pavements.

From an historical perspective, it is clear to see the links among the Seedling Miles program of the 1910s, the Pave-Ins of the 1970s, and the current open houses and demonstration projects, which ACPA and its local affiliates still use as effective showcases for emerging technologies and current best practices.

CPR to the Rescue

By the mid-1970s, the industry’s focus changed as pavement repair and maintenance needs and concerns emerged. Some of the concrete highways and roadways built in the early part of the century, including some early Interstate sections, were experiencing distresses and failures. Highway engineers never anticipated the traffic volumes that ultimately grew on America’s highways.

In 1975, a letter from the Georgia Department of Transportation Director, Tom Moreland, emphasized the need to focus on repair and maintenance. Along with a request to industry to help address his state’s pavement maintenance needs, there was a threat that Georgia might stop building concrete pavements if there were no concrete pavement maintenance solutions.

“To meet its customers’...”

—J.R. Coupal, Jr., Deputy Administrator, FHWA, commenting on funding of highways, 1975.

Econocrete was developed in the 1970s in response to rising transportation costs, stemming from the energy crisis, as well as greater awareness to conserve natural resources.

“The hour is late. It is well past the time when we in the highway business should get off the defensive and go on the offensive about our highway systems. Unless we do, history will record that we presided over the demise of one of the most important assets this nation or any other nation has ever had ... the highway system of the United States.”

—J.R. Coupal, Jr., Deputy Administrator, FHWA, commenting on funding of highways, 1975.
needs, ACPA and its technology partner, the International Grooving & Grinding Association (IGGA), established a series of techniques to repair concrete pavements. Drawing on the best of what was known from around the country, these techniques included full- and partial-depth patching and diamond grinding, which by then was a well-established technique in California. On February 10, 1976, professionals from the concrete pavement industry, as well as state and federal government officials, attended the first concrete pavement restoration seminar in Augusta, Ga. Twenty years later, according to Wouter Gulden, P.E., then the State Materials & Research Engineer with the Georgia Department of Transportation, “Concrete pavement restoration in the State of Georgia (had) proven to be a cost-effective technique for extending pavement life.” In time, the industry branded the series of techniques “CPR,” or concrete pavement restoration, borrowed from the term, cardio pulmonary resuscitation. (Bob Priest, then-President of Sanders Saws, Inc., and recipient of ACPA’s 2003 Hartmann-Hirschman Award, has been credited with pavement related term, CPR.) By the end of the decade highway funding would be earmarked to the “three Rs” for pavement resurfacing, rehabilitation, and reconstruction—an abbreviation that was expanded upon during the 1980s.

Overlays Enter the Picture
Overlays came into sharper focus in the 1970s, too. Newspapers, magazines, and television

“"The Interstate System is the most grandiose and indelible signature that Americans have ever scratched across the face of their land.”

— “The 100 Events That Shaped America” Life Magazine (Bicentennial Issue), 1976.

ACPA’s Concrete Safety Barrier and Curb Manual, published in 1979, reduced highway fatalities and helped set the stage for future guide specifications and design standards established by the Association.
reported on fibrous bonded concrete overlays of concrete pavements in Iowa and Michigan in the fall of 1972. Jackson Construction Company placed four overlays for the city of Cedar Rapids, Iowa. In Michigan, a team of contractors joined forces with the Michigan Department of Transportation to build the largest fibrous bonded overlay in history at that time, a 3-in. overlay on four lanes of an eight-lane highway carrying 100,000 vehicles per day in Detroit.

That feat was followed by a fibrous concrete overlay experiment in Greene County, Iowa. The Iowa Highway Research Board, ICPA, and ACPA were involved in planning the overlay test site, constructed in 1973. The project included 2-, 3-, and 4-in. sections, with and without fibers. At the time, this was the world’s most extensive field research undertaken on concrete overlays, with 41 test sections in a project more than three miles in length.

During the 1970s, ACPA combined efforts with the cement and steel industries to form an ad hoc Committee for the Promotion of Concrete Overlays, whose objective was to “develop the market for concrete overlays and to greatly increase the market penetration through design innovation, encouragement of research, performance evaluation, simplification and standardization of construction techniques, and active promotion.”

Overlay promotion in the 1970s culminated on September 25, 1979, when ACPA and the ICPA co-sponsored a record-breaking open house to showcase a thin bonded concrete overlay placed by Koss Construction Company, Inc. Almost 600 people attended the event, including representatives of 37 state DOTs.

**Origins of Performance-Based Specs**

In the 1970s, construction specifications began the slow evolution we still see evolving from prescriptive to performance-based specifications. ACPA reports from the 1970s include numerous examples of agencies and contractors growing more aware of both the need and the benefits of contractors having more control of practices on the grade.

Commenting on this shift, the Georgia DOTs Tom Stapler in 1971 said quality assurance is a completely separate process from quality control, which he added is not the proper function of the owner. “We don’t need an army of new specialists to accomplish this changeover.” His colleague,

"Former President Ford mingled with the ACPA delegates for thirty minutes during a reception which preceded the dinner. His talk followed the presentation of the H.W. Hartmann Outstanding Achievement Award, and … was interrupted six times by audience applause in strong support of his comments."

—ACPA Newsletter description of Former U.S. President Gerald Ford’s visit to the ACPA Annual Meeting, December 1978.
Contractor Reports
First Three-Miles-a-Day Project

ACPA's recognition of contractors who achieved the “Mile-A-Day” milestone continued in earnest through the 1970s. By 1974, there were 81 contractors who were recognized. The milestone, ACPA reported, “It indicates that the member company is a team that doesn’t guess; it knows what it's doing!” In the early part of the decade, ACPA recognized a contractor that achieved a surprising new record, the written account of which follows:

Beginning at 6 a.m. on February 23, 1971, a Matich Corporation paving crew in Colton, Calif., began what would be the first documented concrete paving project to exceed three miles in one day. Fifteen hours and 57 minutes later, the crew had placed 16,975 ft (3.215 miles) of concrete pavement.

“Upon arriving at the plant early in the morning, I could see that something big could happen that day. Not only were men, equipment, and materials geared to big production, but the crew had a long section of roadway to pave without curves, bridges, or other obstacles in the way,”
— John D. Geesaman, ACPA Technical Director and Mile-A-Day Paving Club Secretary

“He’s crazy.”
— Unnamed crew member, jokingly reacting to the tenacity of company President John Matich’s (ACPA Chairman-1970) in paving three miles in one day.

Tom Moreland, said, “We are taking ‘substantial compliance’ out of our specs, and replacing it with exactly what we require in the end product.”

Then, as now, ACPA’s response to this issue was to step up educational efforts; provide technical guidance; and to work together with federal and state agencies to influence specifications and promote best practices.

Equipment, Materials Suppliers Answer the Call

On a parallel path with changes the contractors were addressing, equipment manufacturers continued to develop and refine paving machines and other equipment that further mechanized the paving process, while also performing other features.

Slipform paving continued its lockstep progression toward greater acceptance among agencies and contractors. Another “pivot of change” was also occurring with many equipment manufacturers, who were quick to incorporate new “solid state” technology. Mechanical controls would soon be displaced by electromechanical and electronic components to provide better and more accurate machine control.

Hydraulic, high-cycle, and pneumatic vibration equipment began to appear in the early to mid-1970s, and ACPA and its member companies were once again at the forefront to study and report on concrete consolidation and various aspects of vibration of the mixture on the grade.

Materials science also took on greater significance during this time, and suppliers were developing fibers; coatings; curing agents; a wide variety of admixtures; and other materials that enabled better control, faster paving speeds, and improved quality.

Once again, ACPA lead the way with field evaluation, technology transfer efforts, and promotion of the new generations of materials.

Focus on Government Affairs

In keeping with the association’s principle of “developing and maintaining helpful relationships,” the association has a long history of effective advocacy with public officials, particularly at the federal level. Three early examples of this can be seen in the context of two critical issues that emerged in the 1970s.

• Save the U.S. Department of Transportation—In 1972, ACPA urged members to “contact their Congressional representatives and any other friends in Congress to oppose the establishment of a Department of

FAST FACTS
Setting the Stage for Stringless Paving

Robert Studebaker of the Laserplane Corporation reported on laser beam applications for highway construction to ACPA in 1974. He described a system for automatic control of grading equipment by a plane of laser light. With the subgrade constructed to the plan elevation, stringlines are not needed for the control of paving. He pointed out that this is a big advantage to the contractor because “a string is a thing that gets in your way, is hard to set and difficult to protect.”
Community Development.” The ACPA dispatch warned that the proposed bill would fragment all federal transportation programs, and also would threaten the fledgling U.S. Department of Transportation (DOT), which began operations only five years earlier on April 1, 1967. 55

“The proposed bill will fragment all transportation programs at the federal level,” ACPA advised. “This will force national transportation policy decisions up to the level of the President. This does not make sense when these decisions can now be made by one Secretary: the Secretary of DOT.”

The bill failed, and the U.S. DOT today remains a viable agency. This was the first documented case of ACPA staff and members answering a call-to-action that was specifically on behalf of a federal agency.

“"If anyone is not aware of what effect the things he is doing have on the concrete, then the chances are that he is going to affect it adversely”

FAST FACTS
Speaking with One Voice
In 1975, representatives of 31 national construction associations formed the National Construction Industry Council with the objective of forming an organization to speak as “one voice” for the construction industry. ACPA was represented by John E. Eisenhour, Jr. (ACPA Chairman-1974) and ACPA President Harold Halm. The group was a forerunner to today’s Transportation Construction Coalition, of which ACPA is a member.

- Calling on President Nixon to Incent Capital Investment—When a cement shortage threatened supply to the concrete pavement industry, ACPA’s Board of Directors informed President Richard Nixon and appropriate administrative and Congressional leaders by letter of the seriousness of the problem and requested that steps be taken to encourage the investment of capital in the cement industry. This would include permission to price cement at a level that would provide a realistic return on investment.” Glen Perkins (ACPA President-1972) said, “On one hand the cement companies are being required to expend vast sums of money to comply with pollution control ordinances, while on the other hand, the price for which they

Early experiments with thin, bonded concrete overlays in Iowa and Michigan laid the groundwork for what has become a popular technology used to rehabilitate asphalt, concrete, and composite pavements.
sell their product is being controlled...This is leaving little capital for the companies to invest in new cement plants and increased production.”

• Calling on ACPA Members to Support 1975 Highway Bill —John Eisenhour (ACPA Chairman-1974) reported on a conversation with then-U.S. House Minority Leader Gerald Ford (R-Mich.) and later, the 38th U.S. President. (As former President, Ford would visit the ACPA annual meeting in 1978.) “The opinion was expressed that an interim program can be passed if Congress is convinced that it is needed. Since [the Minority Leader] also sees a possible delay of six to eight months before a new highway act is passed, there is an urgent need for some way to keep the highway program alive and kicking. Write to your Congressman and your Senator. Urge your people to write also. Urge those that supply your equipment, your materials, your fuel and oil. You won’t be buying much from them without a strong highway program.”

These are early examples of ACPA advocating on behalf of its members in Washington, D.C. Although such efforts have peaked and waned over time, these events demonstrate the need to focus some of the association’s efforts on public advocacy in the nation’s capital.

In the End New Name to Reflects 1970s Changes

The Board of Directors approved changing the name of the association to the American Concrete Pavement Association, effective January 1, 1979. The new name was intended to be “more

The 1970s: The Pivot Of Change Decade

Like the two Pave-Ins before it, Pave-In Southern Style in 1978, garnered significant, positive attention. The event was held on the campus of North Alabama University in Mobile, Ala. (Photo courtesy of GOMACO Corp.)

As you know there is a great movement at this time to divert highway trust fund money to rapid transit. Rapid transit is fine. We have no quarrel with that. But we cannot afford to finance other programs from the highway trust fund... We’ve got to get our message across. We can’t do that by talking to equipment manufacturers and highway department engineers. The three of us agree that the highway program is the best thing that ever happened... We have to get our message across to legislators.”


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Recognizing ACPA’s First Technology Partner

The grooving and grinding industry began with experimental use of a single diamond blade was used on a concrete saw to groove pavement in the late 1940s.

“Since that early tentative step, concrete grinding, grooving and texturing with diamond blades has developed into what is today a multimillion dollar industry that is literally practiced around the world,” according to the IGGA, an ACPA technology partner.

In June 1972, IGGA was incorporated in Lakewood, Calif., and the association’s “inception was largely due to the inspiration and driving force of Lester Kuzmick, who envisioned an organization that could advance the collective interests of contractor members.”

ACPA and IGGA worked together on the early development of CPR, starting in the 1970s, and in 1995, the two organizations created a formal affiliation with IGGA to represent ACPA’s newly formed Concrete Pavement Restoration Division. Today, the renamed ACPA/IGGA Pavement Preservation Partnership serves as a valued collaborative effort to provide technical resources and industry representation in the promotion of concrete pavement preservation to DOTs, municipalities, and engineers around the world.¹

members, and a collaborative approach that was at times daring and risky, but the lesson of the 1970s is that no one member of ACPA ever went it alone.

If there is a single statement that captures the excitement, energy, and focus of ACPA during the “pivot of change” decade it is this: ACPA’s leadership, staff, and members recognized both the uncertainty and the opportunities of the future, and in response, took bold and decisive steps that benefitted members in every category then, and still to this day. □

FAST FACTS

Dowel Bar Insertion First

According to ACPA records, inserting dowels into the surface of concrete pavement by machine was first attempted in 1945 using contractor-built machines. The first manufacturer recognized to commercialize “dowel implanting” was the Heltzel Company on a form-riding machine. In 1976, Southern Roadbuilders, Inc. retrofitted an old Heltzel dowel implanting rack onto a “crawler track spreader,” which per ACPA records is believed to be the first time dowels were ever implanted on a production job—I-16 west of Savannah, Georgia—in a slipform paving train. Savings were reported as $0.25 per square yard.

“The entire industry ought to move a little faster in developing and training technicians who can anticipate problems rather than just solve them after they occur.”

Chairman Frank Surianello  
American Concrete Pavement Association  
9450 W. Bryn Mawr Ave.  
Suite 150  
Rossmore, IL 60018

Dear Chairman Surianello,

I would like to offer my congratulations to the American Concrete Pavement Association for fifty years of representing companies who play a critical role in America’s infrastructure and transportation.

The ACPA has maintained a strong voice in Washington promoting the interests of its member companies. They have had great success in advocating for investments in America’s infrastructure. Most recently, with the passage of MAP-21, they proved to be an enormous resource and supporter of our legislative efforts.

Again, please extend my congratulations to the members, staff, affiliates, and allies of the ACPA on fifty years of hard work.

Sincerely,

James M. Inhofe  
U.S. Senator
The 1980s: The Era Of Expansion
The 1980s: The Era of Expansion

In 1980, former actor and state Governor Ronald Reagan was elected the nation’s 40th President. He was sworn into office in January 1981, a time when the economy was suffering through a recession. Even so, the downturn proved to be a temporary setback along a path of sustained economic growth.

The commercialization of cable television, including the founding of CNN in 1980, brought the world into sharper view, often through the lens of live news reports. People witnessed terror turned to hope with the release of 52 hostages held in Iran, in all some 444 days after their capture. Failed attempts on the lives of President Reagan, Pope John Paul II, and British Prime Minister Margaret Thatcher were dispatched around the globe and around the clock. Millions looked on in shock and sadness as seven U.S. astronauts died in the crash of the Space Shuttle Challenger. Cable delivered news instantly, and so, information began reaching more people faster than ever before.

The nation began healing from the turbulence of the 1960s and the tragedy of the war. One example of the healing can today be seen in the Vietnam Veterans Memorial, the main part of which was opened in 1982 to honor the almost 59,000 Americans killed or reported missing in action during the war.61,62

From the solemn to the celebratory, people observed profound changes in 1980s, often as a result of the struggles of the 1960s and 1970s. One example was the second wave of the Women’s Movement, during which the nation saw several major “firsts” for women, including Geraldine Ferraro’s run for U.S. President; Sandra Day O’Connor’s appointment to the Supreme Court; and Sally Ride’s journey into space.63

As the decade continued to unfold, “economic liberalization” led to financial growth in countries previously known as “third world” nations, and this, along with the start to globalization of business, fueled an economic boon. By August 1987, the Dow Jones Industrial Average had increased 44% over the previous year’s closing of 1,895 points, although “Black Monday” in October of the same year would at least temporarily thwart the sharp growth in the equities market.64

In spite of some ups and downs, personal income climbed significantly
Remembering Harold J. Halm  
(1925-1985)

On July 1, 1985, the first executive director of ACPA passed away after an extended illness. The following is an account of his career, reported in a special edition of ACPA's newsletter in September of that year.

Harold Halm graduated from the University of Detroit in 1951 with a degree in Architectural Engineering. His fascination with architecture continued throughout his career, although he never practiced it. He would often take the time to look at an unusual building and point out details and ponder the reasons for a particular design. He was particularly entranced by wooden beams and enjoyed restaurants which had them running overhead.

During his college years, he worked for the Detroit City Planning Commission, gaining an understanding of the need for a high-quality system of streets and roads. Following college, he went to work as a structural engineer with the Western Electric Company. Halm would spend two years with Western Electric before joining the Leininger Construction Company as project superintendent.

In the training courses Halm taught, his understanding of the paving operations and the interrelationship of all the different activities often surprised both rookie and veteran inspectors. He knew where things could go wrong and how they could be corrected.

In 1958 Halm went to work for the Portland Cement Association. A few years later, he wrote a paper on concrete pavement costs as affected by design. The Highway Research Board published the paper, “An Analysis of Factors influencing Concrete Pavement Construction” in 1962. This paper was used as the bible in showing engineers how their designs affected paving costs for many years. He then attended a short course at the Massachusetts Institute of Technology to learn about a new technique—Critical Path Method or CPM. Halm’s paper, “Critical Path Method as Applied to Pavement Construction,” was published by the American Road Builders Association in 1963, “and was so well received by concrete paving contractors that Harold was able to gain their friendship and trust,” recalled Gordon Ray, Portland Cement Association, adding that the contractors asked him to become their first Executive Director.”

Within a few years, he would become the first President (then Executive Director) of ACPA, and during his career, would make countless contributions to the industry. Among the many tributes to Halm were these, also reported in the ACPA newsletter:

“Harold’s life’s work was dedicated to the advancement and improvement of the concrete pavement industry.”  
—Gary L. Godbersen, GOMACO Corporation.

“Much of ACPA’s success can be attributed to the fact that Harold’s main concern was quality. Harold believed that quality construction sold concrete pavement; if you promoted quality you promoted concrete.”

—W. J. Noonan, Jr., Noonan Construction Co., Inc. (ACPA Chairman-1975)

“Harold preached- until the day he left us- that the contractors, equipment manufacturers and dealers, suppliers and related associations should coordinate our efforts and have one common goal of giving the industry and the taxpayer the most for their money.”

—M. Lee Powell III, Ballenger Group, Inc. (ACPA Chairman-1985 and ACPA-Chairman-1999)
in the United States during the 1980s, and the focus on individual wealth and disposable income was reflected in movies, television, literature, and other aspects of the nation’s cultural fabric. For the first time we heard the term DINC (due income no children) and Yuppie (young urban professional). With more disposable income, people were purchasing their first home computers, buying video games, and enjoying an ever-expanding array of entertainment, news, and sports options available for the first time in the 1980s. These included MTV (Music Television), VHS movies, the Walkman, boom boxes, and compact discs.65,66,67

One of the crowning accomplishments of the decade was the dismantling of the Berlin Wall in November 1989. The event not only marked the end of the Cold War, but also symbolized the eventual dismantling of the Iron Curtain that had both isolated and separated many nations from the rest of the world.

With outstretched hands liberating citizens from the clutches of communism; with the poignant embrace of the nation’s forgotten veterans; with giant strides of men and women alike; and with the expansion of business across the globe, the United States and its citizens were reaching new heights in the 1980s, and the same may be said of the ACPA.

Construction Climate in the Early 1980s

The consequences of high interest rates for the construction industry were disastrous at the outset of the decade. Real GNP in construction dropped by 8.4% in 1980, followed by further declines of 2.0% and 6.2% in the following first two years. By 1982, unemployment in the construction industry was 20.1%, the highest rate in any major sector of the economy since World War II.68

In 1980, Irving F. Jensen, ACPA Chairman, summarized the situation in a few telling statements that sound all too familiar to comments heard in present times: “The construction industry is facing the greatest challenge that it has faced in seventeen years of the American Concrete Pavement Association. We have increased fuel costs, high cost of interest and devastating inflation which all have eroded the highway dollar, reduced work volume, and caused contracting agencies to defer needed maintenance and construction. The greatest problem we as an industry face today is the lack of adequate funding.”

The impacts of this economic challenge reached far beyond the concrete pavement industry, but were perhaps felt more by ACPA members than most contractors, when coupled with the loss of

“...The greatest problem we as an industry face today is the lack of adequate funding. Nationwide highway construction costs increased 208% between 1967 and 1979; however, the Federal Highway User Tax has not increased, remaining at 4 cents per gallon since 1959. Conventional funding will not provide the revenues required to maintain highways and streets at adequate service levels.”


Marlin J. Knutson became the second President & CEO in 1985.
their “bread and butter” paving work, a loss that came from the substantial completion of the Interstate.

Originally estimated to cost about $27 billion and to be completed by 1972, 96% of the system was serving traffic or under active construction by 1980. In 1980, it was estimated that the remaining 4% would require over $50 billion in Federal dollars (1980 baseline). However, the Interstate authorizations projected through 1990 would only meet $30 billion of the estimated $50 billion remaining costs. The need to preserve and add capacity while completing the system was underestimated by planners and legislators, and state DOTs adjusted their focus to preserving their systems first, and then, adding capacity as a secondary priority.

In 1970, states were allocating 88% of their total highway capital investment to the primary system for new capacity (new highways). By 1980 that figure dropped to little more than half of the DOT investment, and later in that decade only roughly 20% of the capital investment went for this purpose. At the same time, secondary roadways were also experiencing declines in condition, and estimates were made that by 1990, some 90% of the secondary mileage would need to be replaced. The needs had grown far beyond the resources available.

Fortunately, some help came in the form of an increased user fee (gas tax) in 1983. A five cent increase more than doubled the federal gas tax from four to nine cents per gallon. The new funding was viewed as an antidote to the challenges felt at the time. “The future of concrete pavement looks a lot brighter than it did last year at this time. The economy looks better—stronger—filled with new vitality. And so does our association. In short, we’re over the hump,” stated Harold Halm, Executive Director in addressing the ACPA membership in late 1983.

**PCA Scales Back**

In the 1980s, a significant change occurred within the cement and concrete industry. The Portland Cement Association began an unprecedented scaling back of their operations and personnel, which ultimately influenced new directions for ACPA. In the 1960s PCA’s field promotion staff numbered in the 500s, with multiple engineers and promoters stationed across the country in every state. After downsizing in the 1980s, the field promotion staff was gone and PCA’s central office staff was all that remained.

Although the eventual pullback on cement promotion may have been exacerbated by the economic downturn in the late 1970s and early 1980s, the roots may also be much deeper. Except for a brief respite in the “pro-business climate of the 1950s,” the cement industry was heavily regulated by the federal government for many decades. The restrictive government regulations prevented the cement industry from investing, growing and consolidating for efficiency.69

“The industry remained fragmented and full of small companies … largely because of antitrust enforcement.

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**FAST FACTS**

**Computers and the Concrete Pavement Industry**

Perhaps starting the ACPA’s long-standing tradition of embracing technology, the 19th annual meeting of the association included a session on “Computers and Our Industry,” featuring a keynote address on how to best put computers to work controlling costs and managing business. Randell Riley explained how ACPA determines equivalent pavements using a computer. ACPA member R. James Horton of Rexworks, Inc. (now RexCon), also explained how computerized mixing can be successfully implemented into contractor’s plant operations.

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Marlin J. Knutson (center) is flanked (L to R) by Bill Yrjanson, Tom Harmon, Randy Riley, Stan LaHue, and Jerry Voigt.
Consolidation and concentration were pursued by producers, but blocked by the Federal Trade Commission. This antitrust policy froze the structure of the cement industry, and there was little change until a restructuring was forced upon the declining industry in the 1980s.70

Affected by the challenges of a declining cement company membership, PCA, which had been an ACPA proponent, providing seed money, sharing staff expertise, and recruiting help throughout the first 20 years of ACPA’s existence, was entering arguably the most challenging era of its history.

**Promoting and Persevering**

Operationally, federal policy issues, including the “deplorably high interest rates” and the Federal Reserve’s “yo-yo” theories of money manipulation, were “dealing a disastrous blow to the entire construction industry,” according to accounts by ACPA. These policies also stressed the association’s finances and membership numbers. In 1983 the association hit an operational low point since its early days—only 78 contractors and fewer than 200 total members remained.

Despite these challenges, ACPA and its members continued exploring and developing opportunities in markets beyond the Interstate Highway System. According to published accounts, in the early 1980s the association focused significant promotional efforts on parking lots, county roads, and municipal paving. At the same time, the concrete pavement industry began making strides on concrete overlays, including “whitetopping” existing asphalt pavements. The association’s efforts to develop concrete shoulders, econcrete, and CPR, which were started in the 1970s, also continued to bear fruit.

In what was clearly a sign of frustration with federal policy, ACPA in 1981 issued an urgent call to action to all members. The association urged all members to write the President, their Congressmen and Senators, and the Federal Reserve Chairman, Paul Volcker, to change federal fiscal policies.

**Energy Crisis Wanes**

In the early 1980s, ACPA reported important petroleum industry developments, including new technology that enabled “more sophisticated refining of crude oil for higher percentages of fuels such as gasoline.” ACPA’s Executive Director, Harold Halm, argued that this breakthrough further accentuated the position that an energy-containing material should not be wasted on road construction when there is a far less energy containing materials, such as concrete.

The focus on energy conservation waned as the decade unfolded, according to information in ACPA’s archives. The worldwide demand for oil went down by 1985. Price cuts were called for by OPEC oil minister, Ahmed Zaki Yamani, and the pressure on oil production subsided,71 as did the cost of asphalt binder.

**The Loss of Our First President**

At about the midway point of the decade, the association experienced one of its darkest days in its more than two decades of operations. On July 1, 1985, the association’s first chief
executive, Harold J. Halm, died after battling an extended illness. He would be remembered for his many accomplishments, but equally, for his personal traits. In fact, many members and staff expressed how his illness did not sway his sharp focus, his selfless efforts for the industry, or his strong passion for quality concrete pavement construction. (See sidebar, “Remembering Harold J. Halm.”)

As was the case two decades prior, ACPA’s leadership stepped forward to plan the future of the association and to locate a new chief executive. M. Lee Powell, then Vice President of Ballenger Paving, was Chairman of the Board, and it bears mentioning that the company was the first contracting company to join ACPA.

Commenting on the death of ACPA’s first chief executive, Powell said, “His passing left the future of the association hanging in a state of uncertainty. There was never any question that the association would continue its work; there were only questions of the direction it would take.”

**Succession and More**

Powell, along with other leaders—R.E. Hirschman (ACPA Chairman-1967), John Eisenhour (ACPA Chairman-1974), Robins Jackson (ACPA Chairman-1977), and Edward Egan (ACPA Chairman-1986)—began the search process.

“Fortunately, an Advisory Committee (made up of ACPA Past Presidents) had discussed some future plans at a few of the previous Board Meetings,” Powell said. “This made the transition somewhat easier. It allowed us to establish what I believe is a new direction for the association.”

The new direction would be led by ACPA’s second chief executive, Marlin J. Knutson, P.E., or “Knute.” As former Executive Vice President of the Iowa Concrete Paving Association, Knute had “proven himself to be a skilled promoter of concrete pavement,” Powell said. “His experience in the development of the concrete overlay market and the promotion of the secondary road market demonstrates that ‘Knute’ knows how to bridge the gap between having an idea and making it a reality.”

As the new President of ACPA, Knutson said, “I view my position as a challenge and an opportunity to implement some positive changes in the organizational structure, membership participation, marketing concepts, and communications with members as well as other associations, governmental agencies, consulting engineers, universities and researchers. The changes we will implement will be consistent with the purposes of the organization as defined in Article I of the By-Laws of the association. In order to achieve our purposes we need a unified team approach and effort from our members and staff.”

With this resolve, and the prospects of an improved mid-1980s economy, the era of

“The Congressional Budget Office produced a study in which one of the main conclusions was “Of all the commonly held notions about energy efficiency, probably the most misguided are those concerning rapid transit.” The findings of this study indicate that under typical conditions, new rapid rail systems actually waste energy rather than save it.”

expanding the reach of ACPA for the concrete pavement industry would rapidly reach full stride. It bears mentioning that in his comments regarding “Article 1 of the Bylaws,” Knutson was reaffirming the original mission of the association, which had in spite of the tumultuous times, remained unchanged.

The Great Expansion

Knutson ushered in a new era, hiring additional technical and administrative staff, including engineers who drew on diverse backgrounds ranging from the FHWA, state and municipal agencies, and industry.

The new staff was charged with the responsibility of building upon the association’s technical credibility, while also applying market development principles and promotional practices that capitalized on the inextricable links between technical development, market development and government affairs. The association adopted a successful 10-point marketing plan in 1987 for implementation in 1988.

In January 1987, ACPA reported, “The increase in the amount of Federal money available for highway work combined with the sad reduction in field forces by the Portland Cement Association, has created a need for the expansion of ACPA’s operations.” This pronouncement followed a strategic discussion in December 1986 by the ACPA Board of Directors.

The answer was to form new regional and state chapters, as well as affiliate with existing state paving associations, some of which pre-dated the incorporation of ACPA. At their meeting in December 1986, the ACPA Board of Directors had set plans into motion, and by Knutson’s retirement in December 2007, the “map” had been filled out.

“The American Concrete Pavement Association strongly opposes the use of public employees performing construction work for government agencies. Such work should be contracted for with private industry—this after all, is the foundation of the Free Enterprise System. The construction industry and the American Concrete Pavement Association are obligated to preserve and expand the Free Enterprise System. It is this system that helps keep government in its place—keeping it a servant of the people—not a master of the people.”

—Harold Halm, ACPA Executive Director, February 1981.
“In 1981, for the first time, we have seen concrete win out as a lower priced pavement in alternate bids with asphalt. This trend has the attention of specifying agencies all over the United States. We are now in a position to sell our product not only as the best pavement, but as the pavement with the lowest initial cost.”

—Robert S. Riley, ACPA Chairman-1981

across most of the contiguous United States. (See sidebar, “Building the Federation of ACPA Affiliates”.)

**CPR Comes of Age**

By 1983, CPR had been fully developed, including all of the techniques we know today: full- and partial-depth repair, diamond grinding, load transfer restoration, undersealing, and joint resealing. Equipment manufacturers helped the process become more effective by introducing more powerful diamond grinding machines in 1980. The machines were designed for full grinding, and were capable of keeping costs down by increasing production capacity with higher horse power driving 3 and 4 foot grinding heads. The machines could grind 10 to 15 feet per minute depending upon the aggregate hardness and depth of the cutting.

As CPR was taking hold, state and federal engineers were asking questions on best practices and performance of the techniques. In 1983, ACPA assisted the University of Illinois on National Cooperative Highway Research Program (NCHRP) project 1-21 “Design and Construction Guidelines and Guide Specifications for Repair of Jointed Concrete Pavements.” Also, FHWA and the National Highway Institute (NHI) contracted ACPA to develop a technology transfer manual and course entitled “Construction and Rehabilitation of Concrete Pavements,” which ACPA taught in venues around the country. These contracts are the first paid projects undertaken by ACPA. Both projects were led by Bill Yrjanson, ACPA Director of Engineering.

Georgia, which had issued the original challenge leading to CPR, had restored 300 miles of concrete pavement using CPR techniques by 1983. In an address to ACPA members that year, Allen Childers, then with the Georgia Department of Transportation, summed it up well, “Rehabilitation by CPR has given Georgia a cost-effective repair system for extending the life of concrete pavement far beyond their design capacity. This has allowed Georgia Department of Transportation to stretch available funds over many more miles than if only asphalt overlay methods were used.”

ACPA’s support of CPR continued ramping up throughout the 1980s and into the 1990s. A CPR Committee was put into place in 1987 with the goal of technology transfer. In 1989, ACPA issued its first two of a new series of technical bulletins: Guidelines for Full-Depth Repair (TB002) and Guidelines for Partial-Depth Repair (TB003).

**3R and 4R Solutions**

ACPA began a 3R promotion program in 1983 called “Concrete Solutions.” The effort involved a broad cross-section of the industry and involved demos, seminars and news releases. It started as 3R, which stood for Resurfacing, Restoration and Reconstruction. Later ACPA added a fourth R, for Recycling. Multiple national workshops on 3R and 4R drew hundreds of participants and were held across the United States. The program was considered quite successful, and can be considered the forerunner to later programs, such as the “mix of fixes”.

The demand for concrete pavements in airport markets has increased as both a function of aircraft sizes and the recognition of quality.

“In 1981, for the first time, we have seen concrete win out as a lower priced pavement in alternate bids with asphalt. This trend has the attention of specifying agencies all over the United States. We are now in a position to sell our product not only as the best pavement, but as the pavement with the lowest initial cost.”

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Concrete Recycling Gains Attention

One of the first and most ambitious reconstruction/recycling projects occurred on the Edens Expressway (I-94) in Suburban Chicago in 1979 and 1980. At the time it was the world’s largest concrete pavement recycling project and largest paving contract ever awarded in the United States, with over 360,000 tons of old concrete crushed and used as recycled material. ACPA played a part in the project, helping with early planning and feasibility discussions with the Illinois DOT.

Denton Construction Company recycled the old concrete pavement and built a new continuously reinforced concrete pavement in its place. The project also was the first ever (reported in 1980) to use maturity meters (the M-Meter by James Electronics) to assess when to open the pavement to public traffic at interchanges, as well as for timing of longitudinal joint sawing (targeted at 450 psi strength development). The technology worked—there were no random cracks on the project and phasing was exceptional. S. J. Groves, Brown & Lambrecht, and Denton Construction Co. were awarded the Hartmann Outstanding Achievement Award for the innovations and historic achievements.

ACPA promoted recycling in many other states, including Oklahoma, where a D-cracked concrete pavement on I-40 east of Oklahoma City was recycled and replaced with a new 10-in. pavement in 1983. It was reported that Koss Construction used a diesel pile-hammer breaker for pavement breaking and a combination of crushers to control the gradation of the recycled aggregate. The coarse aggregate was used back in the concrete mixture and the fines were used to stabilize soil on the project, representing one of the industry’s first efforts of full recycling of its product for “resource conservation.”

The John Lodge Freeway reconstruction in 1987 was site of one of the biggest (7-mile, six-lane) and most effective concrete paving industry open-houses co-sponsored by ACPA in the decade. More than 200 highway industry leaders from around the country witnessed the activities and learned firsthand about urban concrete pavement reconstruction that had enthusiastic public support. The DOT carried out an extensive $600,000 public relations program, a precedent for handling urban reconstruction in many other U.S. cities for years to come.

Fast Track

With its 10-point marketing plan in place, ACPA began to tackle new challenges. “Public Awareness” was the mantra of ACPA’s Marketing Committee. To support this effort, a Fails Management Institute (now FMI) study commissioned by the association in 1989 revealed three perception challenges to overcome: “concrete paving takes too long, costs too much, and is too hard to repair.” Association leaders determined the “it takes too long” perception required a concerted industry effort “to prove we are capable of reducing the time between placement and opening to traffic.” Fortunately, for several years preceding the perception study efforts were well underway on “fast-track” paving.

Fast-track paving was championed in the mid-1980s by Jim Mikulanec (ACPA Chairman-1989), then President of Central Paving Corporation. The first successful placement of fast-track concrete paving was in April 1986 at the Dundee Cement...
Terminal in Southeast Des Moines, Iowa, a trial installation to see what it took to slipform high-early strength concrete. Encouraged by this effort, ACPA co-sponsored a national demonstration project with the ICPA in Storm Lake, Iowa in July that same year. The project involved Central Paving Corporation and several other Iowa companies. More than 400 federal, state, and local officials, contractors and consulting engineers assembled to watch history being made as “the first major project using a fast-track bonded concrete overlay” was placed and opened to traffic in a matter of hours not days.

Based on the success of Storm Lake and other early projects, ACPA’s equipment and material manufacturers soon responded with technology for fast-track paving. Zero-clearance paver concepts and dowel bar inserters became more prominent as ACPA manufacturer members augmented the fast track approach. Admixture and cement producers also provided proprietary cements, Type III cements, and high-range water-reducing admixtures to enable the pavements to be closed a minimum time—24 hours or less in some cases—and then opened to traffic.

Moving quickly to address the negative perception about the speed of concrete paving, in 1989 ACPA published a special report “Fast Track—Construction Material with a Conscience.” ACPA published its first technical bulletin on Fast Track Concrete Pavements in 1989.

Fast track promotion would continue well into the 1990s. In time, maturity meters became a principle technology promoted by ACPA for fast construction, because practical experience showed that strength development knowledge was

**CPR Demo Project on Historic Pavilion**

On May 10, 1983, more than 51 years after being opened to traffic, the Mount Vernon Memorial Parkway became the site of a historic CPR demonstration project, led by the American Concrete Pavement Association.

More than 300 state and federal officials and industry representatives gathered along a 1,500 lineal ft section of the parkway to demonstrate and observe various methods of rehabilitating concrete pavements. The project included diamond grinding, partial and full depth patching, undersealing, installation of load transfer devices, cleaning and resealing of cracks and joints, and various non-destructive testing methods.

The original concept for constructing the parkway as a memorial to George Washington came from a group of spirited citizens from Alexandria, Va., in 1886. It wasn’t until 1928 that a law was passed that guided the U.S. Commission for the Celebration of the 200th Anniversary of the Birth of George Washington to construct a suitable memorial highway connecting Mount Vernon, the home of George Washington and the Arlington Memorial Bridge. With that, the Mount Vernon Memorial Highway was completed and opened to traffic on January 16, 1932.

Fifty-one years after completion, at the ACPA’s CPR demo in 1983, Ray Barnhart, 16th Administrator of the FHWA, said it was “fitting that a demonstration be conducted on the George Washington Memorial Parkway, now known as the Mount Vernon Memorial Highway.” He went on to say that “this more than 50-year-old pavement had served well, the taxpayers certainly received their money’s worth and it is only fitting in order to effectively promote rehabilitation techniques.”

Administrator Barnhart is credited with beginning a longstanding cooperative spirit between FHWA and ACPA for technology implementation. “With billions of dollars invested in America’s system of highways, it is extremely important that both the private and public sectors work together to advance new technologies to help bring our highways back up to a high level of service,” Administrator Barnhart said during remarks to the demonstration project attendees.

Dressed in a sombrero and poncho for a decidedly southwestern-themed event, Marlin Knutson takes time out from annual meeting activities to share time with staff members (L to R), Jerry Voigt, Maureen Stecker, Bob Risser, Debbie Becker, and Sara Stevens.
as important to fast-track as high-early strength mixtures.

**Doweled Joints**

Among the expanding array of solutions, a major technical advancement in conventional concrete pavement design took hold in the 1980s, and ACPA was in the middle of advancing the best practice. While researching jointing concrete pavements with the University of Illinois at Urbana-Champaign on NCHRP 1-21, a realization that dowelled joints needed to be standardized for the industry to maintain a quality product came along with best practice information for quality repairs. The long-panel, jointed-reinforced pavements that were commonly built during the Interstate construction in the 1960s and 1970s faulted significantly at mid-panel cracks causing the thump-thump ride that aggravated road users, highway departments and the industry alike. However, the doweled joints on these pavements performed remarkably and comparably better.

And so, with this realization, ACPA began promoting the merits of plain dowelled pavements in favor of jointed reinforced pavements with wire mesh or distributed steel. The transition took years to accomplish, but by the 1990s jointed reinforced pavements were essentially extinct from all but a few state DOT standards.

In the 50-year history of the ACPA, perhaps no single association-led advancement has done more to improve jointed concrete pavement performance than the proliferation of the jointed plain dowelled design. Today, ACPA continues to support plain dowelled and continuously-reinforced pavement designs as the best choices for heavily-trafficked highways.

**Cross-Stitching**

During construction of a section of I-70 through a mountain pass in Utah, uncontrolled cracking was observed in areas of varying length and at random locations on the project. The Utah DOT hired ACPA in 1985, shortly after the project’s completion to identify the problem and develop a solution. ACPA investigated the project with Utah DOT and found it was caused by bonding of the pavement to the econcrete base, combined with the high differential in day and night temperatures in the mountainous area.

“A few years ago I never would have dreamt that we would be recycling old pavement and reusing the aggregate for new concrete; I never would have thought that we would be placing a thin bonded layer of concrete over an existing continuously reinforced concrete pavement; I never would have dreamt that we would be building and repairing very old concrete pavement with CPR methods and restoring it to like-new conditions with excellent riding qualities. These are the new market areas created by this organization.”


“Teamwork is essential to success in the association business—teamwork does not just happen; it grows out of opportunity, loyalty, trust, consideration, involvement in the decision making process and careful training that enables people to respond effectively and cooperatively in a well-coordinated, concerted effort. Working in harmony with others: This is the essence of teamwork.”

Drawing on his knowledge of military research on strengthening joints from a 1971 USACE study, William (Bill) Yrjanson, P.E., ACPA Director of Engineering, recommended that Utah try an untested process called cross-stitching. Cross-stitching uses deformed tie bars epoxied or grouted into holes drilled at an angle through a crack. The second, slot-stitching, uses deformed tie bars grouted into slots cut across a joint or crack. Each technique is beneficial for certain circumstances.

ACPA developed the details and oversaw the installation. The project became the first known application of cross-stitching technology ever applied in the field.

Subsequent field reviews by in 1989 and again in the early 1990s showed proof that the process worked and through this experience cross-stitching was added to the CPR toolbox. ACPA was instrumental in developing this repair solution, which is now used commonly by nearly every state and local highway department across the US.

Growing Need for Technical Service

The latter half of the 1980s saw a growth in service needed by the ACPA staff to support its growing array of concrete solutions and expanding base of membership and chapters. ACPA’s technical staff provided direct technical support to members daily, often handling hundreds of phone calls and scores of visits to paving sites around the country per year.

Recognizing the need to maintain the industry’s credibility and product quality, as well as promote new technology, ACPA President/CEO Marlin Knutson expanded the staff in the late 1980s, hiring young engineers to bring a fresh perspective and an ability to expand the association’s use of computers, as well as to continue to improve ACPA’s side-by-side pavement design software.

“It was not possible in the early 1950s to predict that a high percentage of freight would leave the railroads in favor of faster delivery over our interstate system in numbers large enough to cause the pavement design life to be exceeded in just a few years. It was not possible to predict that, along with the increased truck traffic, America’s driving habits would be forced to change to the point that the states would have much less income to maintain the larger highway system.”

Building the Federation of ACPA Affiliates

The starting of a network of ACPA chapters and affiliates is arguably the most significant accomplishment of the 1980s. There was great recognition of the importance of local promotion to success of the industry. Meetings were held throughout 1987 to form chapters of ACPA. The procedure of automatic membership by chapter contractors in “ACPA National” was developed following the policy set in agreements with the contractors and paving associations in Indiana, Iowa, Nebraska, and Wisconsin. The chosen organizational structure was a federation, which is defined by the characteristic where members join one organization which in turn joins another organization.

In the course of history, two state associations were formed prior to ACPA: Wisconsin Concrete Pavement Association in 1952, and Concrete Paving Association of Minnesota in 1959. The Iowa Concrete Paving Association was formed the same year as ACPA (1963) and ACPA helped with the formation of the Michigan Concrete Paving Association in 1968. In 1980, ACPA created the Illinois Division and appointed national staff member Dennis Hogan, Director of Marketing, to run the local program. A Washington Concrete Paving Association is also reported in ACPA records to have “held its inaugural meeting in 1968.”

Chapter/state association growth was rapid at first, as noted in the table below:

<table>
<thead>
<tr>
<th>Current and Past Local Affiliate Organizations</th>
<th>Year Founded/Affiliated</th>
<th>Executive Director in First Year of Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisconsin Concrete Pavement Association</td>
<td>1952/1996</td>
<td>Dennis Brush</td>
</tr>
<tr>
<td>Concrete Paving Association of Minnesota</td>
<td>1959/1994</td>
<td>Dan Frentress</td>
</tr>
<tr>
<td>Iowa Concrete Paving Association</td>
<td>1963/1989</td>
<td>Bob Given; Gordon Smith</td>
</tr>
<tr>
<td>Michigan Concrete Paving Association</td>
<td>1968/1994</td>
<td>Gerald McCarthy</td>
</tr>
<tr>
<td>Washington Concrete Paving Association</td>
<td>1968/NA</td>
<td>Unknown</td>
</tr>
<tr>
<td>Illinois Chapter, Inc.—ACPA†</td>
<td>1980/1994</td>
<td>Roger Marquardt</td>
</tr>
<tr>
<td>Northeast Chapter—ACPA</td>
<td>1987/1987</td>
<td>Bill Alcock; Bill Berg</td>
</tr>
<tr>
<td>Southeast Chapter—ACPA</td>
<td>1987/1987</td>
<td>John Irby</td>
</tr>
<tr>
<td>Missouri-Kansas Chapter—ACPA</td>
<td>1987/1987</td>
<td>Bill Dearsaugh</td>
</tr>
<tr>
<td>Ohio Valley Chapter—ACP</td>
<td>1988/1988</td>
<td>Joe McDaniel</td>
</tr>
<tr>
<td>Texas Chapter—ACPA</td>
<td>1988/1988</td>
<td>John Roberts</td>
</tr>
<tr>
<td>South Dakota Chapter—ACPA</td>
<td>1988/1988</td>
<td>John Reisenauer; Deb Larson</td>
</tr>
<tr>
<td>Colorado/Wyoming Chapter—ACPA</td>
<td>1989/1989</td>
<td>Ron Youngman</td>
</tr>
<tr>
<td>Indiana Chapter—ACPA</td>
<td>1989/1989</td>
<td>Mike Byers</td>
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<tr>
<td>Nebraska Chapter—ACPA</td>
<td>1989/1989</td>
<td>Robert Berlin</td>
</tr>
<tr>
<td>Oklahoma/Arkansas Chapter—ACPA</td>
<td>1989/1989</td>
<td>Frank Cunningham</td>
</tr>
<tr>
<td>Western States Chapter—ACPA</td>
<td>1990/1990</td>
<td>Jim Woodstrom</td>
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<tr>
<td>Northwest Chapter—ACPA</td>
<td>1993/1993</td>
<td>John Strada</td>
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<tr>
<td>Utah Chapter, Inc.—ACPA</td>
<td>1994/1994</td>
<td>Ed Cooper</td>
</tr>
<tr>
<td>New Mexico Chapter—ACPA</td>
<td>1994/1994</td>
<td>Rick Dyke</td>
</tr>
<tr>
<td>North Dakota Chapter Inc.—ACPA</td>
<td>1996/1996</td>
<td>Trevor Spiedel</td>
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<tr>
<td>Louisiana Chapter—ACPA</td>
<td>1996/1996</td>
<td>William Burt</td>
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<td>Kentucky Concrete Pavement Association</td>
<td>2004/2004</td>
<td>Jim Onnen</td>
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<tr>
<td>ACPA-Pennsylvania Chapter</td>
<td>2006/2006</td>
<td>John Becker</td>
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<tr>
<td>ACPA-New York State Chapter</td>
<td>2006/2006</td>
<td>Jim Shea</td>
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<tr>
<td>ACPA-Mid Atlantic Chapter</td>
<td>2006/2006</td>
<td>Bob Long</td>
</tr>
</tbody>
</table>

† Organization started as the Illinois Division of ACPA in 1980. In 1986 it was renamed Illinois Concrete Council and Mel Larson was appointed executive director. In 1994 it was officially named Illinois Chapter—ACPA, and affiliated with ACPA.
ACPA’s Pavement Analysis Software

A March 1982 report stated the association was opposed to the concept of alternate bids between asphalt and concrete sections because there was no means to propose “equal sections with similar performance,” a prerequisite for the contracting mechanism. The challenge led to the development of an early pavement thickness design computer program, which at the time was known as the “Dudley-Feltz” program. It was programmed in Basic 8 language and run on Lexitron word processing computers. The software made it possible to analyze the “awkward AASHTO performance equations to predict the expected traffic carrying capacity of both asphalt and concrete sections.”

Developed by S.W. (Bill) Dudley of the Ohio Department of Transportation and William R. (Bill) Feltz of Anderson Concrete Corporation, the program is believed to be the first of its kind in the world. It was given to ACPA to further refine and promote the concept nationwide.

Randell Riley, P.E., ACPA Director of Technical Services, was the first to put the program to use for the association, and became a major driver on staff to adopt it into practice by ACPA and promote it to the industry in the mid-1980s.

ICPA’s performance data from county roads in Iowa were used to validate the program’s results, which allowed concrete pavement thickness results less than 8 in. In the 1970s and 1980s, PCA’s thickness design method was overly conservative and arbitrarily cut off design thickness at a minimum of 8 in., which as a result was adopted as a minimum standard by many state agencies. To this day, there remain some DOTs that continue an 8-in. minimum thickness requirement despite the fact it has no foundation in science or engineering.


ACPA introduced PAS (Pavement Analysis Software) in 1988, the association’s first side-by-side thickness design software. The software was written to run on the first generation IBM-compatible personal computers. PAS was a huge step forward in user friendliness and featured a design computer program, which at the time was known as the “Dudley-Feltz” program. It was programmed in Basic 8 language and run on Lexitron word processing computers. The software made it possible to analyze the “awkward AASHTO performance equations to predict the expected traffic carrying capacity of both asphalt and concrete sections.”

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“The if we plan to survive we must be aware of the latest concrete technology in concrete paving, we must have the tools to promote our own products. We no longer can sit back and wait for work to be advertised so that we can bid and build the projects. We need to get out and tell people that concrete paving is the best buy. It is more and more evident every day that in order to accomplish this task, we need to work together.”

—Edward Egan, President, Allstate Paving. (ACPA Chairman-1986)
The Users of America's highways and airports, who pay the bills, have faith that what their public officials put into these trust funds will be used to provide modern, safe facilities at the lowest possible cost. This cannot be achieved by building up huge balances or reserves in these trust funds.”


FAST FACTS
First ACPA Chapters
The first chapters of the ACPA were the Northeast, Southeast and Missouri-Kansas Chapters. Records show all three were formed in spring 1987 and announced together for the record.
“The birth of the ALLIED INDUSTRIES concept of melting together all of the common interests of the major associations (ACPA, PCA, and the National Ready Mixed Concrete Association or NRMCA) into one total effort towards concrete paving promotion… present the greatest opportunity for long range growth in our industry.”


Membership grew significantly with the energy of new leadership and the affiliation of chapters. The association had experienced highs and lows during the decade, but never strayed from the mission defined by the founders in 1963. Time and again, the members of ACPA proved their resilience, flexibility, and ability to adapt to changing times.

As a new decade was dawning, ACPA leadership had an eye toward the future. “I believe that our association is at a juncture in which we need to implement a strategic long range plan,” Knutson said in December 1989. 

“I challenge the leaders of AASHTO, FHWA and the highway pavement industry to join with us in developing a Quality Pavement Performance Program. It is only through a combined effort that we can meet the public’s demand to improve the pavement of the future.”


This 1980s-era photo shows contractors placing concrete for an airport pavement application. Increasingly large commercial jets changed the length and thickness of runways, as well as increased the demand for concrete pavements.
American Concrete Pavement Association  
9450 W. Bryn Mawr Ave.  
Rosemont, IL 60018

Greetings,

As Governor of the State of Illinois, I am pleased to congratulate the American Concrete Pavement Association on the celebration of its 50th anniversary.

Founded in 1963 by a small group of contractors, the Association quickly grew to become the primary national trade association for the concrete pavement industry. Composed of approximately 375 members ranging from contractors, to cement producers and manufacturers, the Association is tied to a wide range of projects and developments around the state.

As Governor of Illinois I take great pride that the Association was founded in our state and remains here today, demonstrating the importance of the concrete pavement industry to Illinois' economy and the benefits our state has to offer. This is an excellent opportunity to reflect on all that you have accomplished over the past 50 years and to make plans for the future of your organization that will build on your past successes. I am certain that the American Concrete Pavement Association will continue to be an influential advocate for the concrete pavement industry for many years to come.

It is my honor to join in commemorating your 50th anniversary. On behalf of the people of the Land of Lincoln, I offer my best wishes for an enjoyable and memorable celebration, and for continued success.

Sincerely,

Pat Quinn  
Governor
The 1990s: A Decade of New Starts

At first glance, the events of the 1990s may appear to lack a common theme, but on closer examination, it is clear that a common theme did emerge. It was not a decade of major conflicts or revolutionary causes in the United States. It was a decade of new starts.

On the world stage, dissolution of the former Soviet Union “led to a realignment and reconsolidation of economic and political power across the world and within countries.” The dismantling of the Soviet bloc eased a long-standing tensions among the bloc nations and western allies.

In science and technology, we turned to mobile phones (including bag phones) as an increasingly valuable communications tool. We witnessed the launch of more NASA shuttle missions in the 1990s—64 in all—than in either the 1980s or the 2000s.

The 1990s also was the age of the Hubble telescope; a cloned sheep named Dolly; the first web search engine in 1993, and a relative latecomer called “Google” in 1998; and of course, microprocessors and computer technology, which increasingly affected every aspect of our lives.

Economically, world markets and strengthening economies developed based on revised economic and political policies.

One of the most profound changes of the 1990s—the Internet—not only drew citizens of the world closer, but did so at blinding speeds along the “information superhighway.”

Technology and the global expansion of business had an equally dramatic effect on the economy, popular culture, the arts, and language. Terms such as “dot.com,” “DVD,” and “globalization,” and “genome” appear on the top 10 lists of words introduced in the 1990s. On the lighter side, new terms such as “goth,” “d’oh,” and “grunge” were emblematic of bold new attitudes that permeated culture, entertainment, music, and daily life for many people.

Construction in the 1990s

As had occurred almost a decade prior, the United States experienced a recession that lasted most of the first two years of the 1990s. When the recession ended, however, sustained growth ensued and lasted well into the new millennium. Most of this growth was driven by technology and specialty construction.

Heavy construction, including paving, experienced a large decline during the 1990-91 recession. ACPA members were hampered by the economy, and the concrete paving industry as a whole still had yet to fully rebound from the 1980-82 recession when the downturn hit again in 1990. However, by 1999, employment in the industry had completely recovered from the losses incurred during the 1990s, and nearly recovered from those incurred during the early 1980s.

The 1990s growth was boosted by government...
expenditures on long-term heavy construction projects. For the first time significant opportunities came in the form of project earmarks in the series of federal transportation bills passed during the decade.

**Expanding The Reach**

ACPA developed and implemented “long-range plans” every few years during the 1990s. Completing a network of chapters and state associations was a central focus of the plans and in time the map was filled with chapters and state paving associations, many that exist to this day in ACPA’s federation. However, several chapters started on the basis of “frontier” status did not stand the test of time (Arizona, New Mexico, Western States), while others (Texas, Nebraska) evolved to focus almost solely on technical support for contractor members, and eventually decided to break from the federation, which was focused increasingly on marketing and government affairs.

Aside from the quest to build the federation, ACPA’s plans evolved through the decade to involve participating more in federal legislation and federal government policy development. ACPA’s 1990, 1994 and 1996 long-range plans all aimed to increase legislators and regulators’ knowledge and understanding of the benefits of concrete pavement and the various solutions developed by the industry and association through the 1970s and 1980s.

The 1996 plan was the most comprehensive, building on capabilities of a larger staff and membership. The plan called for creating innovative...
marketing and promotional campaigns, and improving partnerships with allied organizations. The 1996 plan also included a measurement component to create performance benchmarks and conduct market research, which were new to ACPA at that time. Interestingly, despite its comprehensive nature, the 1996 plan was never fully implemented, as it was preempted by an even larger strategic planning effort started in 1997.

**Transportation Funding: STURAA**

By the beginning of the 1990s, the Interstate Highway System still was not completed many years past the original goal. Views on highway funding had perhaps changed from a grand plan for the country to a system taken for granted and funding targeted for other uses. The Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA) was widely considered by Congress and the transportation community as the last authorization bill of the Interstate era. The Interstate System was 97.5% open to traffic and it was not clear if the few remaining segments would be built, largely because amid 40 years of accomplishments and controversy, the consensus of support waned. Transit had switched from private industry to public utilities, each with their own demands for federal funding. The environmental movement, absent in 1956, had grown steadily in the 1970s and 1980s, and had become a factor, including in the completion of the remaining Interstate sections.

STURRA set the tone for the start of the 1990s and perhaps had an even longer impact. The bill was controversial in its own right due to the politics surrounding its passing. President Ronald Reagan vetoed the transportation bill—ostensibly because of the 121 demonstration projects (earmarks). The veto was overturned decisively by the House, but the vote was much closer in the Senate. Notwithstanding its eventual passage, the legislation lacked the “pure play” highway construction funding that previous bills had, and in fact, may have been a landmark in the underfunding that persists today. Certainly with transit and special interests vying for, and effectively diverting both highway construction

“A formal signing ceremony in December 1992 marked ACPA’s assimilation of PCA’s national paving section. Signing the agreement were (L to R): ACPA President & CEO Marlin J. Knutson, PCA Chairman George Wells; ACPA Chairman-1992 Chuck Sheley; and PCA President & CEO Jay Gleason

**FAST FACTS**

ACPA’s SWAT Teams

In the 1990s, ACPA sent “SWAT” teams on three or four city/state road trips to promote CPR and fast track construction. The SWAT teams were comprised of four or five ACPA members and staff. It wasn’t uncommon to deliver a workshop by day and travel to the next state or city by night.
Tides of Change: Transportation Acts of the 1990s

From the time first federal funds were designated for roadways in 1803 to the most recent bill signed in 2009, there has never been a single decade that had as many far-reaching transportation Acts as the 1990s. Also, notwithstanding the scope and gravitas of the 1956 highway bill, which established the Interstate highway system, the legislation of the 1990s had a profound effect on both transportation policy and funding.

The Acts, including the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the National Highway Designation Act of 1995, and the Transportation Equity Act for the 21st Century of 1998 (TEA-21), represented tides of change in transportation policy and funding. ISTEA represented a significant change in post-Interstate transportation planning and policy. ISTEA brought greater awareness of the interdependent relationships of transportation methods used in modern commerce, notably the increased use of overland trucks, along with air, railcars, and ships to carry freight. While many companies and other organizations had already adopted intermodal business and logistics strategies, “the law presented an intermodal approach to highway and transit funding with collaborative planning requirements, giving significant additional powers to metropolitan planning organizations.” Signed into law on December 18, 1991 by President George H. W. Bush, it expired in 1997.

The National Highway System Designation Act was signed into law by President Bill Clinton on November 28, 1995. It designated about 160,955 miles of roads, including the Interstate Highway System, as the National Highway System. Although the Act was not a highway reauthorization per se, it did serve a vital role in funding, including “restoring $5.4 billion in funding to state highway departments, giving Congress the power to prioritize highway system projects,” among other purposes. It also established a pilot program that established, State Infrastructure Banks. “Ten states were chosen in 1996 for this new method of road financing. These banks would lend money like regular banks, with funding coming from the federal government or the private sector, and they would be repaid through such means as highway tolls or taxes. In 1997, 28 more states asked to be part of the program. Ohio was the first state to use a state infrastructure bank to start building a road.”

TEA-21 was a landmark transportation bill, signed into law by President Bill Clinton on June 9, 1998. The bill included a record level of guaranteed funding—$198 billion over six years— and was said to affirm the President’s key priorities, “improving safety, protecting public health and the environment, and creating opportunity for all Americans.” It was also said to do “within a balanced budget and without cutting education, Social Security, and other vital Presidential priorities.” In addition to these standards, the Act also required that seven planning factors be included in regional transportation plans, including:

- Support the economic vitality of the metropolitan planning area, especially by enabling global competitiveness, productivity and efficiency
- Increase the safety and security for the transportation system for motorized and non-motorized users
- Increase the accessibility and mobility options available to people and for freight
- Protect and enhance the environment promote energy conservation and improve the quality of life
- Enhance the integration of connectivity of the transportation system, across and between modes, for people and freight
- Promote efficient system management and operation
- Emphasize the efficient preservation of existing transportation system.

If there is a common thread to these Acts, it is that they served a higher purpose, in the authors’ view, than simply reauthorizing programs that maintain the status quo.
and rehabilitation/preservation funding. STURAA might have been as impactful on ACPA members as any legislation in the association’s 50 year history.

**Transportation Funding: ISTEA**

As lackluster as STURAA had been for the concrete pavement industry, there was great optimism about the impending passage of the transportation legislation in 1991. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), represented both new attitudes and policy directions to transportation construction. “The law presented an intermodal approach to highway and transit funding with collaborative planning requirements, giving significant additional powers to metropolitan planning organizations.” Signed into law on December 18, 1991 by President George H.W. Bush, it expired in 1997. Despite its focus away from highways, the bill provided additional funding that was welcome by the ACPA members and the entire transportation community.

*National Highway Designation (NHS) Act of 1995—The NHS Act was signed into law by President Bill Clinton on November 28, 1995. It designated about 161,000 miles of roads, including the Interstate Highway System, as the “National Highway System”. Although the Act was not a highway reauthorization per se, it did serve a vital role in funding, including “restoring $5.4 billion in funding to state highway departments, giving Congress the power to prioritize highway system projects,” among other purposes. It also established a pilot program that established, State Infrastructure Banks.”

*Transportation Equity Act for the 21st Century of 1998 (TEA-21)—TEA-21 was a landmark transportation bill, signed into law by President Bill Clinton on June 9, 1998. The bill included a record level of guaranteed funding—$198 billion over six years. However, the bill also added additional*
environmental and planning regulations. As time passed, some would suggest that these bills stopped short of meeting highway needs and creating much impact on the concrete pavement industry. Still, at the time of their passing into law, there was an overarching sense that "rising tides raise all ships," and so, there was general satisfaction with the legislation packages and the impact that they would have on the transportation sector and concrete pavement construction and CPR.

A Major Transformation
About 10 years after PCA downsized its operations and eliminated its field forces, and only a few years after ACPA’s successful start in building a federation of chapters and state paving associations, a major transformation occurred when ACPA assimilated PCA’s national paving section. Commonly referred to as “the consolidation,” the event was marked with a formal resolution and signing ceremony on December 4, 1992, at the 29th ACPA Annual Meeting in Tucson, Ariz.

Before the consolidation, differences on design, concrete overlays, and focus on CPR and preservation defined the two associations. PCA promoted an arbitrary 8-in. minimum pavement thickness standard; ACPA promoted designs based on engineering the traffic needs and design reliability, with solutions down to 4 and 5 in. for low-volume roads. PCA promoted thick concrete overlay designs; ACPA developed and introduced the thin overlay design concepts and methods known at the time as ultrathin whitetopping. ACPA continued its promotion of CPR and introduced the concept of “windows of opportunity” for

“You have a responsibility to tell us when something’s not right, not just because you got the contract, but as citizens. ‘You know what will and won’t work because you’re trying new things all the time. You don’t do things the way you did 20 to 30 years ago, so why should we?’”

–Gov. Bill Janklow (R-SD) in a keynote address to 1996 ACPA Annual Meeting attendees.
restoring pavements, which parallel today’s pavement preservation concept; PCA did not actively support CPR as a concrete pavement solution.

The idea behind the consolidation was to “speak with one voice” and eliminate the challenges posed by the two associations sending different messages to public agencies about priority issues and technology. Maintaining the “contractor’s face” for the organization and prioritizing the importance of the contractor relationship with the DOTs were central to the new objective. The consolidation also afforded the opportunity to streamline operations, reduce overhead, and expand capabilities. The consolidation agreement also meant that additional funding would come from PCA cement company members, all of whom were afforded ACPA membership status.

PCA Chairman George Wells, PCA President/CEO Jay Gleason; ACPA’s 1993 Chairman Charles T. Sheley; and ACPA President/CEO Knutson all signed the first formal consolidation agreement. “The organizational strength brought about by the ACPA/PCA consolidation will re-energize our hopes and dreams for the future of concrete paving in America and beyond. Our once fragmented industry will now speak with one voice and one vision,” Knutson said on the occasion of the signing ceremony. “ACPA will be able to accomplish so much more with this consolidation. “Our chapters will be stronger and our structure will be sounder,” Sheley said, adding, “It’s all to the good.”

“I’m excited about the new organization,” Wells said. “The opportunities for the future of concrete pavements are vast and positive.”

Brimming with optimism at the signing of the consolidation agreement, ACPA was still dealing with significant challenges, largely a result of the financial impact of a generation of recessionary cycles; the increasing use of mill-and-fill resurfacing with asphalt among state highway agencies; and the waning highway funding.

A few months after the signing ceremony, ACPA Secretary/Treasurer Edward A. Egan, expressed concern about the misperception that “ACPA received a windfall from the consolidation,” adding that with the additional staffing requirements to meet demand, the budgetary challenges were still a major concern.

In 1996 (and until 2010), ACPA moved to the PCA campus in Skokie, Illinois, and also shared office space in Washington, D.C. The Skokie location afforded the space to house the staff, which had grown to 18 at its peak.

The ACPA Board structure was changed to allow an equal number of cement and contractor directors and to alternate the chairmanship between the two membership categories. The consolidation agreement called for cement CEO’s to participate on the ACPA Board to maintain a strong commitment to communication and

FAST FACTS
Recognizing Excellence
ACPA’s first “Excellence in Concrete Pavement Awards” program began in 1990, with awards presented at the 27th Annual Meeting in December. Since then, the association has presented more than 530 awards, which recognize contractors, owners, and engineers for high quality construction, rehabilitation, and preservation of pavements used for the nation’s highways, roadways, airports, and industrial facilities.

The idea behind the consolidation was to “speak with one voice” and eliminate the challenges posed by the two associations sending different messages to public agencies about priority issues and technology. Maintaining the “contractor’s face” for the organization and prioritizing the importance of the contractor relationship with the DOTs were central to the new objective. The consolidation
Inside the Tank:
The Facts (and Fiction) about the Federal Gas Tax

President Herbert Hoover is to credit (or blame) for the first gas tax. The gas tax was actually part of a larger measure, “The Revenue Act of 1932, which also proposed 20% pay cuts for the President and each Cabinet member. Amid the political wrangling, President Hoover paid a surprise visit to Senators, urging them to break the impasse and stating that people “know from bitter experience that the course of unbalanced budgets is the road of ruin.” President Hoover signed the bill into law, thereby approving a 1-cent excise tax on gasoline, June 6, 1932.

Here are some other perspectives on the gas tax:

The label of a “gas tax” is somewhat inaccurate. The federal excise tax that supports the Highway Trust Fund applies to gasoline, gasohol, diesel fuel, liquid petroleum gas, liquefied natural gas, an 85% methanol blend, and compressed natural gas. It also includes tires, truck and trailer sales, and heavy vehicle use, and fines/penalties associated with violations of motor carrier safety requirements.

Since the first gas tax in 1932, the contentious journey, wrought with opposition, has passed many mileposts, including:

- 1933—Increase of 1-cent gas tax rate to 1.5 cents, National Industrial Recovery Act (June 6).
- 1941—Increase to 1.5 cents to support World War II, The Revenue Act of 1941 (September 20).
- 1951—Increase to 2 cents to support Korean Conflict, The Revenue Act of 1951 (October 21).
- 1986—Increase of gas tax by 0.1 cent for EPA remediation program, The Superfund Amendments and Reauthorization Act of 1986 (October 17).
- 1990—Increase of gas tax by 5 cents (with half to the HTF, half to deficit reduction), Omnibus Reconciliation Act of 1990 (November 5).
- 1993—Increase of gas tax by 4.3 cents, originally for deficit reduction, but in 1997, President Bill Clinton redirected the amount to the Highway Trust Fund.

This most recent increase represents the longest period without an increase since the gas tax was first enacted, and today, the federal gas tax remains a controversial and misunderstood issue. Here are a few more facts about the federal gas tax:

- Only two countries—Kuwait and Saudi Arabia—charge lower gas taxes than the U.S. and both are net global oil suppliers, not consumers.
- Adjusted for inflation, the Federal gas tax eroded to 11 cents in 2011. This amounts to purchasing power of 45 cents for every dollar in national highway construction costs. To put this in perspective, only about half the transportation investments made since 1993 could be afforded less than a decade later, even though U.S. gross domestic product (GDP) grew 55% and vehicle miles traveled increased 29%. An upgraded, well-maintained, operationally-efficient transportation system, on the other hand, offers a significant competitive edge.
ownership of the association’s direction.
This aspect of the agreement waned around
the turn of the century for a variety of reasons,
weighing on the effectiveness of the “one voice
and one vision” goal.

**AASHTO ‘93 Addresses ACPA Issues**

In 1993, the American Association of State
Highway and
Transportation
Officials
(AASHTO)
released a
revision of its
1986 pavement
design guide,
and of course,
a resource that
traced its lineage
to the first
AASHO road tests
of 1959.

In the 1980s
ACPA officially
endorsed the
1986 Guide
for the Design
of Pavement
Structures, with
reservations
about the
complicated and
confusing overlay
design procedures, which were difficult to use
and often resulted in unreasonable thicknesses for
concrete overlays. ACPA also cited numerous other
concerns on design factors.

AASHTO committed to work on these issues,
and released its 640-page, “AASHTO Guide for
Design of Pavement Structures, 1993” (AASHTO
‘93). AASHTO ‘93 was an improvement and did
satisfy many of
the points ACPA
brought forward
as qualifiers
to its 1987
endorsement
of the AASHTO
1986 procedure.

ACPA went to
work revising
its Pavement
Analysis Software
(PAS) to reflect
the 1993
guide updates,
introducing a
major software
revision in
1996. That
same year ACPA
also introduced
AirPave, the
association’s first
Airport Pavement
Design program.

On the heels
of the AASHTO
‘93 release, the transportation
community pushed for an
even better, equitable, and
reliable method for pavement
thickness design. The new
approach would be “based
on mechanistic-empirical
principles with numeric
models calibrated with
pavement-performance data
from the Federal Highway
Administration’s Long Term
Pavement Performance
program.”

The transition to a
mechanistic-empirical pavement
design guide (along with
software, and supporting
elements) would be a lengthy,
and at times daunting journey.
(See sidebar, “Mechanistic-
Empirical Approach to Design.”)

“Contribution to the quality and
value of concrete pavements will be
improvements in cement and other
materials, equipment, and quality
assurance/quality control methods.
These improvements will be designed
to find the right solutions to meet
performance requirements and cost
parameters. Then, as now, the emphasis
will be on ‘getting in, doing it right,
getting out, and staying out.’”

—Marlin J. Knutson, January
1997, on the future of the concrete
pavement industry.

In June 1994, ACPA hosted the first national dowel bar retrofit open house.
FAST FACTS

Two-Lift Construction

In the 1997, the Kansas Department of Transportation, (KDOT) and Wittwer Paving, Inc., of Wichita, Kansas, teamed up to produce a unique section of highway, and in the process, created a research proving ground. From mid-September through October 1997, the project team placed 12 test sections of concrete pavements on a 6-mile stretch of the K-96 Highway in Reno County. Alan Farrington, then-Vice President and Project Engineer for Wittwer Paving, commented that the length of the sections was a sign of the project’s unique nature. “Most of the sections in this project are 3,000 feet long,” he explained. Three of the 500 to 600 ft test sections called for two-lift construction, with one section using recycled asphalt as part of the bottom layer.

The Birth of “Ultrathin” Whitetopping

It started with a question by Stan LaHue, ACPA’s Director of Highways: “If asphalt can be built 2 inches thick on existing asphalt pavements, why can’t concrete?” ACPA went to work on the concept in early 1991, including the consideration of spacing joints at 2 to 4 ft, closer than anyone had ever engineered before, and using fibers based on experiences in Greene County, Iowa, and other conventional overlay projects.

ACPA originally called the concept “flexcrete”, but later renamed it because the term was trademarked. LaHue held an informal staff contest to come up with a new name and “ultrathin” whitetopping (UTW) was selected, a term attributed to Gerald F Voigt, PE.

On September 21, 1991, the first experimental UTW project was constructed on an entrance road to a landfill near Louisville, Ky. Like the Pave-ins of the 1970s, the Louisville UTW project was a volunteer effort. ACPA created the experimental design and ACPA members donated materials and equipment. Strain gages and other instruments were used to study the reaction of the overlaid pavement to loads. University of Louisville performed the data collection.

The unprecedented application of 2- and 3-in. overlays with short joint spacing bonded to the existing asphalt proved to be successful. Because the trucks entering the landfill were counted and weighed, researchers were able to reliably demonstrate 30 years of comparable low-volume road service in a very short period.

The Push to Explain UTW’s Success

After the Louisville experiment, ACPA documented UTW projects and sponsored engineering studies to develop a design procedure that would explain the performance.

From 1992 to 1994, many UTW projects were constructed at intersections, where asphalt rutting created unsafe conditions. By 1997, more than 100 UTW projects—and more than 1M square yards—had been placed in North America, primarily on streets, ramps, intersections, and general aviation airfields.

Five years after the Louisville project, the use of UTW had grown beyond levels that were practical to track and ACPA’s documentation efforts were abandoned.
Technology Laboratories was engaged to use the data from Louisville to devise a new design method. Bonding between the asphalt and concrete and the short joint spacing were found to explain the performance, and with the explanation confirmed, ACPA promoted the new method.

In 1995, as a result of advocacy efforts by ACPA, the FHWA began evaluating UTW at the Turner-Fairbank Highway Research Center’s Accelerated Load Facility (ALF) in McLean, Va. The testing was a cooperative research project among the FHWA, ACPA, Northeast Chapter-ACPA, and the Northern Virginia Ready Mixed Concrete Association. The 18-month testing compared the effects of slab thickness, joint spacing and fibers. Data from the instrumentation were also used to validate ACPA’s new procedure for estimating the load-carrying capacity of UTW.

**Intersection Joint Layout**

In 1996, ACPA introduced a ten-step method for laying out joints for concrete intersections. The method refined and developed by Voigt, who was then ACPA’s Director of Technical Services, addressed a common need for improving the quality of the expanding concrete intersection market. ACPA held numerous state and regional workshops to instruct engineers and contractors on the approach. Over the years many state DOTs have adopted ACPA’s methodology into their concrete pavement specifications and provisions. It remains one of ACPA’s core training tools for quality projects.

In the 1990s, in-place recycling gained popularity, thanks to the developmental work of two ACPA contractors.

“I firmly believe vision is defined by actions—and our actions are, and will be based on timing, discretion, judgment, agility, and responsiveness in pursuing new directions and new dimensions to meet our members’ needs. If vision is the hallmark of leadership, it is also the ability to see opportunities when other see obstacles, and to work tirelessly to advance the many objectives of our members.”

In-place recycling was another step in paving process efficiency, which benefitted owners/agencies and contractors.

the basis of ACPA traffic management training delivered across the country.

New Focus on Smoothness
Starting in the 1980s, ACPA partnered with state DOTs on new smoothness specifications, introducing the California Profilograph to many states that previously only employed a straightedge. ACPA published its first technical bulletin devoted to smoothness in 1990, and became a supplier of precision-made blanking bands and bump templates for contractors working under the California profilograph specifications. ACPA held smoothness workshops included hands-on training for manually reducing the profilograph trace and determining the profile index. By the mid-1990s computerized profilographs were introduced, which all but eliminated demand for the training.

In October 1991, the two-tenths blanking band was reduced to a “zero” blanking band by the Kansas DOT. The Missouri/Kansas Chapter-ACPA and ACPA national staff worked closely with the DOT on the change, which aimed to ensure the specification identified and avoided paying incentives on paving segments with surface chatter (short-wave bumps). Other states were slow to adopt the specification, but many tweaks and innovations are attributed to the contractors working to achieve zero-band incentives, such as using aircraft cable for stringline, night-sighting the stringline, adoption of computerized profilographs, and eventually non-contact profilers.

Commitment to Quality
On November 10, 1992, a standardized national transportation policy was adopted and ratified at an AASHTO/FHWA/Industry-sponsored “Partnership for Quality” conference in Dallas. Calling it an historic occasion, Marlin Knutson signed the document on behalf of concrete paving industry. He and other signers pledged to endorse the principles of quality, including: proper design, performance-related specifications, cooperative research, incentives and the development of quality management systems. On November 14 and 15, 1996, representatives of several industry groups joined federal and

ACPA’s first fast track technical bulletin was mostly focused on materials, but the technology evolved to include planning, material selection, joint sawing, curing and temperature management, strength testing, and traffic opening criteria.
The 1990s: A Decade Of New Starts

Air Force Threatens Moratorium

At the 30th Annual Meeting in December 1993, Jim Lafrenz, then with the U.S. Air Force (and later hired as ACPA’s Director of Airports), delivered a tough message to the association. If the industry did not address the quality of slipform construction, there would be no market for concrete pavements on U.S. Air Force Bases.

ACPA responded by forming an Airfield Task Group in January 1994, which worked with Lafrenz and the Air Force to devise a new specification, incorporating the combined aggregate and “workability box” concepts endorsed by Jim Shilstone, P.E., principal of the Shilstone Companies. The new specification solved the severe joint spalling and durability problems that had led to the challenge.

Durability and Vibration Issues

Major highway concrete pavements in Iowa exhibited premature deterioration in the mid-1990s. The cause(s) of the deterioration were the subject of much controversy. ACPA, along with other local and national industry experts were brought in to assess the problem.

Various investigators used different methods to characterize the processes and arrived at different interpretations. Depending on the study, the deterioration was attributed to effects of ettringite formation (including delayed ettringite formation), alkali-silica expansive reactions, and to frost attack, or some combination of the three. After several years, the agreed conclusion in 1999 by the National Institute of Standards and Technology was that the problem was not new, but was primarily

The journey from the empirical pavement design guides (AASHTO ’72, ’86, and ’93) to mechanistic-empirical pavement design (M-E PDG to AASHTOWare Pavement ME Design) turned out to be an arduous and lengthy journey, sometimes punctuated by disagreements and differences, but most in the spirit of advancing equitable, uniform, and technology-driven pavement design and analysis solutions.

Before 1986, the enhancements to AASHTO’s design methodology were to provide the designer more flexibility over design inputs, such as reliability. Between 1986 and 1993, most enhancements were geared towards inclusion of rehabilitation and nondestructive testing information for evaluation of existing pavements, including back-calculation of layer moduli for determination of the layer coefficients.

Starting in 1996, the AASHTO Joint Task Force sponsored the development of a mechanistic-empirical pavement design guide for new and rehabilitated pavements. The National Cooperative Highway Research Program (NCHRP) provided support with project 1-37A, the largest project in the 40-year history of the program. The panel was comprised of representatives of the concrete pavement industry, asphalt paving industry, state DOTs, academia, and FHWA. Martin Knutson represented ACPA on the panel both before and after he retired.

The aim was to develop the M-E PDG; software; and training under the name AASHTO 2002 Guide. Due to its complexity and other challenges, the project was delayed multiple times. The M-E PDG was released in draft form at the conclusion of NCHRP 1-37A in April 2004, but it wasn’t until 2011 that AASHTO officially released the software under the name DARWin-ME.

ACPA was involved in the evolution of the AASHTO design procedures through all of its evolution, providing endorsements, suggestions for improvement and support for a fair and equitable design method.
due to poor freeze-thaw durability caused by a lack of entrained air. Subsequent studies in Iowa found that a contributing factor may have been related to contractors working with mixtures designed with less than ideal gradations, coupled with over-vibrating their concrete trying to achieve pavement smoothness goals.

Two major shifts emerged from this industry challenge: internal vibration frequency on slipform pavers should be monitored and controlled, and mixtures with well-graded aggregates provide for more reliable slipform paving and higher quality end-results. Soon after these conclusions were reached, vibrator manufacturers devised monitoring systems so contractors could have immediate indication of vibrator frequency and malfunction. ACPA also began endorsing Shilstone’s well-graded mixture concepts and procedures.

“ACPA has reached new dimensions in the engineering and technical services provided to the concrete industry. These services underscore our resolve to provide the information specifiers need to produce quality pavements.”

—Don Beuerlein (ACPA Chairman-1997), Quality Committee Chairman, in the 1998 Annual report to members.

ACPA’s work with the California profilograph in the 1980s and 1990s helped introduce the smoothness measuring method to many states that previously only employed a straightedge.

Dowel insertion equipment became a more common option in the 1990s, as manufacturers introduced improved inserter technology. ACPA addressed numerous questions on which was better, insertion or basket installation, concluding that experience showed both worked well as long as a well-graded concrete mixture was employed to prevent settling of inserted bars.

Other machine controls evolved to meld microelectronics, mechanical controls, and even space-age

In 1996, ACPA relocated its headquarters to Skokie, Illinois.
global positioning technology, which resulted from the “space race” of the 1960s. In the 1990s, “stringless” controls emerged, first with earthworks, and by the end of the decade, with the first curb & gutter applications.

In 1995, Bill Swisher, Chief Executive, CMI Corporation, projected that “High-tech, computerized laser technologies will be used as construction practices and equipment continues to evolve. Global positioning system (GPS) technologies will improve to provide measurements to within one-eighth-inch tolerances. Equipment will literally be controlled through satellite technology, enabling structures and roadways to be laid out without external references.” History proved Mr. Swisher’s predictions to be both prophetic and accurate.

**Dowel Bar Retrofit Goes Big Time**

Washington State brought the topic of dowel bar retrofit (DBR) to the forefront as more than a specialty application, and the technology rapidly became a key CPR strategy. In 1994, after several years of experimentation and review, Washington employed DBR on a 32-mile stretch of I-90 east of Seattle.

“A lot of states tried dowel bar retrofit on an experimental basis only. We were one of the first to apply the technology as a viable rehabilitation option for concrete pavements,” said Linda Pierce, Engineer, Washington State Department of Transportation. A major innovation coming out of Washington’s first job was a customized saw developed by Concrete Textures, Inc. of Des Moines, Iowa. The machine cut six parallel slots simultaneously, creating a viable, high-production process.

**Most Popular NHI Training Course**

In 1994, the NHI awarded ACPA a five-year contract to develop and conduct a comprehensive program covering concrete pavement construction and inspection. Over 30 ACPA members were involved with staff and subcontractor, ARA, Inc., to produce the course over an 18-month period. By
the end of the 5-year contract, thousands of public officials and construction industry participants had participated in the course. It had become the most popular training course offered by NHI at the time.

Pavement.com and Email

In 1995, ACPA established its first website—pavement.com—a scant few pages of mostly text and a few illustrations. The association was ahead of most organizations in launching a website. One year later members could reach staff by email. Later in the decade, ACPA had completely overhauled its website ... twice in fact, all by the staff without consulting expenses. The expanded site included thousands of links to Chapter/States, elected officials, state agencies, and other industry partners. This upgrade also included the first-ever searchable database of state agency practices, a procedure to design for ultra-thin whitetopping, and e-commerce transactional capabilities. (See sidebar, “Find us on the BBS?”)

Developed by CMI Corp., the “Ten Commandments For Smoothness” were a key emphasis in ACPA’s tech transfer efforts in the 1990s.

Chapin Sipherd (R) poses with Jerry Voigt after being formally recognized for his life-long commitment to concrete pavements. Sipherd was the author of “Ten Commandments of Concrete Paving,” which helped establish best practices in smooth concrete pavement construction.

FAST FACTS

In-Place Concrete Pavement Recycling

In 1994, two contractors found a better way to recycle concrete: instead of taking the pavement to the crusher they brought the crusher to the pavement. Manatt’s Inc. of Brooklyn, Iowa, and Duit Construction Co., of Edmund, Okla., created the first train of crushers that moved along the pavement site crushing the original pavement and laying it back down as base. The process became known as “paradigm” recycling.

ACPA Influences

P-501 Update

In 1998, the Federal Aviation Administration put into place a major revision to the P-501 specification, introducing percent within limits (PWL) acceptance criteria. ACPA’s Airfield Task Group was instrumental in working with the agency on the strength acceptance criteria and testing requirements for concrete pavements.
Fast Track: The New Normal

Fast track concrete pavement construction came of age through the 1990s. Although it started as a materials consideration, fast track construction of concrete pavements became much more. In 1994, ACPA issued its second edition of its technical bulletin on the subject, which stressed that fast track technology involved considerations in planning, material selection, joint sawing, curing and temperature management, strength testing, and traffic opening criteria.

ACPA advised contractors and agencies to look at the details from planning to project completion, and fast tracking evolved to include high early-strength concrete for a smaller portion of a project just to meet staging or opening to traffic. Concrete maturity was promoted as an essential element, as it was discovered that even “normal mixtures” achieved opening strengths in 18-24 hours in some conditions.

Change of Leadership Brings New Focus

Following ACPA President/CEO Knutson’s announcement he would retire at the end of 1997, the search for a new chief executive began in earnest. With the assistance of an executive search firm, a committee reviewed scores of candidates and eventually offered the position to Valentin J. Riva, then General Counsel and chief lobbyist for the American Road & Transportation Builders Association (ARTBA). Riva earned a Juris Doctor degree in 1984 from Georgetown University Law Center and had held several...
transportation infrastructure. “As a nation we have a lot to be proud of; yet at the same time, we all must recognize that we can do better. The new millennium offers us all extraordinary possibilities. This country is capable of growing at a rate well beyond the current two percent level. However, for us to achieve this growth we must adequately invest in our transportation infrastructure.”

—Darrel Rensink, 1997 President of AASHTO and Director of the Iowa Department of Transportation, Ames, Iowa.

positions as a lobbyist with trade associations, including the National Stone Association and Associated General Contractors of America.

Riva was selected with a keen interest in what his legal and political background could provide for the association. He accepted the position and began work in August 1997, a few months ahead of Knutson’s retirement. The timing provided an overlap for the leadership transition, but also an opportunity for Riva to continue advocacy efforts—with a concrete pavement focus—for the impending highway bill.

Advocacy Firsts

At the outset of his tenure, Riva led ACPA staff to conduct a large-scale grassroots effort in support of the Building Efficient Surface Transportation and Equity Act of 1997 and the first research provision written by ACPA. With more than 250 documented calls from staff, members, and Chapter/State paving association personnel, the effort yielded six solid commitments to co-sponsor the bill and 20 pledges to vote in favor of the legislation.

The effort would pay off. The phone bank was a first for the ACPA staff, and its success was emblematic of the association’s renewed focus on political advocacy.

BESTEA became better known as the landmark Transportation Equity Act for the 21st Century (TEA-21), and it was passed by a wide margin, thanks to strong House leadership and bipartisan support, and equally strong support in the Senate. With TEA-21’s passage into law came ACPA-written provision that dedicated $30 million in funds for concrete pavement research over the life of the bill, which Riva set out to establish on his first day on the job at ACPA.

The U.S. Tech Tour

For the second time in ACPA’s history, concrete pavement industry experts examined Europe’s major motorways in mid-1992. The group toured France, Austria, Germany, the Netherlands, and Belgium to evaluate roadbuilding research, design, construction, maintenance, performance, and financing, as well as to develop appropriate actions for enhancing the U.S. highway system, paving productivity, and economic future.

The U.S. Tour of European Concrete Highways (U.S.TECH) included representatives from seven industry groups, including American Concrete Pavement Association. Experts on concrete pavements from four other nations—Italy, Portugal, Spain, and Switzerland—also addressed the group. Key findings included a focus on Europe’s 30 to 40 year designated service life, compared to the 20-year design life convention in the United States. Participants also found the highways and roadways were built with the latest technology available, much of which was developed in the United States.
The 1990s: A Decade Of New Starts

original incorporators. On October 13, an ad hoc group of ACPA and PCA members agreed to fund a research study to examine the concrete pavement industry and propose a comprehensive marketing strategy. Within a few weeks, leading management consulting firms—among them Bain & Company, McKinsey & Company, and Coopers & Lybrand—submitted proposals. The ad hoc group selected PricewaterhouseCoopers (PwC), created from the former Price Waterhouse and Coopers & Lybrand firms, which merged during the selection process.

Less than four months after the IPRF was founded, it was embarking on its first project—a $2 million research study underwritten by six major cement company members of ACPA. The project oversight was assigned to a committee of association leaders that was called the CP2000 Committee (CP = Concrete Pavement) looking ahead to the new millennium. CP2000 was comprised of CEO’s from six contractor companies and six cement producers.

Through “voice of the customer” interviews with members; Chapter/State executives; ACPA, NRMCA, and PCA staff members; and others, PwC formed a picture of the critical needs of the industry. PwC staff—including strategists, financial analysts, and other technicians, sometimes working in teams of 15 or more—pored through the data and information to create national and state-by-state plans. At the same time, the PwC teams, supported by ACPA staff, were conducting “roll out” sessions to present interim findings and to test hypotheses and validate study findings. By the end of 1998, the teams had rolled out sessions representing 42 of 48 states.

Three scenarios were presented: the first was to effect a nominal increase in market share; the second to effect a 15% increase in market share; and the third to effect a 40% increase. The CP2000 oversight committee opted to invest in the 15% increase.

To effect this change, the industry contributed more than $5 million in additional resources (over 1998 funding levels). ACPA proposed that more than $4 million be distributed to Chapter/States—a 110% increase over previous funding levels. With these resources, the Chapter/States brought on experienced professionals, as well as lobbying and public relations resources. In 1999, some 53 professionals were involved in local promotion of concrete pavements, up from 29 in 1998.

Nationally, the CP2000 committee guided the implementation of the key findings, including the development of eight “charter” areas to focus national ACPA activities: marketing & promotion; engineering & technical services; products & processes; streets & local roads; membership services; knowledge management; education & training; and legislative & regulatory affairs.

In hindsight, the PwC plan was not perfect, but neither was its execution. PwC underestimated the timetable to impact public policies and the commitment horizon needed to effect real change. From the beginning, the proposed investment by industry partners (cement and contractor) also fell well short, in part because of management and/or ownership changes among stakeholder

“In response to the use of rubberized asphalt [open graded friction course], ACPA and IGGA members performed diamond grinding in Maricopa County, Ariz. This project was pivotal in ACPA’s successful efforts to compete against what was billed as a “quiet pavement.”

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“Last year, the leadership of ACPA decided it was time to take aggressive actions to recapture the market share for concrete pavements. And it was the right time.”

—David L. Rinas, then-Sr. Vice President-Marketing, Holnam, Inc.* (ACPA Chairman-1998), commenting on the initiation of the largest, most comprehensive market research in ACPA’s history.

*Now Holcim, (US), Inc.
companies. Eventually, interest waned as leaders continued to change, industry consolidation would become a larger factor, and longer term, the market dynamics would take a turn for the worse before the implementation was fully realized.

Although a historians’ view may suggest the ACPA/PwC study’s results fell short of expectations, the facts are that it delivered many benefits. It reshaped the direction and composition of many Chapter/State paving associations, and hence, strengthened the industry’s resolve for local promotion. The implementation effort put more “boots on the streets”; broadened the capabilities of ACPA national’s operations; invested resources in targeted areas; and made accountability and measurement an integral part of the association’s business plan. One of the most indelible effects of the project is that it equipped ACPA staff and leaders with the tools to manage change in almost any situation. This would prove to be a valuable, institutional skill set in the years that would follow.

The Blueprint for Research
On a parallel path to the ACPA/PwC study, the IPRF, with strong support from ACPA technical staff, developed a comprehensive research program proposal that included 70 research projects identified and scoped by ACPA. The proposal was aimed at the $30 million provision ACPA lobbied for in the TEA-21. ACPA used this plan in negotiating priorities for use of the funding with FHWA. The “Blueprint for Concrete Pavement Research,” preceded, but also complemented the development of the Concrete Pavement Research Road Map, which would follow several years later.

Closing the 1990s
By the end of the decade, ACPA had reached across the country to build and solidify with a federation of chapter/state paving associations. The association had reached across both aisles of Congress and both Chambers of the U.S. Congress to advocate for the largest highway bill in history—and the first research provisions drafted by the association. ACPA also reached across industry lines to partner with the cement and ready mixed concrete industries.

ACPA rallied its allies at the national and regional/state levels with the pledge to share, and once again, did so under the mantra of, “One voice and one vision.”

ACPA unified the transportation construction community around the principle of getting in, doing it right, getting out … and staying out. The association addressed durability challenges, a quality policy, new smoothness specifications, and adopted new web and email technologies.

By the end of the 1990s, ACPA had once again proven the power and effectiveness of fostering creativity and strengthening partnerships to thrive in an era of significant change.

Find us on the BBS?
As incredible as it may seem today, there was a time when people debated whether the World Wide Web (WWW) or its precursor, the Bulletin Board System, would prevail as the preferred method of computer-based communications around the world. The WWW prevailed; the first documented website appeared as an experiment in 1991; and the use of BBS and other systems has declined dramatically. 98

ACPA wasted no time in joining the WWW revolution. By 1995, the association had established its first website at www.pavement.com. The first website was comprised of about three pages, mostly text. Since then, ACPA has expanded its primary website geometrically, and increased the number of web addresses as a reflection of our goal to provide a greater breadth and depth to members and public agency customers. Today, ACPA has a commanding presence on the web with these sites and re-direct links:

- Main Website | acpa.org
- Concrete Wiki | wiki.acpa.org
- App Library | apps.acpa.org
- Sustainability | pavementsforlife.com
- Desktop Software | software.acpa.org
- Resources | resources.acpa.org
- On-Demand Training | ondemand.acpa.org
- Live Online Training | webinars.acpa.org
- Local Chapter/State Paving Associations | local.acpa.org
December 1, 2013

Mr. Gerald F. Voigt, P.E.
President and CEO
American Concrete Pavement Association
9450 W. Bryn Mawr Ave.
Suite 150
Rosemont, IL 60018

Dear Jerry:

I write to wish you hearty congratulations on the occasion of the American Concrete Pavement Association’s 50th Anniversary!

In a day and age where interest groups form one day and disappear the next, the longevity and vibrancy of ACPA is a testament to the importance of your issues, the critical value your members gain from your presence, and the effectiveness of your advocacy in advancing the concrete pavement industry.

Here at the American Highway Users Alliance, we greatly value the decades of partnership we’ve shared. The regular exchange of information and guidance to each other on core priorities has served both of us well. In particular, we have deeply appreciated ACPA’s commitment to the needs of your ultimate customers, the American traveling public.

At every turn, ACPA has advanced the case for the next generation of pavements, an ethical approach to business, and great care for the common good. Today, your mission is more important than ever, as we approach a critical juncture in the future of highway funding nationwide and the role of federal and state governments in pavement policy. For the next fifty years, I am certain ACPA will grow and thrive to meet the challenges ahead.

Best wishes to you, your excellent staff, and your fine members.

Sincerely,

[Signature]

Gregory M. Cohen, P.E.
President & CEO

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The 2000s: The New Millennium
The 2000s—The New Millennium

The 2000s—the term for both the third millennium and the decade from 2000 to 2009—were times of triumph, tragedy, and tumult.

At the outset of the decade (and actually for a few years prior) people around the world held their collective breath in anticipation of the year 2000. Some believed the stroke of midnight on January 1st would trigger the “Y2K problem,” because software writers of past generations did not plan for the changeover from the 1900s to the 2000s. The prediction of a widespread technological apocalypse proved to be mostly apocryphal, and shortly after calendars and clocks turned over to January 1, 2000, most people breathed a sigh of relief.

On the morning of September 11, 2001, the nation witnessed events that redefined the decade, as well as impacted the lives of millions. Of course, no historical account of the 2000s would be complete without reflecting upon the violent acts that would forever etch “9/11” into history. As the years have passed and the stories have been told and retold, they are no less tragic today than when the events were first reported. Ultimately, the “9/11” attack led the nation into a “War on Terror,” which has continued into the next decade.

Despite the dot-com “bubble burst” in 2000 and 2001, the economy started strong for the first half of the decade. However, a U.S. housing and credit crisis began in 2007, plunging the nation into a deep and lingering recession considered to be the worst since the Great Depression of 1929 to 1937. The economic crisis called the “Great Recession” was felt worldwide. “For the first time, the Standard & Poor’s 500-stock index finished a calendar decade with a negative total return. A one dollar investment in

“It is said that no captain is tested in calm waters. We, as Americans, have been tested—and severely so—but we have responded courageously, decisively, and with honor unprecedented in world history.”

—Valentin J. Riva, ACPA President/CEO, and Jim Duit, Duit Construction Co., Inc. (ACPA Chairman-2001) in tribute to victims of 9/11.

Photo (L) and FLIR image underscore the dramatic difference in the urban heat island effect of asphalt (in red) compared to cooler concrete (in green, yellow, and blue). The photos also underscore ACPA’s increasingly sharp focus on sustainability.
the S&P 500 on Dec. 31, 1999, was worth roughly 90 cents at the end of 2009. The wealth of American families plunged nearly 18% in 2008, erasing years of gains in housing and stocks, and marking the biggest loss since the Federal Reserve began keeping track after World War II.

There were bright spots in the 2000s. The high-tech revolution, which built steadily during the three decades prior, was in a period of explosive growth to start the decade, thanks in large part to the Internet. Compared to many traditional businesses, Internet-related start-ups appeared rapidly, seemingly as fast as traffic on the information superhighway. As the decade evolved, it was clear that some dot.coms had some serious business models and equally serious valuations. Just how serious? Consider the current market capitalization (the total value of shares of publicly-traded companies) of two U.S. companies, Ford Motor Company and Facebook, Inc. Founded in 1903 and featured in the first chapter of this historical account, Ford has a market cap of about $64.2 billion. By comparison, at less than 10 years old, Facebook has an estimated market cap of $116.4 billion.

The trend introduced us to a whole new communications channel called “social media,” and the increasing proliferation of websites and applications impacted the way people communicate, learn, teach, shop, play games, and much more. And, of course, they affect the way we do business. With names that sometimes puzzle or amuse novices or the uninitiated, many sites and companies have evolved, and have gone from quirky and esoteric to mainstream and familiar almost overnight. They include names such as Facebook (which...
The 2000s: The New Millennium

Construction enjoyed significant growth in the early part of the decade. This was in large part a result of the robust economy. Driving factors included the expansion of the housing market, as well as the landmark highway bill, TEA-21, which provided record funding levels (44% larger than ISTEA) through 2003. The highway funding continued beyond 2003, but this was done through a series of twelve extensions, which generally were not viewed favorably by the industry. Conventional wisdom says extensions tend to impede future funding increases, but also make it difficult for departments of transportation to plan larger, long-term projects, as well as contractors and other businesses to invest in day-to-day business operations.107

“The intermittent extensions of TEA-21 disrupted the flow of federal funding for transportation projects for about two years. Only the signing of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in August 2005 stabilized that funding,” according to the FHWA.107

In 2006, elected officials, agencies and ACPA celebrated the Interstate Highway System’s 50th Anniversary. The celebratory mood was tempered by a concern for the future, however. When the “Great Recession” began in 2007, it slowed construction to almost a standstill, not only because of the housing crisis, but also because of the credit crisis. Some would argue that the equally troubling aspect of the economic downturn was a crisis of confidence. The losses during this period represented a 19.8-percent decline in construction employment, the largest decline of any nonfarm industry super-sector, according to a Bureau of Labor Statistics report.108

In early 2009, the American Recovery and Reinvestment

“ACPA had a duty to assist in our nation’s time of need. We are pleased and honored to have been part of this important initiative.”

—Valentin J. Riva, ACPA President/CEO, on the announcements of recommendations for reopening Washington Reagan National Airport following 9/11. ACPA was directly involved in making those recommendations.
Act provided some increased spending for infrastructure projects, although not to the level it was purported to be. Grateful for the stimulus funding, ACPA members, along with many others, eagerly embraced the opportunity to build again. Unfortunately, field reports from ACPA-affiliated Chapter/States and members at the time suggested concrete paving opportunities were only sporadic across the country. DOTs were again primarily defaulting to asphalt resurfacing for the shovel-ready projects required by the stimulus law.

A lack of consistent DOT consideration for concrete pavement solutions became easier to see and more confounding especially as the cost difference between equivalent concrete and asphalt designs leveled and even tipped in favor of concrete in many states by the end of the decade. During the 2000s the price of asphalt paving materials increased dramatically and mirrored the political instability of wars in the Middle East, as well as increasing instability in the region. (See “Figure 1. Inflation at a rate of 4% with a basis of 100 at 1958, Producer Price Index (PPI) for concrete and asphalt (PPI1958= 100), and various political events over the past 50 years.”)

ACPA at the Turn of the New Century

The story of ACPA in the 2000s is a story of two halves. The early part of the 2000s was a period of great optimism. The strong economy, enthusiasm over implementation of the ACPA/PwC study, and federal transportation legislation set the tone. The latter part of the decade was a period of struggle as the association battled through the Great Recession and the impacts it had on its members, PCA and state DOTs.

Interestingly, despite the positive tone in 1999 the association’s financial reserves were almost depleted and membership numbers were declining. The Board of Directors recommended changes and

**FAST FACTS**

**ACPA’s First E-Newsletter**

In 2001, ACPA began publishing news through its first e-newsletter. Reaction to the first issue was swift and positive, but the circulation for issue one was only 168. At the time, members were given their choice of either an emailed or faxed version. Most opted for the fax, either because they lacked email or because they were still becoming familiar with it. By the end of 2003, more than 1,500 members and Chapter/State personnel welcomed the new-age periodical, “ACPA On the Grade.” The calls and emails to ACPA were memorable in support of issue one, as members expressed surprise and curiosity at how staff was able to link readers to web sites and web resources—a common practice today.
in 2000 advanced Voigt to the position of Chief Operating Officer to oversee the finances and dues collection. The change proved fruitful. Between 2000 and 2007, ACPA built cash reserves by nearly $1.75 million from $363,000 to almost $2.1 million, in line with recommendations of the association’s independent auditor. These rainy day funds would prove to be vital for the association to withstand losses during the tough years of the Great Recession.

Early-Decade Marketing Milestones

In August 2000, ACPA began producing market-tracking reports called “Pavement Market Quarterly,” one of the key deliverables called for in the ACPA/PwC study. The project was executed by Andrew Gieraltowski, originally hired as an intern, but because of his skills, expertise, and experience, eventually became Vice President of Operations and Information Technology. It was the first national market tracking project that measured both asphalt and concrete use by state DOTs. The data relied on Oman Systems with whom ACPA contracted to have access to state DOT bid tabulation data. ACPA produced the reports quarterly for 8 years until stopping in 2007 with an agreement that PCA would take over the project.

“"If you want to build a ship, don’t herd people together to collect wood and don’t assign them tasks and work, but rather teach them to long for the immensity of the sea.”

Warranties sparked consternation, debate, and questions within the ACPA membership in the early 2000s. FHWA and state DOTs in the Midwest were challenging the concrete and asphalt industries to develop warranties for pavements. ACPA contractor members recognized the imperative to address the issue, and the association developed a materials and workmanship warranty model that could be used by Chapter/State affiliates and contractor members to provide guidance to their states. (See Sidebar… “Warranties and Concrete Pavements.”)

On the technical front the association was tackling early cracking, premature durability and mixture compatibility issues. Significant effort was focused on early cracking, formalizing decades of association experience in a new technical bulletin. The guide titled “Early Cracking Causes and Repairs” was released in 2002 and remains one of the association’s most popular documents. Later in the decade, ACPA supported the Iowa Center for Portland Cement Concrete Pavement Technology.

ACPA staff witnessed President George W. Bush signing into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users on August 10, 2005. Standing three people to the left of the President is then-Illinois Senator Barack Obama. (ACPA staff photo.)
(PCC Center) in the development of the “Integrated Materials and Construction Practices (IMCP) Manual.” ACPA authored the sections on construction and troubleshooting. Since its introduction, the IMCP manual remains one of the most comprehensive written works on concrete pavement materials available.

ACPA's “Concrete Pavement Progress” (CPP) newsletter was converted from print to electronic format in 2003, saving ACPA members thousands of dollars of production costs and speeding up the delivery of the periodical. In time, the circulation was expanded from under 2,000 to more than 15,000 readers. CPP targeted federal, state, and local agency personnel, as well as other public officials who specify or influence the selection of paving materials.

Work on Lightweight Profilers and IRI
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Following a ceremony formalizing the official launch of the National Concrete Pavement Technology Center (CP Tech Center), the five signatories posed for photos. Standing (L to R) are: Peter Deem (ACPA Chairman-2006); Dan Keys (ACPA Chairman-2005); ACPA President & CEO Jerry Voigt. Seated are Pat Nolan (ACPA Chairman-2007) and CP Tech Center Executive Director Tom Cackler.

Inc. during the Spring of 2000 to discuss a perceived bias in the way non-contact profilers measure smoothness on concrete pavements. LMI Technologies was the market-leading manufacturer of laser sensors used on the smoothness profiling...
equipment. At the meeting LMI engineers agreed that tined textures could be picked up as roughness by point lasers erroneously and bias the results. LMI agreed to pursue an internal R&D effort to develop a line laser that could interpret tining from roughness.

In July 2000 ACPA formed a Smoothness Task Force with the primary objective to research and document bias issues surrounding lightweight profilers and the International Roughness Index, and work to remove the bias. ACPA contracted with the University of Michigan Transportation Research Institute to test different non-contact profile devices. Phase I of the research tested profilers at four sites to evaluate their repeatability and reproducibility results. This work was completed in 2002, and a second phase was pursued in 2003 to test early versions of lightweight profilers with a line laser, as well as other laser configurations.

By 2004, ACPA had published a new technical bulletin on smoothness and had motivated lightweight profiler manufacturers to introduce a new line of profilers with line laser technology that performed better on coarse textured concrete pavements. ACPA’s efforts helped remove the artificial bias that concrete pavements were rougher than asphalt pavements.

Government Affairs
In the early part of the decade, ACPA’s Political Action Committee activities increased steadily, thanks in large part to support by ACPA members and staff. In addition to maintaining regular dialogue with key political leaders and transportation champions, fundraisers became more frequent than ever and many were hosted or cosponsored by ACPA. During this time, ACPA welcomed for the first time at its Skokie, Ill.-headquarters, several influential Leaders from the U.S. Senate and House of Representatives.

These included visits by House Transportation & Infrastructure Committee Ranking Member Jim Oberstar (D-Mn.-08), Rep. Tom Petri (R-Wis.-06), and Senate Minority Leader Tom Daschle (D-S.D.)—who arrived surrounded by a large security detail in the wake of a domestic terrorist scare. Other fundraising events abounded in Washington, D.C.; Skokie; Chicago, and even at an annual meeting site during the 2000s. ACPA also supported political fundraising activities, including silent auction events, as well as often high-spirited live auctions at the association’s annual meeting.

IPRF’s FAA Cooperative Agreement
In 2000, ACPA had for the second time in its history, advocated successfully for a research provision in a federal-aid
transportation bill. The provision called for concrete pavement research to be conducted with an industry-based organization. The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21) was signed into law on April 5, 2000 providing a record-level $10.2 billion for airport improvements and the research provision was in effect. To execute the work, the Federal Aviation Administration (FAA) entered into a cooperative agreement with the IPRF.

By 2008, the IPRF facilitated more than 40 projects under the FAA’s Airport Concrete Pavement Technology Program and with the leadership of Jim Lafrenz, P. E., ACPA Director of Airports. Valued at approximately $12.5 million, many of the projects created new best practices and redefined how concrete pavements are designed and constructed in the airport market. The tangible results translated into practice quickly because the agency, consulting community and industry worked together in partnership. Six new or revised FAA technical advisory circulars were issued as a result of the work; advisory circulars guide pavement decisions by airport owners, consultants, and contractors every day.

**Tire-Pavement Noise Action Plan**

In fall 2003, ACPA formed a “tire/pavement noise” task force in direct response to an Arizona DOT program to determine whether sound walls can be replaced by rubberized asphalt surface courses to reduce noise alongside highways. Initially, the ACPA task force was charged with monitoring the situation and assessing potential impacts on the concrete pavement industry, but within a year called for a full strategic plan on noise. Voigt drafted a 3-year plan, calling for $750,000 per year for policy, promotion and research efforts and together with Rolland Johns, CEMEX (ACPA Chairman-2004), presented the plan to the PCA Board of Directors in October 2004 with a request for funding.

PCA’s Board agreed, and with a funding source in hand the ACPA Board of Directors adopted the plan on December 5, 2004. Work commenced quickly. A contract was signed to write a state-of-the-practice industry document on January 1, 2005. Also in January, ACPA staff met with the FHWA and Iowa State University to discuss a country-wide research plan on surface textures, and agreed to leverage funds together to implement the program. The ACPA Noise Task Force met soon afterward at World of Concrete 2005 and approved applying $250,000 to noise research in cooperation with FHWA and the Iowa Center for PCC Pavement Technology. The industry money leveraged an additional $300,000 in funding from the other organizations.

Also approved was a new testing protocol for the research. Sound Intensity testing would be used, which was cutting edge for noise research at the time. ACPA became one of the first entities capable of performing the test method. The field and research efforts were spearheaded by new

Influential Chairman of the U.S. House Transportation & Infrastructure Bud Shuster (R-Pa.-09) poses with Rick Sniewkowski (ACPA Chairman-2009) during an ACPA-sponsored reception for the Chairman.
The 2000s: The New Millennium

hire, Larry Scofield, P.E. ACPA Director of Environmental Technology after his hiring in March 2005. Larry had spent nearly 30 years with the Arizona Department of Transportation, mostly performing pavement research.

The program was up a running. On December 1, 2005, the ACPA Board of Directors formally adopted a surface characteristics policy to guide the rapidly moving effort.

A key goal of the noise strategic plan involved encouraging revisions to FHWA’s Technical Advisory (TA) 5040.36 for surface characteristics. The TA was originally put into effect by FHWA in 1979 after years of texture research in the late 1960s and 1970s involving support from ACPA at the time. However, the original advisory did not consider tire-road noise and in the 2000s had become an impediment to adoption of low-noise textures by state DOTS. ACPA worked with FHWA to encourage a revision and one of the key changes was the agency’s acknowledgement that various textures other than transverse tining were acceptable.

The Birth of Next Generation Surface Texture

In April 2005, ACPA developed a comprehensive plan for conducting a grinding and imprinting experiment with Purdue University, taking advantage of the university’s unique tire pavement test apparatus (TPTA). The plan was for a joint effort between IGGA, ACPA, and Purdue. Research started in May with evaluation of the effect of different grinding configurations (e.g. blade width, spacer width, grinding depth) on the noise generation characteristics. Upon completion of the first phase, tining and imprinting textures were evaluated later that year.

The TPTA research proved yielded excellent results, including the development of a configuration employing both grinding and grooving. The name for the new texture (Next Generation Concrete Surface) is attributed to Scofield, who sought to differentiate it from a conventional diamond ground surface. (See sidebar, “Our Customers are Listening.”)

Tragedy and a Turning Point

In September 2004, ACPA President/CEO Valentin J. Riva died in office approximately a month after complications following surgery. He was credited most for the formation of the IPRF, the ACPA/PwC study; and his effective lobbying. Those who knew Riva, knew that what he lacked in technical experience and knowledge, he made up for with a tireless passion for funding and research that was specifically intended to make concrete pavements more competitive. His ideas came at all hours of day or night and his colleagues knew to always keep their cell phones handy.

The loss was difficult and came in

FAST FACTS
StreetPave 1.0

ACPA released its first version of StreetPave in 2005. The side-by-side pavement analysis and design software for street and road pavements has been revised numerous times since its introduction and is widely used throughout the world. It now provides a mechanistic analysis of individual or combined design features; allows life cycle cost analysis (LCCA) to compare hard costs, and provides for overlay designs of all types.

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Senator Jim Inhofe (R-Okla.), then Chairman of the U.S. Senate Environment & Public Works Committee speaks to attendees of an ACPA-sponsored event as Val Riva and Jerry Voigt look on.
the midst of negotiations between ACPA and PCA on revising the then eleven year old partnership agreement. After his untimely passing ACPA staff recalled, against doctors orders, Val phoned from his intensive care hospital bed several times to check on progress. In one way we were shocked and in another we weren’t. It was emblematic of Val’s drive. (See sidebar, “Remembering Valentin J. Riva.”)

Still coming to terms with Riva’s untimely passing, ACPA’s Board appointed a search committee to take on the unenviable task of preparing for the future. The search began in October 2004, and well-qualified candidates were encouraged to submit their credentials.

After careful consideration, the position was offered to Gerald Voigt, who had begun his career with ACPA in 1988 as a director of technical services, and then became Chief Operating Officer and Senior Vice President of Technical Services in 2000. In addition to both learning from and working alongside the well-respected ACPA staff and members, Voigt brought his extensive knowledge of the association and his experiences in managing the association’s finances, research program, market measurement program, and almost every facet of the association’s business at various times in his career.

Voigt accepted the position effective January 1, 2005, but he had effectively served in the role on an ad hoc basis for months prior. As such, neither he nor the association missed a step during a time that was equal part challenge and opportunity.

**Chartering the National Center**

Voigt wasted no time in advancing the concept of forming a “national concrete pavement research center” that would work on a collaborative basis. In January 2005 he advanced the concept to the association’s volunteer leaders and in March to
The 2000s:

The concept was to bring industry leadership to the Concrete Pavement Research Road Map, which the concrete pavement community— including ACPA—had assisted in developing. The massive plan, representing $220 million to $400 million in cooperative research over a decade, not only emphasized the need, but foretold of the opportunities to advance concrete pavements immeasurably.

On March 16, 2005, the Executive Committee agreed unanimously to charter the “National Center for Concrete Pavement Technology” and approved $150,000 in seed money to get it started. The plan was for the Center to be seated at Iowa State University, home of the Iowa Center for Portland Cement Concrete Pavement Technology (PCC Center). The PCC Center, established in April 2000, had earned a positive reputation within the region. Under the leadership of the Chartering Committee Chairman Pat Nolan (ACPA Chairman-2007), a group of members and staff worked quickly to make the vision a reality. “We have a terrific opportunity to grasp what the Iowa Concrete Pavement Association, Iowa contracting community, Iowa DOT and Iowa State University have done. We have an opportunity to take this model and leverage it to a grand scale” remarked Pat Nolan on the occasion of the Executive Committee’s decision to move forward.

New bylaws, operating framework

Our Customers Are Listening

When the issue of open graded friction courses constructed with rubberized asphalt first gained serious attention in the association, ACPA members, staff, and affiliates answered the call. ACPA members rallied around the goal to develop a new low-noise texture on par with the best of “our competitors.” There were three hallmarks of the effort. ACPA would not trade off safety; would not compromise long-term performance; and would strive to avoid significantly increasing first cost and life-cycle cost of concrete pavements. The effort was made possible through $2.25 million in funding over three years (2005-2007) provided by ACPA’s cement members through PCA.

ACPA evaluated data representing noise testing results from European countries and U.S. research. Although considerable amounts of data were available, comparisons between European noise data and U.S. noise data were difficult because of a lack of a measurement standard. At the time it was thought that European concrete pavements (exposed aggregate textures) albeit more expensive to construct, were quieter than any U.S. concrete pavements with tined or diamond ground textures. This was disproved through ACPA’s research.

The program’s initiatives included both field experiments and laboratory testing:

- **Field Experiments**— The CP Tech Center, FHWA, and ACPA worked together to understand the relationship between noise and pavement texturing, as well as diamond grinding. The research was aimed at understanding the noise/texture/time relationship from in-service pavements and developing related construction techniques that are repeatable and cost-effective. The project evaluated noise and texture on more than 30 projects for the purposes of establishing an inventory of pavements and studying noise-texture relationships during and after construction.

- **Laboratory Testing**— ACPA-sponsored research employing Purdue University’s Tire-Pavement Test Apparatus and a custom-built grinding head (donated by ACPA and IGGA members). The testing results allowed for a fundamental understanding of noise generation and became a key to developing the Next Generation Concrete Surface.

- **Sound Intensity Test Protocol**— ACPA invested in sound intensity (SI) testing equipment to conduct its own tire/pavement noise testing. The equipment was custom-built, as there was no commercially available SI Testing equipment at the time. ACPA became the second entity to have SI capability in the U.S. and eventually was instrumental in helping define a Sound Intensity testing standard. The SI protocol employs a standard test vehicle and specific ASTM testing tire. The sound intensity equipment, originally developed by General Motors, was first championed by Caltrans. ACPA partnered with Caltrans to improve the equipment and develop SI test procedures for standardization by AASHTO.

- **Sound Intensity Field Testing**— Using its SI capability, ACPA conducted tire/pavement noise testing throughout the U.S. from 2005 to 2011. Larry Scofield ran the program and to ensure consistency, used the same make, model and year of rental car for the testing. He checked the testing tire as baggage when he moved from location to location. Moving from city to city was a key to inventorying pavements for the research, but presented logistical and other challenges to obtain the same make, model, and year of rental car for the testing.

The result of the noise program and action plan was the “Next Generation Concrete Surface (NGCS)”. NGCS involved special diamond-grinding and grooving blade configurations to minimize offending noise levels. At present, there are 22 NGCS projects in service in the United States, and at least one project outside the country (in Australia). Having moved out of the trial phase, the technology continues to get positive reviews, and for anyone who has ever driven on an NGCS section, it’s easy to see (and hear) why.

The precursory work and development of NGCS was arguably one of the largest and most inclusive efforts in ACPA’s history. Many partners were involved, and of particular importance was the IGGA, whose members contributed sweat equity and financial support to the effort. In time, ACPA handed the reins of NGCS to IGGA. It has been in good hands since.
The Next Generation Concrete Surface (NGCS) represents one of the most significant milestones in ACPA’s tire/pavement noise research and field evaluation program. Today, NGCS surfaces may be found on pavements worldwide. (Photo courtesy of Matt Zeller, P.E., Concrete Paving Association of Minnesota.)

and projects were put together by the chartering committee through the remainder of 2005. On August 10, 2005, the nation’s 43rd President, George W. Bush, signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. This authorized $16.4 million for applied research (a direct result of ACPA’s continuing advocacy efforts), as well as an additional $10 million for concrete pavement research and technology efforts earmarked to the National Concrete Pavement Technology Center (CP Tech Center). By January 1, 2006, the CP Tech Center was fully funded and in full operation.

In the period from its inception through the present day, ACPA has contributed more than $2.8 Million to the CP Tech Center, leveraging countless more in research funding and extracting significant value from the Center’s work.

**FAST FACTS**

**Quietest Concrete Pavement**

In June 2007, ACPA’s surface characteristics research and testing program achieved a critical milestone with the construction of the quietest concrete pavement surface texture ever documented in the United States. The Next Generation Concrete Surface (NGCS), texture was ground into a test cell at the MnRoad Cold Weather Research Facility and was measured at under 100 dBA.

**Mid-Decade Market Milestones**

In 2005, the Board of Directors endorsed a new federal program known as Highways for L.I.F.E., which was a
The 2000s: The New Millennium

federal program aimed at recognizing and communicating best practices associated with long lasting, innovative, and fast construction of efficient and safe highways and bridges. ACPA President/CEO Voigt hand-delivered a framed resolution signed by ACPA’s leadership, and told FHWA officials that the document represented the overwhelming support of the concrete pavement industry. “Lean on us,” he suggested, adding, “We will support you and are here to help you, as well as other agencies involved in construction of safe, durable, and efficient highways.”

In the summer of 2006, ACPA and Kansas City-based Market Strategies, conducted a series of focus group studies to see just what the general public had on their mind about pavements and whether this may give insight for promotional strategies. People from all walks of life—and representing a broad demographic range—told us some interesting things about what they think of pavements. The effort showed the public understands the basic differences between concrete and asphalt pavements. Second, they both perceive and appreciate some very tangible benefits linked to concrete pavements. Third, they value their free time immensely, citing it more frequently than even safety. Ultimately, what people want most is a predictable ride to and from work and less congestion. The study shaped messages by the association and a media placement program that reached more than 1.3 million people across the U.S. in 2008.

Also in 2006, ACPA was among many transportation organizations, politicians, and others to commemorate the 50th Anniversary of the Interstate Highway system. A celebration convoy retraced the famed route across the U.S. first taken by then Lieutenant Colonel Dwight D. Eisenhower in 1919. ACPA’s Bill Davenport, Vice President of Communications, marked the event with media work and assistance in promoting the anniversary. In addition to extensive media work focused on the 50th anniversary of the Interstate, ACPA conducted the “Great American Road Trip” essay contest as part of the celebration.

Visit to Europe Yields New Technology

Drawing on past successes, ACPA actively supported another opportunity for an international scanning tour. In 2006, Voigt, along with Jim Duit, Duit Construction (ACPA Chairman-2001) and Peter Decm, Holcim (US) Inc. (ACPA Chairman-2006), as well as the CP Tech Center’s Tom Cackler represented the ACPA on an FHWA-sponsored tour of long-life pavements in Austria, Belgium, Canada, England, Germany, and the Netherlands.

Direct results of this tour are seen in the U.S. today, including fabric interlayers for unbonded concrete overlays, which were adopted from technology seen in Germany. The renewed interest in two-lift concrete pavement construction and recycling of aggregates in the U.S. also has arisen from studying Austria’s ideas on the tour.

Focus on Sustainability

The tire/pavement noise issue would be only one of many to emerge in the 2000s. A resurgent interest in the environment, reminiscent of the original 1970 Earth Day, emerged with a broader platform of environmental consciousness, societal concern, and balance of business needs. Known as “sustainability”, the interest area became a concern worldwide … and of course, in the concrete pavement industry. (The tire/pavement noise issue was a sustainability issue at its core.)

In response to the heightened awareness and
quest for sustainable construction practices, ACPA was invited to present formal testimony on the subject of sustainable, energy-efficient infrastructure to the U.S. House of Representatives’ Subcommittee on Technology & Innovation (Committee on Science and Technology). Voigt testified at the hearing June 24, 2008, suggesting that the only way for environmental and sustainable construction considerations to be adopted into practice was for a framework to be adopted to both guide and enable state highway agencies to implement sustainability into pavement specifications. He urged for a stronger federal position on the use of federal-aid highway funds and an objective and more comprehensive state pavement type selection policies. The testimony proved to be controversial to some, but it also signified ACPA’s commitment and leadership on the topic.

Many other efforts followed in the area of sustainability. ACPA published its first special report on sustainability in 2008. Other efforts to communicate concrete pavement sustainability have been pursued consistently by ACPA in forums with FHWA, the U.S. Environmental Protection Agency and other organizations. Leif Wathne, P.E., Vice President of Highways and Federal Affairs has become a renowned champion and expert on the subject, speaking worldwide on behalf of the industry.

**The Advent of Web-Based Training**

ACPA’s classroom-style training efforts continued unabated in the early part of the 2000s, but the impacts of the economic downturn had a dramatic impact on attendance. If agencies and consultants could not make the trek to classroom-style seminars, ACPA reasoned the most pragmatic solution was to use technology to deliver the training to them. Following a pilot program on June 21, 2007, ACPA formally unveiled its webinar program. Skeptics warned that consultants and others would not participate, but by 2013, ACPA had delivered close to 90 programs over five years, training over six thousand people across North America and the globe.

**New Strategic Plan**

ACPA’s leadership approved a new strategic plan in 2008. The five-year plan established five key strategies, which would concentrate ACPA’s efforts on managing through adversity to pursue opportunities for the industry. Three strategies focused on promotion, including:

“We can either let our surface transportation network condition erode through the perpetuation of current practices ...or we can re-invest in new practices that contribute to sustainable development of our surface transportation system.”

—ACPA President/CEO, Gerald F. Voigt, testifying on Sustainable, Energy-Efficient Transportation Infrastructure before the U.S. House Science and Technology Committee.
The 2000s:

- Impacting pavement type selection to achieve additional business opportunities for members;

- Optimizing concrete pavement design and construction to achieve a competitive advantage; and

- Creating a strategic framework for traditional promotion and technical support. The plan also called for establishing effective collaboration with the Chapter/States and diversifying financial support through membership development and non-dues programs.

Commenting on the plan, Kari Saragusa, Lehigh Cement Company (ACPA Chairman-2008) “We directed staff to flesh out the details of the plan within budget constraints, which at that time included a much higher commitment from cement members through PCA. Since September, due to economic times, the PCA contribution was reduced dramatically… this has started many discussions regarding the efficacy of the partnership. Still we feel the plan is moving the association in the right direction, which reflects the wishes and needs of ACPA members.”

Conclusion

By the close of the decade, the nation was in a deep recession. Economic instability had taken its toll on ACPA members, the association and countless other businesses. Cement companies braced for the worst without prospects for business from a residential housing market. ACPA’s formal affiliation with PCA ended and with it the funding that supported the one voice/one vision goal started in 1993. ACPA worked through a significant staff and resource reduction, and made plans to go forward without the formal alliance.

In spite of the downsizing—from 18 to 8 national office staff, and many more on the local level in affiliated Chapter/State Associations—the demand for ACPA services was higher than ever. The association was at a crossroads and was responding by reorganizing and transitioning away from old ways of delivering information. Through it all, the one thing that did not change was the strength that came from members, affiliates, allies, and staff, all united around a common purpose.

Bob Priest, Sanders Saws (Multiquip, Inc.), was a driving force behind ACPA’s government affairs and political action committee activities for many years.
Remembering Valentin J. Riva
(1953-2004)

During his tenure as ACPA's third chief executive, Valentin J. Riva—Val to friends, family, and colleagues—renewed the awareness in ACPA of the need for government affairs. He brought lobbying to the forefront of association activities. He was a tireless and emphatic advocate in his own right, but also frequently explained both the imperative and the benefit of public advocacy for concrete pavements with both elected and appointed officials.

In his dealings with public officials, Riva was always respectful and measured, but never timid. He took seriously the need to ask for legislative language and for actions that benefited the concrete pavement industry, and in doing so recognized the need to be direct, straightforward, and concise.

As a student of history, Riva admired the strength and character of political and military leaders. So it was that he often 'seasoned' his speeches, sprinkling generously his favorite anecdotes about past and present leaders. He was particularly drawn to ancient Roman leaders.

On the occasion of his passing, ACPA received many expressions of sympathy from friends and colleagues throughout the transportation industry. The following remembrances were among many presented in a booklet specially prepared for Riva's family:

“ACPA has a rich tradition of setting and reaching objectives, setting even loftier goals, and then repeating the process again. It is not only the way he taught and led, but the way Val Riva lived his life.”

— ACPA staff tribute to Valentin J. Riva, September 2004.

“Val Riva recognized that we not only need to replace and rehabilitate those crumbling roads and bridges but we also need to conduct the necessary research to create new technologies that will help prolong the lifespan of our infrastructure.”

—excerpt from a statement read on the floor of the U.S. Senate by Senator Patty Murray (D-Wash.), October 8, 2004.116

“Like the consummate chess player, Val was always thinking several moves ahead in the match and did so with the leadership, charm and passion the we all admired. However when the business discussion subsided, it never took long for Val to talk about families, both yours and his.”

—Steven R. Miley, Senior Vice President, CEMEX, and ACPA-Chairman-1996.

“Because Val always believed in and worked within a team concept, some may not be aware of the truly pioneering industry accomplishments he achieved for the four national construction associations he worked for over a career that has been tragically cut short.”

—Pete Ruane, President/CEO, American Road & Transportation Builders Association (ARTBA). Among the accomplishments, Ruane noted, were legislative provisions in several transportation bills; the transportation-construction industry’s first legal challenge of a federal agency overreaching in the environmental area; and workzone safety legislation.
November 21, 2013

American Concrete Pavement Association
9450 W. Bryn Mawr Ave.
Suite 150
Rosemont, IL 60018

To the Leadership and Members of the American Concrete Pavement Association:

Congratulations on the celebration of the American Concrete and Pavement Association’s 50th anniversary.

Over the past five decades, the American Concrete Pavement Association has grown into a premier national trade association and has served the concrete pavement industry with exceptional leadership. ACPA is a strong national force for positive development in transportation and infrastructure across America.

By working closely with industry, academia, and the public sector, ACPA benefits its members and the traveling public. ACPA is a strong partner in the fight for sustainable, predictable, growing federal transportation funding as evidenced by Rally For Roads 2012. Additionally, ACPA Legislative Issues Resource Center provides excellent guidance and educational materials about building, rehabilitating, and preserving America’s industrial pavements, highways, roadways and airports. Building on its 50 years of experience, professionalism and dedication, I have no doubt that ACPA will play a key role inside and outside of Washington in the future.

Again, congratulations on this significant milestone and best wishes for continued success in the years to come as you continue to serve the traveling public with the highest standard of surface transportation infrastructure.

Best Regards,

Janet F. Kavinsky
Executive Director
Congressional & Public Affairs

[Signature]

[Handwritten note: Congratulations!]

[Stamp: Chamber of Commerce of the United States of America]
The 2010s and Beyond: A Look Ahead

The difference between news and history is a matter of timing and perspective. As such, and with only a few years of the decade behind us, the history of the decade has yet to unfold fully in order to be told accurately.

Even so, the first part of the decade has been eventful. At the end of 2013, news and industry economic reports suggested the economic recovery, which technically began in 2009, continued, albeit very slowly and with mixed results. The economic expansion thus far is the weakest of any period in the post–World War II era. Its negative impact still grips the construction industry and ACPA members of all types.

Although on its way up from the bottom, U.S. cement consumption remains well below 90 MMT (million metric tons) annually, down substantially from its peak of around 125 MMT prior to the Great Recession.

After 12 extensions, a short-term highway bill was signed into law on July 6, 2012. Moving Ahead for Progress in the 21st Century Act (MAP-21) provides funding for surface transportation programs at over $105 billion for fiscal years 2013 and 2014.

One of the issues that impacted passage of MAP-21—and which will likely be a factor in the passage of the next highway bill—is the faltering Highway Trust Fund (HTF). The HTF is set to go broke, according to the Congressional Budget Office, which says, “Although the number of miles that people drive is projected to increase as the economy grows, CBO expects the effect of that increase on fuel use to be largely offset by improvements in the fuel economy of vehicles, mainly because of increases in the government’s fuel economy standards,” according to an article in GOVERNING magazine.

The article continues that the trust fund’s accounts (one each for highways and transit) will not be able to meet obligations. On the highway side of the ledger, the current federal gas tax of 18.4 cents per gallon is not tied to inflation and hasn’t been increased since 1993. “As a result, its purchasing power has declined dramatically,” the article says, adding, “Yet members of Congress on both sides of the aisle, as well as President Obama, have opposed any proposals to increase the gas tax to help shore up the fund.”

Battles over the HTF are nothing new, and in fact, opposition can be traced back almost 100 years. The debates, often contentious, have continued intermittently since then, and yet, the HTF has always prevailed. Of course, the past is not always an indication of the future, but is does provide at least a glimmer of hope that federal legislators, and the White House may find a durable, well-reasoned solution. (See sidebar, “A Knuckle in the Fight? A Snapshot View of Highway Trust Fund Opposition.”)

ACPA’s advocacy efforts remain strong in the second decade of the 21st century. One example of this can be seen in the “Accelerated Implementation and Deployment of Pavement Technologies” provision in MAP-21. ACPA successfully led this initiative, which provides funding to “promote, implement, deploy, demonstrate, showcase, support, and document the application of innovative pavement technologies, practices, performance, and benefits.”
The HTF is not the only issue facing the ACPA members today. A statutory overhaul of the nation’s health care system, as well as a wide and far-reaching range of domestic and international issues, such as the on-going war on terror that started in 2001, has created significant political divisiveness in the United States. This extreme political climate suggests that the nation’s surface transportation infrastructure has simply been trumped by other issues in recent years.

Adapting to Current Challenges

In spite of the unprecedented economic challenges, political turmoil and heavy issues weighing on the nation, the association has had to rely on its resiliency and ability to adapt to the forces around it. ACPA has been at the forefront of both leading and embracing change since 2010.

At the outset of the decade, and with its staff reduced by nearly 60%, ACPA relied on the considerable experience and creativity of its remaining staff to focus on its core functions and develop efficiencies and improvements that would help the association do more with less. Changes put into place starting in 2010 began to stabilize the association financially and in spirit.

The constancy of the senior executive and administrative staff provided a very beneficial foundation. Elke Allen, ACPA’s Vice President – Finance/Comptroller for more than 20 years managed ACPA’s finances with great efficiency, and has done so impeccably through both the good and bad economic times. Similarly, Debbie Becker, with 30 years on staff (and an original hire of Harold Halm), has adapted ably to any required role, earning praise for professionalism and goodwill from countless members.

After four years of sizable deficits, the reorganization and a drive for new revenue led by Voigt and ACPA senior staff, brought surpluses and membership growth in 2012 and 2013. A reorganized governance structure, eliminating what was perceived as duplicative efforts brought more effective governance. The “Strat Board” is responsible for identifying opportunities and challenges, as well as for initiating and overseeing results-oriented task forces.
relevance to member participation at all levels of the association. Knowing that a smaller staff meant more reliance on members to roll up their sleeves, Voigt put history to work modeling the new ACPA closely to the ACPA that existed in the late 1960’s and early 1970’s.

The Executive Committee was eliminated, and its role transferred to the Board of Directors starting in January 2010. The bylaws, which had been revised 15 times since 1963, were completely rewritten and adopted. The new bylaws were designed to create a more inclusive board and open up the chairs to any category of membership.

ACPA created a Strategic Advisory Board (known as the “Strat Board”), to which the Board of Directors assigned the role of: evaluating industry trends; recommending promotional and technical strategy; and determining and communicating research priorities to the IPRF, CP Tech Center and agency partners (FHWA, FAA, TRB, etc.).

The Strat Board is similar to the “Pavement Advisory Board” put into place by the association in 1970. It provides guidance and direction, and assigns task forces for specific actions until they are accomplished and then reassigns the members to newer priorities. The Strat Board assigned seven task forces for the association at the outset of 2010: Legislative Issues; Jointing, Alternate Design/Alternate Bidding; Airports, Paving Field Guide, Education & Training; and Joint IGGA-ACPA Task Force on Surface Characteristics. Four of those task forces remain active at the end of 2013, and four others have been formed for new endeavors.

In its short history, the Strat Board has made other major recommendations, including adopting the goal of refocusing on quality and uniformity of concrete pavement construction, as well as to direct more training for contractors.

“The only thing new in the world is the history you don’t know.”
—Harry S. Truman (33th U.S. President).\textsuperscript{124}
and inspectors. In December 2011, the Strat Board recommended adding roller compacted concrete (RCC) as a product the association would support and promote. “It is time we stand by a product whose name includes concrete pavement,” said 2011 Strategic Advisory Board Chairman (ACPA Chairman-2013) Frank Surianello, P.E., Surianello General Concrete Contractor, Inc., after the decision to address RCC was finalized.

ACPA’s reorganization was completed in June 2011, with the adoption of new affiliation agreements for ACPA chapters and state paving associations, and a new dues structure for contractor members. This final step was the most difficult and took the better part of a year to develop, including many meetings with the Chapter/State executives and their boards to ratify the concept. The Board adopted the changes unanimously and a new era for the association began.

**Putting a Stake in the Ground**

It there is an emerging trend in the 2010s, it is a renewed commitment to clearly articulate industry positions on issues great and small. Perhaps this can be seen best in ACPA’s “Perspectives,” which are one- to two-page documents explaining the association’s stance on public policy and technical issues. “Perspectives” present a consensus view of the ACPA membership and are carefully reviewed and revised with input from the Strategic Advisory Board and its Task Forces.

By “putting a stake in the ground” on key issues—many of them controversial—staff, members, and Chapter/State shape and direct the industry’s posture and define the specific actions the association takes on an ever growing list of the issues of the day. Building on the “one voice/one vision” mantra of the 1990s, ACPA’s “Perspectives” allow ACPA to speak decisively while working with national partners, such as PCA and NRMCA toward common views, and helping local affiliates address the unique perspectives in their local markets.

Toward this end, the
The association has begun to develop new commented guide specifications (including smoothness, RCC, and dowel location and alignment) to address the needs identified by state DOT and airfield colleagues. ACPA’s Leif Wathne, acting as the primary liaison with FHWA and AASHTO, and Gary Mitchell, acting similarly with FAA and the Military Tri-Services, are bringing industry leadership and placing a stake in the ground on the industry’s view of the best way to specify quality for concrete paving. The reaction has been very positive, as states and other agencies have begun adopting the industry recommendations.

**Building on Prior Legislative Wins**

In December 2011, ACPA set out to encourage Congress to take a stand that available paving technology is implemented by state departments of transportation under the new highway bill. In support of this vision, ACPA drafted, gained support of allies, and successfully advocated for a provision in MAP21 that designated implementation and deployment of “well-conceived and effective pavement technologies and strategies, developed as part of research efforts in previous highway authorizations.” Leif Wathne and Jerry Voigt were the driving force of the strategy and its execution. The resolution was in part looking forward and in part backward, aiming to continue the association’s legacy of successful concrete pavement research/technology provisions. In MAP-21, the Accelerated Implementation and Deployment of Pavement Technologies (or AID-PT) program, was the only designation in the entire bill, which was ultimately passed without any earmarks.

The provision simply made sense to legislators. ACPA’s view was that implementing technology was the best and most proper stewardship of previous investments, and was particularly important in view of the economic challenges and the increasing demands on state departments of transportation and industry.

Working together with PCA, the National Asphalt Pavement Association, Duit Construction, Haskell-
Lemon Construction, and others, ACPA advocated successfully for the provision, which authorizes $12 million per year of the Technology and Innovation Deployment Program under Title II of the bill. This allows $6 million for asphalt pavement technologies and $6 million for concrete pavement technologies. FHWA has contracts with the CP Tech Center and others to execute the plan for concrete.

Working as partners with FHWA for technology implementation in the manner first articulated by Ray Barnhart, FHWA Administrator in 1983, ACPA and FHWA have developed an agreed to a list of priority technologies for the AID-PT implementation program. Implementing concrete overlays and performance-engineered concrete mixtures, which consider such available technology as recycled concrete aggregates, black rock (fractionated asphalt) and durability-based mixture design, head the list.

**Mechanistic-Empirical Design Evolves**

Mechanistic-empirical pavement design reached new milestones in the early part of the decade.

First, the implementation of AASHTO’s DARWin-ME™ design guide in 2011, which has since been rebranded AASHTOWare Pavement M-E Design, which AASHTO says “reflects eight years of research and development involving both AASHTO members and the National Cooperative Highway Research Program (NCHRP).”

In June 2011, ACPA renewed its long-standing support of the AASHTO M-E design process, not only with a formal “Perspectives” position statement, but also with an annual investment in a group license. The license enables staff and Chapter/State paving associations to perform design analysis and support contractor members and other allies.

ACPA’s Strategic Board, following the association’s approach when AASHTO released the 1986 design guide, has prioritized a Task Force to become “street smart” on the complex method and to provide recommendations for further refinements. In 2013, the software is considered both state-of-the-art and a significant step toward equivalent pavement designs. ACPA’s Robert Rodden has taken on the important challenge to help educate the association’s members and Chapter/State paving association staff on the use of AASHTO M-E design and to bring to light industry concerns with the procedure, as was done three decades earlier when ACPA engaged AASHTO with concerns regarding the 1986 version of the AASHTO design guide.

In 2012, ACPA staff updated its entire suite of design software, including WINPas, AIRPave, and StreetPave, bringing the programs into compliance.
with new generations of the Windows(R) operating system, while also adding significant new features. StreetPave 12, for example, for the first time allows concrete overlay designs for all six types of concrete overlays as part of ACPA’s focus on overlay technology. It also addresses shortcomings on overlay design found in the AASHTO Pavement ME program.

**A Bold Move in Roller Compacted Concrete Pavement**

Over the span of more than two decades, the question of whether to support roller compacted concrete (RCC) was discussed, but dismissed at leadership and peer-level exchanges among ACPA members. The reasoning was that the focus should be on primary paving market opportunities versus the niche-oriented applications for RCC, and the fact that RCC did not involve traditional concrete paving equipment.

Staying true to its continuing responsibility to gauge members’ interests in emerging and existing technologies, ACPA added a discussion topic on RCC to the December 2011 ACPA Strategic Advisory Board meeting agenda. With a clear acknowledgment that RCC was gaining ground throughout the country, ACPA members were asked the question, “Should ACPA pursue RCC?” The room fell silent, but not for long. Jim Duit, Duit Construction (ACPA Chairman-2001) rose, then stated that he was one of the most vocal opponents in the past, but after placing a temporary RCC pavement and then trying to remove it, he was convinced of its merits. One by one, contractors and other members in the room voiced their support, and from that moment, the ACPA’s embrace of the technology was confirmed.

The Strategic Advisory Board recommended the Board of Directors adopt the technology and called for the formation of an RCC Task force at that December 2011 meeting. By the first task force conference call in April 2011, the then 48-member group has since grown to more than 65 members, making it the largest of any ACPA task force. New contractor and supplier members have joined the association with the expressed purpose of engaging in the RCC task force, building a new momentum for the technology.

**Technical Service Evolves to Web**

ACPA broke new ground in 2011, using staff resources to develop and introduce the first web (and “smart” phone) applications. The purpose was to take advantage of a staff skill set brought by Robert Rodden, P.E., ACPA’s Director – Technical Service & Product Development, as well as to reduce staff time devoted to answering repeated technical questions from customers and members by providing them tools in an easy to use fashion 24/7.

Now anyone who has an interest in concrete paving can use the apps, which have been accessed from 135 countries worldwide on an average of once every four minutes. The roots for this goal date to the ACPA/PwC study in the late 1990s where a similar effort to reduce technical service time was attempted. The web applications and software interfaces now number more than 40 and have reduced staff time devoted to technical service by 50% or about one-half of a person-year.

Also in 2011, a massive digital conversion of association and industry technical and promotional

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*Patsy and Ed Denton, Denton Enterprises, Inc., share a relaxing dinner at ACPA’s 50th annual meeting. Ed Denton (ACPA Chairman-1969) and his namesake company have twice been recognized with ACPA’s Hartmann-Hirschman-Egan award, as well as many other ACPA honors and recognitions. Ed Denton has been involved as a volunteer leader for most of the past 50-plus years.*
The federal government’s role in highway construction has been the subject of debate, even going back to the “Good Roads Movement” in the 1880s, says FHWA historian Richard Weingroff. The program has come under criticism and attack by a steady procession of U.S. Presidents, state Governors, Members of Congress, and even state highway officials.

Weingroff notes there were four periods in history where these fights were most significant:

- In the period between 1916 and 1921, marked by passage of the Federal Aid Road Act of 1916 and the Federal Highway Act of 1921, the highway community and federal and state officials debated whether the federal government should be responsible for building the nation’s highways and roadways.

- In the 1920s, the program was under pressure to downsize in favor of the States.

- In the 1930s, with states seeking all the aid they could acquire, the issue was how much control the President should have over government expenditures for highway improvements.

- In the early 1950s, the states sought to regain the control they thought they had lost in the Federal-aid deal struck in 1916.

Each time, the debates ended with the Federal-aid highway program intact, but it was a close call in each case.123

In the 2010s, the debate has begun again, fueled by divisiveness in Congress and economic woes. There is waxing and waning interest in the HTF on the federal level, but the focus again has shifted away to other issues. Some states, it should be noted, also have increased gas and other taxes to address their own needs, but there is no consistent or unified effort to do so.

What lies ahead? Will lawmakers put a knuckle in the fight, sit out the debate entirely, or reach a compromise? Only time will tell, but no matter the outcome, ACPA will advocate for a solution that benefits its members.
ACPA’s logos through the year help establish a first impression, while also promoting the association’s brand in the marketplace. The familiar ACPA logos may be seen on printed and digital materials produced by the Association, as well as on flags, awards, and a wide range of other items used by members, chapter/state affiliates, and other allies in the transportation construction community.

innovative spirit of ACPA members, have poised the technology to become a competitive force against the tradition of asphalt resurfacing. It was the state DOTs change in emphasis at the end of the Interstate era that altered the demand for concrete pavement. Will concrete overlays become a truly competitive product that will alter the dynamics for the asphalt industry and state DOTs in the future?

“Harold Halm said it; Marlin Knutson dedicated the better part of his career to the technology; and I am echoing it even louder. To unleash the power of our industry we need to look inward and devote ourselves to developing a cement-based resurfacing product that will compete with the 2-in. asphalt mill and fill resurfacing. We have everything it takes to advance our current overlay technology, which has gotten us pretty close, but we need a

No discussion about ACPA’s recent history would be complete without noting the contributions of Suneel N. Vanikar, P.E., Pavement Design and Analysis Team Leader, Office of Asset Management, Pavement, and Construction, FHWA. Vanikar (L) accepts the Harold J. Halm Presidential Award from ACPA’s Jerry Voigt for his many contributions in concrete pavement technology, as well as for partnering efforts with industry.
renewed commitment to further this challenge and to provide our agency colleagues with a product that will consistently compete with the asphalt product in this arena. If we do, there will be no shortage of work for our members and we will finally unleash the potential we all know is there,” Voigt said during keynote remarks at the 50th ACPA Annual Meeting in December 2013.

ACPA’s Jerry Voigt and Ron Guntert, Guntert & Zimmerman Const. Div., Inc., discuss innovative technologies used on an Illinois Tollway project. Building on the tradition of technical leadership, ACPA’s core activities continue to focus on quality construction of concrete pavements—a founding principle of ACPA that remains constant today.
Closing Words

This chapter does not end the story, it is simply a marker in time on the road toward the next 50 years. More issues lie ahead, but so too, do solutions that will be created, developed or adopted by the association and its members.

Reflecting on this historical account and looking ahead to the remainder of the decade and beyond, reminds us of the conditions that led to the formation of ACPA 50 years ago and the many ups and downs that have impacted the association along its journey.

We appreciate the factors that led the “founding fathers” of the association to develop the four guiding principles that still serve as our constitution and guiding star. These principles frame ACPA’s programs and activities, but also...

“Much has changed in the concrete paving industry since I first started working at my father’s company as a high school student some 50 years ago. In the past, we didn’t saw joints, and we’d pave 12-foot lanes because we thought the narrower width gave us better quality.”

—Leet E. Denton, President, Denton Enterprises, CONCRETE PAVEMENT PROGRESS, March/April 1999. (ACPA Chairman-1969)
s

The real legacy of the American Concrete Pavement Association can be seen in the bold determination of members in maintaining the highest standards of quality and workmanship. The legacy is ever present in risking the pursuit of new ideas and innovations in equipment, materials, paving processes or in delivering information. The legacy has been handed down over generations and is the unification of members, affiliates, staff, and allies around the common purpose of building, rehabilitating, and preserving our nation’s surface transportation infrastructure with quality concrete pavements. This was true when our forbears were building the first pavements, undertaking the Interstate construction program, and now as they resurface, reconstruct, and preserve the nation’s current network of airports, roadways, and parking areas.

The first 50 years of ACPA shows the greatest results were accomplished because members stood united whether the economy, politics or other events presented opportunities or challenges. The concept of “People Working Together” is our hallmark, and it thrives because the collective intellect, talents, skills, and contributions of ACPA members is greater than that of the same number of individuals working alone.

Ultimately, the pavements that result from ACPA members’ hard work may stand as a monument, but what they build together with their hearts and minds is a far more enduring legacy.
Happy 50th Anniversary
American Concrete Paving Association

The **RexCon** Model S has been serving the members of the ACPA for over 50 years. It’s versatile mix range meets the most difficult concrete design needs.

The Model S has built its rugged and dependable tradition in road and runway construction. **RexCon** plants have tackled the most demanding mix designs from Optimized to Roller Compacted Concrete.

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November 29, 2013

Gerald F. Voigt, President and CEO
American Concrete Pavement Association
9450 Bryn Mawr Ave., Suite 150
Rosemont, Illinois 60018

Dear Jerry:

On behalf of the Officers, Directors and members of the International Society for Concrete Pavements, I offer heartfelt congratulations and best wishes to the leaders, membership and staff of the American Concrete Pavement Association during this celebration of the 50th anniversary of ACPA’s founding!

The role that ACPA has played in the development of the concrete paving industry over the last 50 years, to the benefit of both its member companies and owner-agencies nation-wide, cannot be overstated. Ever since its humble beginnings in 1963 as a trade association formed by a small group of contractors to address the needs of the concrete paving industry, ACPA’s members and staff have been a consistent and ever-growing positive influence on technological and policy-related developments that have impacted the concrete paving industry. ACPA’s collaboration with government, academic and consultant researchers and practitioners over the years has helped to produce concrete pavement design, construction, evaluation, and rehabilitation techniques, improvements and refinements that are far too numerous to list here—although they are reflected in the extensive library of past and current ACPA engineering bulleted, technical bulletins, and informational and promotional literature.

Today, with nearly 400 corporate and individual members and a network of more than 20 regional chapters, ACPA enjoys well-deserved international recognition as a “go-to” source of information and expertise for all things related to concrete pavement technology. The International Society for Concrete Pavements is proud to be affiliated with ACPA and is grateful for ACPA’s long-standing support of ISCP and its mission to facilitate the advancement of knowledge and technology related to concrete pavements through education, technology transfer and research at an international level.

With all of the above in mind, ISCP would like to once again congratulate ACPA on 50 years of successful leadership, advocacy and technical innovation related to the concrete pavement industry, and offer its best wishes for the next 50 years!

Best regards,

Mark B. Snyder, President
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* ACPA Honorary Life Member (HLM). HLM awards are bestowed by the ACPA Board of Directors in recognition of meritorious service and long-term commitment to the association and the concrete pavement industry.
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Except where noted contextually, photos and illustrations used in this publication are from the archives and active files of the American Concrete Pavement Association.

Guide to Acronyms and Abbreviations
The following is a guide to the commonly used acronyms, abbreviations, and truncated terms that appear on a recurring basis in this publication. Other, less common occurrences of abbreviations and acronyms, are shown with their full attribution throughout the text.

AASHTO—American Association of State Highway and Transportation Officials (and its forerunner organization, the American Association of State Highway Officials)

ACPA—American Concrete Pavement Association

AGC—The Associated General Contractors of America

ARTBA—American Road & Transportation Builders Association

Chapter/States—ACPA-affiliated regional chapters and state paving associations

CP Tech Center—The National Concrete Pavement Technology Center

DOT—Department of Transportation

FAA—Federal Aviation Administration

FHWA—Federal Highway Administration

ICPA—Iowa Concrete Paving Association

IGGA—International Grooving & Grinding Association

IPRF—Innovative Pavement Research Foundation

M-E—Mechanistic-Empirical, typically used in the context of mechanistic-empirical pavement thickness design guides, software, and other resources

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NRMCA—National Ready Mixed Concrete Association

NASA—National Aeronautics and Space Administration

OPEC—Organization of Petroleum Exporting Countries

P.E.—Professional Engineer

PCA—Portland Cement Association

PAC—Political Action Committee

TRB—Transportation Research Board

USACE—U.S. Army Corps of Engineers

UTW—Ultrathin whitetopping

Editor’s Notes: Every attempt has been made to include the most appropriate and accurate attribution, including correct point-in-time format for company names, titles, professional designations, etc. Even so, certain documents and other archived records may not contain the most correct, complete, or current information. Any omissions or errors in these important attributions are purely unintentional.
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Congratulations to ACPA on 50 years of excellence!
Congratulations ACPA on your 50th Anniversary

We share in your long-term dedication to the advancement of concrete paving technology.

Together, we will continue to grow, innovate and build on the world-class standards established by our heritage.

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