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ACPA Presents Awards for Excellence in Concrete Pavements

The American Concrete Pavement Association (ACPA) recently presented its 16th Annual "Excellence in Concrete Pavement" awards, the concrete pavement industry's highest-order and most prestigious recognition of quality.

The awards honor contractors, engineers, and owners for quality concrete pavement construction projects completed in 2004. The awards also recognize companies and agencies for safe, efficient, and durable concrete pavements.

The awards program, sponsored jointly by ACPA and *Concrete Construction* magazine, cites projects for quality, efficiency, smoothness, reduced costs, and for minimizing road-user delays. The winners by award category were as follows:

Winner: State Roads – presented to (contractors) Concrete Placing Co., Inc., and JTL Group, Inc.; (owner) Montana Department of Transportation; and (engineer) Forsgren Associates, Inc. for the US-93, Ashley Creek project in Kalispell, Mont.

US Highway 93 stretches from Idaho to the Canadian border in Western Montana. It's a major tourist route between Yellowstone and Glacier National Park, going through both Kalispell and Missoula. The project extended from Kalispell to Ashley Creek, a 3-mile stretch of highway with average daily traffic of 17,400 vehicles—15% of it either trucks or RV campers.

The Concrete Placing Company (CPC), Boise, Idaho, won the \$3.4 million contract for the paving work during the summer of 2004. In spite of many rain delay days, they managed to complete it on time, partly

through innovation. One idea was paving most of the work without stringlines, using a Guntert & Zimmerman S-850 Quadra 4-track paver. After using stringlines to pave the first lane, features of the paver made it possible to pave the remaining lanes without stringlines. Once the first lane was placed, the paver steered itself, guided by the edge of the preceding lane. Programming the cross-slope of the lane into the paver's computer automatically controlled the elevation on the outside lane edge.

CPC also attached a mule to the paver so that curbs and gutters could be cast integrally with the pavement. This saved significant time for the start of the sidewalk construction alongside the curb.

Through careful quality control measures, CPC produced concrete that averaged flexural strengths of 718 psi at 28 days, well beyond the requirement of 500 psi. The owner, the Montana Department of Transportation (MDT), specified an all-or-nothing incentive for smoothness, and CPC earned 99.5% of the amount set aside.

Winner: Overlays – presented to (contractor) Duit Construction Co., Inc., and (owner/engineer) Oklahoma Department of Transportation (ODOT) for the concrete overlay project on Interstate 40 from mile marker 253 to 260 in McIntosh County, Okla.

This project involved the construction of 51.3 lane-miles of 10½-in. thick concrete overlay on 9 in. of existing asphalt. The Interstate freeway was originally a full-depth asphalt construction, and due to heavy truck traffic had rutted considerably over time.

Duit Construction, Edmond, Okla., won the contract to perform the overlay work. Because of the heavy traffic volume, more than 48,000 ft of precast median barrier was placed to separate head-to-head traffic. Shortly into the project, Duit discovered that an existing 10-foot-wide shoulder used as a traffic diversion pavement wasn't holding up, so Duit recommended the installation of a temporary 6-in.-thick concrete shoulder. Because concrete turned out to be less expensive than an asphalt repair, it saved time and responded well to the traffic.

Using the existing asphalt roadway as the base, Duit milled the surface to flatten the roadway and in some cases added new asphalt to control concrete yield and provide a flat surface. The project was well received by the Oklahoma Department of Transportation, and Duit received the maximum money incentive for smoothness of ride.

Winner: Divided Highways (Urban) – presented to (contractor) The Lane Construction Corp. and (owner/engineer) South Carolina Department of Transportation for the Interstate 95 reconstruction in Darlington and Florence Counties, South Carolina.

To help meet some of the limited access challenges that go along with reconstructing a busy urban freeway, the South Carolina DOT for the first time allowed use of a dowel bar inserter on this stretch of I-95. Lane proposed the use of a DBI-equipped slipform paver instead of placing dowel baskets on grade ahead of the paver. This allowed the pavement subgrade to be used as a haul road.

The DOT's concerns over consistent and reliable dowel bar positioning were addressed by using a new, non-destructive testing device that quickly and accurately verifies dowel bar location.

The project required the placement of 635,000 sq. yds. of 11-in.-thick jointed plain concrete pavement over 25 months. Wet subbase conditions due to a wet fall season, and the need to stabilize a much greater portion of the subgrade than originally anticipated, led to additional work in the form of cement stabilization. The owner agreed to pay for the additional work in exchange for a revision to the contract's "No Excuse Incentive." The change allowed Lane to still earn the full incentive, but to do so they would have to deliver the project 30 days earlier than originally scheduled, and they did.

Traffic control included splitting the traffic going in one direction such that one lane crossed the median and ran head-to-head with the oncoming traffic. That required development of effective signage, use of moveable barrier walls, and well-coordinated incident response.

Winner: Divided Highways (Rural) – presented to (contractor) Cedar Valley Corporation and (owner/engineer) Iowa Department of Transportation for the Sioux County Highway 60 Alton Bypass in Sioux City, Iowa.

By setting a pre-project goal of achieving Iowa's trial zero-band specification, at the time being considered for adoption, Cedar Valley Corp. placed 21.5 lane-miles of mainline paving with an average smoothness of 1.4 in. per mile and no required corrective work. The company used ¼-in. diameter polycoated cable instead of conventional stringline, and a very workable, paver-friendly concrete mix that required little finishing. Batching the concrete onsite, combined with a structured and consistent monitoring program, enabled excellent concrete consistency throughout the project, for which Cedar Valley achieved maximum incentive payments.

The company planned its daily production levels to start and stop its mainline paving pours at the nine bridges on the project, which were being built under separate contracts. That eliminated the need for day's end headers and corrective work, and contributed to the overall smoothness.

The project also required construction of a 29.5-foot fill over an old concrete box culvert. Using lightweight geofill and geomembrane liners facilitated a rapid construction sequence that protected the structure and saved a considerable amount of money.

Winner: Concrete Pavement Restoration – presented to (contractor) Millstone Bangert, Inc.; (owner) Lambert - St. Louis International Airport @; and (engineers) Crawford, Murphy & Tilly, Inc. and CRD & Associates, Inc. for the rehabilitation of Runway 12L-30R keel section in St. Louis, Mo.

The problem facing the airport was that 6,000 ft of the keel (center) section of its most critical runway was in dire need of repair. Airport authorities had hoped to have the new expansion runway open before addressing the needs of 12L-30R but realized this would not be an acceptable option.

The scope of the original project was to rotomill the center 50 ft of the runway section, removing the 10-in. overlay and saving the 14-in. concrete pavement beneath, while salvaging and modifying the existing electrical components, and then replacing the section with a new concrete overlay in four 54-hour weekend closures.

After submitting the winning bid, Millstone Bangert proposed an alternate section that removed all existing pavement and aggregate base and replaced it with 6 in. of cement-treated base and 22 in. of plain concrete pavement. This alternate also included replacing the existing electrical components with new ones, providing additional value to the runway.

With the additional work the project required six weekend closures, with overlapping activities throughout. During the heaviest periods of activity, removal, grading, electrical can installation, and CTB placement were all ongoing simultaneously in a 2,000 x 25-foot area. In the end, detailed scheduling and continuous communication were primary factors in the success of this project.

Winner: Reliever & General Aviation Airports – presented to (contractor) The Harper Company; (owner) Columbus Regional Airport Authority; and (engineer) Crawford, Murphy & Tilly, Inc., for the AirNet New Apron Construction at Rickenbacker International Airport in Columbus, Ohio.

A stringent quality-control program of onsite testing and real-time exchange of performance data among the contractor, engineer, and material producer enabled The Harper Company to place 46,760 sq. yds. of 10-in.-thick jointed reinforced concrete with exceptional smoothness. Close tolerance-monitoring of pavement thickness, edge slump, and material consistency, combined with continuous communication between the onsite testing personnel and the concrete producer resulted in 100% of the new 850x500-foot apron meeting the ¼-in.-per-12-ft smoothness standard. Only one of the more than 1300 truckloads failed to meet material standards; that load was pulled from the delivery rotation and mixed with other material onsite to reduce the bleed water.

The subbase consisted of 12 in. of lime-treated soil, compacted and cured, built to stabilize a weak, undulating clay soil. Onsite laser and total station survey techniques contributed to the excellent conformance to grade and smoothness. The no-slump concrete was batched offsite, delivered in non-agitating trucks, and then slipformed.

This project was subject to the usual airport constraints—an active taxiway adjacent to the project and concurrent construction of the new AirNet hangar terminal that the apron would serve. Then four underground storage tanks full of jet fuel were discovered on the project site and had to be drained and removed.

Because the site was formerly an Air Force Base, extensive coordination with the military and the EPA was required. Even so, the overall project schedule was maintained, thanks to good contingency planning and the close working relationships developed among the project team.

Winner: Commercial Service & Military Airports – presented to (contractor) Shafer Contracting Co., Inc.; (owner) Fargo Municipal Airport Authority; and (engineer) Ulteig Engineers for the reconstruction of Runway 18-36 at Hector International Airport in Fargo, N.D.

To allow reconstruction of Runway 18-36, the parallel taxiway was turned into a runway for the duration of the project. To do that without losing capacity at the airport required extensive planning and communication—for example, allowing the airlines to adjust their schedules to use smaller aircraft and more flights.

The 17-in.-thick plain concrete runway slabs are 25 ft square and doweled along the longitudinal joints. The asset value of the old runway was recovered by crushing it and using the aggregates in the 8-in. subbase and the 6-in. econcrete base. Shafer Contracting set up a portable double-drum concrete batch

plant nearby. The 8-cubic-yards-per-minute plant discharged into end dump and agitating trucks for the short haul. Being so close helped maintain a constant head of concrete in front of the slipform paver, eliminating starts and stops, and ultimately resulting in very smooth pavement.

The contractor used maturity monitoring to help maintain the project schedule. The contractor also used a specially fabricated, boom-mounted vibrator on a skid steer during hand pours to reduce foot traffic on the concrete and to reduce the time required to place and finish it.

Winner: Municipal Streets & Intersections (<30,000 SY) – presented to (contractor) Ptaschinski Construction Company; (owner) City of Neenah, Wis.; (sponsor) Wisconsin Department of Transportation; and (engineers) OMNNI Associates, Inc., and Gremmer & Associates, Inc., for the work on Commercial Street, STH 114, in Neenah, Wis.

Scheduling this project presented many challenges for the contractor, Ptaschinski Construction, based in Beaver Dam, Wis. Besides removing and replacing the 12,100 sq. yds. (1.5 lane-miles) of roadway, the project also included the installation of 3000 ft of storm sewer (much of it tunneled under existing utilities), colored and stamped concrete sidewalks and crosswalks, the installation of decorative lighting and a stop signal at one intersection, the removal and replacement of pavement around a railroad dual track crossing as well as storm sewer under the tracks, and proper handling and removal of petroleum-contaminated soils encountered in sewer trench excavations.

Because the work was in the midst of a downtown business area, the contractor had to provide access to businesses and crosswalks at all times. Another contractor hired by the city of Neenah had to relocate underground utilities that were in conflict with this project. The utility work had to be completed first and caused a three-week time delay for Ptaschinski's start.

The schedule was very tight. Construction was to start on May 17 and be completed by August 20 to coincide with the completion of a bridge construction project at one end of the street, which was under contract to another contractor.

To facilitate traffic movement, Ptaschinski used a concrete mix with 846 pounds of portland cement (9-bag) so that the work could be open to traffic on the day after placement. They cast and broke cylinders each day to ensure the earliest opening time for traffic. And because the city liked the decorative concrete work, it increased both the number of colored concrete crosswalks and the amount of stamped concrete work, adding to the complexity of the job.

Despite utility conflicts and the extensive coordination required, Ptaschinski completed the contract to the satisfaction of the city, meeting the basic time requirements.

Winner: Municipal Streets & Intersections (>30,000 SY) – presented to (general contractor) Concrete Applied Technologies Corp. (CATCO); (paving contractor) L & S Construction LLC (Surianello General Concrete Contractor and Leone Construction Inc.); (owner) New York State Department of Transportation (NYS DOT); and (engineer) NYS DOT – Region 5 for project D259485, the complete reconstruction of Walden Avenue and Union Road in the Town of Cheektowaga, Erie County, New York.

The challenge: In an unusually wet and chilly fall in upstate New York, reconstruct 6.8 lane-miles of a busy commercial roadway, along with five intersections, ahead of the impending holiday shopping season. All the while, keep dual turning lanes open and provide minimal disruption to businesses and both commercial and public traffic.

The major objective of the project was to address the deep rutting and shoving problems caused, particularly in the intersections, by high truck traffic along the heavily trafficked commercial section of Walden Avenue. This major municipal street is bordered by 34 businesses, a regional mall with more than 200 stores, and a major truck stop. This roadway also is an important commuter route for the area, providing access to the New York Thruway, as well as the city of Buffalo and nearby towns. The total traffic volume (more than 41,000 vehicles per day) also made this project a challenge.

Highlights of the project included placement of some 17,525 sq. yds. of 11-in. jointed concrete over 12,907 cu. yds. of 4-in. permeable base. The lanes on this busy roadway were 12- and 14-ft. wide. The design mix, supplied by both a central mix and dry batch plant, was a NYS DOT Class C mix with fly ash.

Adding to the challenge of the project was an A+B bid item included in the contract to minimize disruption to traffic and area businesses. Incentives and disincentives up to \$7,000 per day were stipulated if the work was not completed by the scheduled dates. Even further complicating the project were the utility structures that had to be embedded in the pavement area (which required some innovative joint layouts).

Getting the work done involved double-shifts and night construction. To address the challenges of managing under traffic, the general contractor hired a full-time traffic control supervisor for the duration of the project. Unusually long periods of rain, generally occurring overnight, further threatened the project schedule, but thanks to some vigilant weather-watching (using internet programs) and prioritizing of the concrete paving work, the work was done in spite of the bad weather. In fact, work was often completed within minutes of poor weather conditions.

Attention to detail, constant communications, excellent scheduling, and of course, quality construction, all contributed to the successful completion of the project. The work was completed 38 days ahead of the November 1st deadline, for which the owner paid full incentives.

Despite the challenges, the project was completed, thereby resolving long-standing, expensive, and dangerous problems associated with the asphalt pavement rutting and shoving. Now, motorists and area businesses enjoy the benefits of a smooth, durable concrete pavement that has improved traffic flow, ride quality, and safety.

Winner: Urban Arterials & Collectors – presented to (contractor) Trierweiler Construction Company, Inc.; (owner) City of Madison, Wis.; (sponsor) Wisconsin Department of Transportation; (design engineer) HNTB Corporation; and (construction engineer) Ayres Associates for East Washington Avenue Reconstruction – Segment I, City of Madison, Dane County, Wisc .

Washington Avenue is considered to be the gateway street to the Wisconsin State Capitol. It's a six-lane median-divided roadway that carries 56,000 vehicles per day. The asphalt pavement was installed in the 1950s and was rutted and severely cracked.

Trierweiler Construction Company, Inc., Marshfield, Wis., won the contract to completely remove and replace 4.6 miles of the street. At the same time, a completely new infrastructure was planned, including the replacement of all water mains, sanitary sewers, storm sewers, pavement, curbs and gutters, crosswalks, medians, and lighting. Starting on March 15, 2004, with a December 1 completion date, the construction timetable was short. In May and June there were substantial rainfalls—the worst being 6.2 in. of rain during one week of May, just when crews were installing the new 5x10-foot storm drain. Added to the difficulty was the city requirement that two lanes for traffic be open in each direction at all times.

Trierweiler installed 50,311 sq. yds. of 10-in.-thick concrete pavement over a total of 22 in. of aggregate subbase. Elevations and pitches were critical, and the owner also required a smooth ride of 20 in. per mile on a 0.2-in. blanking band, which Trierweiler exceeded.

An unusual feature of the project involved colored crosswalks. Trierweiler accomplished this by paving the crosswalk areas with the street pavement, then masking the street pavement on either side, broadcasting dust-on color hardeners and finishing them. They applied the same surface texture to both the streets and sidewalks. They also installed colored, patterned concrete hardscape in the medians.

Winner: Traffic Management – presented to (contractor) Concrete Works of Colorado, Inc.; (owner) City of Boulder Public Works Department – Transportation Division; (sponsor) Colorado Department of Transportation – Region 4, Boulder; and (engineer) Carter & Burgess, Inc. for Broadway (SH-93) Street and Bridge Reconstruction Project, University Avenue to Pine Street in Boulder, Colo.

Much of the success of a project has to do with how it's perceived. When the traveling public is frustrated and angered by traveling through a construction zone, the experience is remembered. This is one reason good traffic management is important. The other is safety.

Concrete Works of Colorado, Lafayette, Colo., won the contract to do the work on Broadway Street. They knew from the start that the project would be very challenging from the standpoint of traffic management. The construction area included nine intersections (seven signalized), a bridge reconstruction, 175 utility locations, 30,000 vehicles per day (on Broadway), 5000 pedestrian and bike crossings at Broadway and Boulder Creek, and 15,000 pedestrian crossings at one of the intersections with Broadway.

To help manage all the traffic situations a full-time traffic manager was onsite at all times. There were weekly meetings to produce a traffic plan based on the contractor's work schedule. The plan had to provide for automobiles, pedestrian, bicycle, and public transit traffic. Utility connections and intersections were completed at night or on weekends when roads could be closed. High-early-strength concrete was used to quickly reopen intersections to full traffic. All regional bus traffic was re-routed outside the construction zone so that traffic wouldn't be slowed down by frequent stops. Local bus service remained but with fewer stops. And to keep the public informed, there were constant communications by newspaper, radio, TV, and inserts in monthly water bills. On days with college football games, holiday shopping and other community events that brought out large numbers of people, the project was shut down.

This was well received, and at the project's completion, the city and local businesses partnered to hold two events: "A Taste of Broadway" and "Light the Holidays," the latter kicking off the holiday shopping season and celebrating the end of the construction.

ACPA Cites Finalists in Paving Awards Competition

Finalist: State Roads – presented to (contractor) Loch Sand and Construction Co.; (owner) Missouri Department of Transportation (MoDOT); and (engineer) Burns & McDonnell for the Route 36 Reconstruction Project No. J2P0476D in Livingston County, Mo.

The reconstruction of Route 36 from Route C to 0.9 miles west of Route 65 overcame three difficult traffic switches and environmental challenges to open a two-lane highway with head-to-head traffic into a four-lane, divided highway. MoDOT and Loch Sand & Construction worked together to maintain traffic control. This was no easy accomplishment, since one downhill traffic switch diverted traffic into two-lane head-to-head; another used a temporary bypass area where traffic came from two different areas; and westward traffic from Highway 36 and traffic merging onto 36 adjoined at one place.

The contractor also redesigned the project to reduce the size of temporary bypasses and eliminate asphalt connections, increasing the amount of concrete paving but also increasing the number of paving locations from 10 to 12.

Additionally, federally funded wetlands run along the south side of Highway 36, and MoDOT required Loch Sand & Construction to add erosion control devices to construction processes to protect and preserve the land.

The end result despite these challenges? An opened-up, six-mile stretch that achieved 54.68% of all monetary bonus possibilities and at least 3% bonus on 83% of the pavement placed, and a roadway which will also allow for increased economic growth and opportunity for its travelers. Despite the additional work added to the job contract, Loch Sand & Construction completed the 6 miles on time and with minimal hiccups.

Finalist: Overlays – presented to (contractor) Cedar Valley Corporation; (owner) Wapello County Board of Supervisors, Iowa); and (engineer) Brian Moore, P.E., Wapello County engineer for the V-37 project in Wapello County, Hedrick, Iowa.

Cedar Valley overcame a myriad of obstacles to complete a 3.5-mile concrete overlay in Wapello County, including working as a subcontractor to an asphalt contractor. The project was designed as a nominal 8-in. overlay with contraction dowel assemblies placed at 20 foot centers.

However, the existing 6-foot earth shoulders did not provide a sufficient haul road for concrete delivery. Therefore, Cedar Valley also faced the challenge of anchoring dowel baskets with nail guns to the

existing asphalt surface directly in front of the concrete paver because the existing roadway was the only viable haul road. Cedar Valley successfully hauled concrete to the paving spread while completing the time-consuming operation of dowel basket anchoring.

Despite torrential rains to further complicate matters, Cedar Valley Corporation completed the Wapello project ten days ahead of schedule and achieved a commendable 0.85 in./mile smoothness with a two-tenths blanking band. Coordination, planning, and attention to safety details all contributed to a successful project that overcame the odds.

Co-Finalist: Divided Highways (Urban) – presented to (contractor) Koss Construction Company; (owner) Kansas Department of Transportation; and (engineer) HNTB Corporation for the reconstruction of US-54 and US-69, project 54-06-K-7396-01, in Fort Scott, Kan.

For the reconstruction of US-54 and US-69, Koss provided a range of experts to supervise technical applications, such as erecting stringline and measuring steel placement, and ensure that quality concrete pavement was constructed throughout the multiple paving phases involved. The contractor also maintained a central mix concrete plant for the span of the project, which lasted almost two years.

Koss Construction worked with HNTB Corporation to design a construction phasing plan that allowed for existing traffic movements to continue on the projects, which are two of the busiest highways in southeastern Kansas. Both spans of project also included their own obstacles: the US-69 leg included one section, less than half mile long, that contained four pairs of bridges; and the US-54 section contained two through lanes and a center turning lane. Yet, the expectations were high, for project specifications required testing the in-place concrete strength with a statistically-based analysis, with which Koss complied, in addition to achieving a smoothness of 19.8 in. per mile.

Co-Finalist: Divided Highways (Urban) – presented to (paving contractor) Hi-Way Paving, Inc.; (general contractor) Trumbull Corporation; (owner) Pennsylvania Department of Transportation; and (engineers) Pennoni Associates and Urban Engineers, Inc., for the reconstruction of Interstate 81, Dauphin County, Pennsylvania.

The reconstruction of Interstate 81 focused on traffic impact minimization and public relations because of the amount of commuters who use the route. Tight work conditions, allowing for three lanes of traffic in each direction during the entire construction, made precision in every task critical to the safety and financial success of the project. Pavement removal and delivery of concrete were planned to the extreme to ensure timely delivery, placement, and finishing within the confined areas.

I-81 is an integral part of the Harrisburg metro area transportation system, and minimizing traffic impact while reconstructing a high quality pavement was no easy task. However, the contractors worked to place pavement that still achieved smoothness incentives for a long-lasting product that will continue to reduce traffic impact through its low maintenance requirements.

Finalist: Divided Highways (Rural) – presented to (paving contractor) Concrete Placing Co., Inc. (CPC); (general contractor) Western Construction, Inc.; and (owner/engineer) Idaho Transportation Department (IDT) for Interstate 84, Glens Ferry to King Hill, in Glens Ferry, Idaho.

Early on in the fast-paced I-84 project, CPC realized their challenge: Maintaining quality concrete placement and paving while preventing impact to traffic on a project that included three interchanges and two bridges. The contractor had to coordinate closely with the general contractor to achieve the required thickness, and all paving had to be done at night. In addition, Alkali-Silica Reactivity (ASR) caused concern, so the contractor shipped in fly ash before paving operations even began.

CPC also employed the tricky procedure of hand-placing dowel baskets directly in front of the paving operation, as well as using a texture/cure machine to score a randomly-spaced tine for reduced tire noise. These methods in combination with close attention to quality earned the company 97% of the available bonus for the ride and 73% of the bonus for thickness. The project finished with an average ride of 0.5 in/mi, and no corrective measures were needed to bring the pavement within specified smoothness tolerances.

CPC beat daily grade transition changes, worked around the 5 bridges on the project, and completed the project between two phases of another project 800 miles away to produce quality pavement of which Idaho can be proud.

Finalist: Concrete Pavement Restoration – presented to (contractor) Diamond Surface, Inc. and (owner/engineer) Mississippi Department of Transportation for the Interstate 55 CPR Project, Pike County, Miss.

The rehabilitation of I-55 in Pike County, Miss., overcame significant difficulties in diamond grinding a hard aggregate to restore a 43-year-old jointed reinforced pavement to a smooth riding surface at a cost effective price. The work restored two different projects completed in 1961: the southern section was 7.337 miles long, and the northern section was 5.360 miles.

Diamond Surface, Inc. received 91% of the total available incentives for smoothness, despite encountering chert¹ gravel coarse aggregate with a Mohs scale² number between 9 and 10. The southerly section, comprising about 58% of the project, required a careful balancing act on the part of the contractor to hold the diamond chips in the matrix on the edge of the blade to get reasonable blade life and production.

The contractor also successfully handled the difficulties posed by six interchanges in the 12.7-mile length, two of which were of the full cloverleaf design. However, Diamond Surface worked with the Mississippi Department of Transportation to post arrow boards and signs, as well as traffic barrel lane closures to separate traffic from restoration operations.

Diamond Surface restored a 43-year-old jointed reinforced pavement to a surface that carries a traffic load of an estimated 30 million equivalent single axle loads. In addition to improving the smoothness and resealing the joints, MDOT also added full- and partial-depth repair and undersealing to its capabilities for application on other such projects in the future.

¹ Chert is a very hard sedimentary rock that is usually found in nodules in limestone. Chert is light gray to dark gray in color.

² In 1812 the Mohs scale of mineral hardness was devised by the German mineralogist Frederich Mohs (1773-1839), who selected the ten minerals because they were common or readily available. The numbers and their associations are: 1-Talc; 2-Gypsum; 3-Calcite; 4-Fluorite; 5-Apatite; 6-Orthoclase; 7-Quartz; 8-Topaz; 9-Corundum; and 10-Diamond.

Finalist: Reliever & General Aviation Airports – presented to (contractor) Fred Weber, Inc.; (engineer) Crawford, Murphy & Tilly, Inc. (CMT); and (owner) City of Washington, Mo., for Runway 15-33 and Associated Parallel and Connecting Taxiway at Washington Memorial Airport, Warren County, Mo.

Scheduling proved to be a hurdle for Fred Weber in the Washington Memorial Airport project. The 60-day airport closure did not provide time for the existing runway to be removed prior to opening the new runway, then an elevation “bust” of the existing ground line became exposed after work began, resulting in a shortage of dirt to complete the runway platform. The City of Washington and CMT then agreed to let the contractor do the earthwork outside of the runway, so that they would have 60 calendar days to complete Phase 1: the paving of Runway 15-33 and partial connectors, installation of storm sewers, lime treatment of the subgrade, and placing 4 in. of dense-graded aggregate base.

Fred Weber Inc.'s team coped with 9.85” of rain during Phase 1 by building an all-weather access route to the runway and placing the concrete pavement on dry days. One of the keys to the success of this phase was completing the soil modification early on so that the lime-treated subgrade did not absorb the rain, and recovery time from the weather was quick. The team's commitment to completing the project within a tight schedule was evident in the result: Fred Weber Inc. earned 100% of the available bonus for strength and thickness with 0.51 in./mile on the two-tenths blanking band with no bumps. Phase 2 also went smoothly, with Fred Weber earning 97.1% of the available bonus.

The City of Washington and its citizens expressed appreciation for the new runway, as it allows for increased air traffic and closer proximity to facilities, which will provide flexibility and efficiency for local business owners.

Finalist: Commercial Service & Military Airports – presented to (contractor) The Lane Construction Corporation; (owner) Metropolitan Washington Airports Authority; and (engineer) Michael Baker Jr., Inc., for the reconstruction of Runway 12-30 at Washington Dulles International Airport, Chantilly, Va.

Airport authorities rarely close runways for any length of time. However, in the case of Runway 12-30 at Washington Dulles, authorities made an exception so that The Lane Construction Corporation could complete a range of reconstruction techniques for improved performance, including: pavement demolition; concrete paving; isolated slab repairs on a high-speed taxiway; pavement grooving; shoulder work for pavement construction and grade transitions; pavement marking; underdrains; and the replacement of runway centerline, edge, and touchdown zone lighting systems.

To complete these efforts, however, the project team had to overcome a cement shortage on the east coast, a labor shortage, and increased airport traffic from a new low-cost airline. In addition, heightened security measures surrounding air travel required detailed coordination with the Transportation Security Administration.

However, timesaving measures such as the preparation of an on-site batch plant for the contractor and team coordination enabled the project team to complete the 10,000-foot reconstruction 13 days ahead of the revised 134-day schedule. Speed was not the only exceptional result of this project; the project also achieved a smoothness measurement of 7 in./mile, compared to the Federal Aviation Administration standard of 15 in./mile, on a key project in the airport's program for meeting current and future demand, as well as increasing passenger convenience and efficiency.

Finalist: Municipal Streets & Intersections (<30,000 SY) – presented to (contractor) Concrete Works of Colorado, Inc.; (owner) City of Boulder Public Works Department – Transportation Division; (sponsor) Colorado Department of Transportation – Region 4, Boulder; and (engineer) Carter & Burgess, Inc. for Broadway (SH-93) Street and Bridge Reconstruction Project, University Avenue to Pine Street in Boulder, Colo.

Innovative funding partnerships among the city of Boulder, the Colorado Department of Transportation, the Federal Highway Administration and the Transportation Improvement Program process of the Denver Regional Council of Governments accelerated the Broadway Street and Bridge reconstruction project, the largest single transportation project in the city's history.

One of the main challenges of the project involved paving 23,000 sq. yds. of concrete pavement over 3.50 lane miles that included integrating various utility-related components, such as water, storm and sanitary sewer, electric, phone, and gas lines, into project phasing while maintaining vehicular, transit, and pedestrian access. However, with extensive planning and public outreach, an innovative design that shapes the project around the community, and paving completed by hand, the project was completed ahead of time and within acceptable smoothness specifications.

Finalist: Municipal Streets & Intersections (>30,000 SY) – presented to (contractors) Western Quality Concrete, Inc. and Ralph L. Wadsworth Construction Co., Inc.; (owner) Salt Lake City Corporation, Utah; and (engineer) RB&G Engineering, Inc. for the reconstruction of South Temple Street, Main Street to Virginia Street, in Salt Lake City, Utah.

Concrete pavement was selected for the reconstruction of South Temple, one of Salt Lake City's first streets with pavement, curbs, and sidewalks, because of its durability, minimal maintenance, and historical significance.

The project included the removal of the original pavement and the placement of 76,400 sq. yds. of new 11-in. concrete pavement. Sequencing techniques provided the public with continuous access to businesses and maintained traffic flow. The crew also used compaction techniques and materials modified to decrease potential vibration damage to historic mansions lining the roadway. Meanwhile, a website contained construction updates and distributed news releases through local media to inform the public throughout the project.

Finalist: Urban Arterials & Collectors – presented to (contractor) Emery Sapp & Sons, Inc.; (owner) City of Lee's Summit; and (engineer) George Butler Associates, Inc., for the Tudor/Scruggs Road Improvements in Lee's Summit, Mo.

The Tudor/Scruggs Road Improvements project won against asphalt as an alternate bid, as the results of a life cycle cost analysis figuring for a 35-year pavement life predicted that concrete pavement would save the city \$165,155 during the project's life. Located close to a lake and crossing three streams required special provisions for erosion control, but the contractors managed to complete construction four days ahead of schedule. The traffic plan also had to accommodate several residential subdivisions and three shopping centers along the project and ensure correct relocation of water mains and sewer lines.

Finalist: Traffic Management – presented to (contractor) Trierweiler Construction Company, Inc.; (owner) City of Madison, Wis.; (sponsor) Wisconsin Department of Transportation; (design engineer) HNTB Corporation; and (construction engineer) Ayres Associates; for East Washington Avenue Reconstruction – Segment I, City of Madison, Dane County, Wisc.

Continuing traffic movement and providing access to property while keeping user inconvenience and disruption at a minimum became both the traffic management goals and challenges during the reconstruction of the first segment of East Washington Avenue. To do this, construction operations were completed in four primary stages that switched traffic lanes to facilitate paving while maintaining traffic flow.

East Washington Avenue is the primary connection between the state capitol and downtown Madison at the western end, and at the eastern end, between large retail centers, suburban housing, and Interstate

39/90/94. In addition, the geography of the reconstruction did not permit for detours or alternative routes, so the traffic management plan called for the avenue to remain open to traffic during construction with two lanes in each direction.

The City of Madison constantly monitored and maximized signal green times at the three signalized intersections along the reconstruction route, where full access was also maintained and temporary left turn lanes were created. When access to minor side streets needed to be closed, HNTB also worked with the City of Madison and Wisconsin Department of Transportation to develop alternate routes to business properties, in order to minimize potentially unsafe movement in and out of the construction zone.

Consistent attention to these measures, as well as signs, changeable message boards, and extensive media coverage of construction progress and traffic switches all contributed to a successful project in traffic management.

Winners and finalists for the Excellence in Concrete Pavement Awards were selected from more than 60 entries by a panel of industry experts and judged on the basis of overall pavement smoothness, quality-control measures, project complexity, and innovative construction solutions.

ACPA is the national trade association for the concrete pavement industry. ACPA and its network of regional chapters and state paving associations (covering the contiguous United States) represent members in marketing/promotion, government affairs, and research/technical support associated with concrete pavements used for highways, airports, streets, and roads.

ACPA's members include paving contractors, cement companies, equipment manufacturers, material and service suppliers, ready-mixed concrete producers, allied associations/organizations, bonding and insurance companies, consulting firms, and other allied organizations and individuals.

Founded in 1964, the American Concrete Pavement Association is headquartered in Chicago at 5420 Old Orchard Road, Skokie, IL 60077. Telephone: 847-966-2272. Fax: 847-966-9970. ACPA's Washington, D.C.-office is located at 1130 Connecticut Ave., Suite 1250, Washington, DC, 20036. Phone: 202-887-8290. Fax: 202-887-8298. ACPA's Mesa, Arizona-office is located at 807 W. Keating Ave., Mesa, AZ 85210. Phone: 480-775-0908. Visit our website at www.pavement.com.

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For photo requests, please specify photos of **award recipients, projects, or both**. Please note that photos of award recipients will be available after December 12, 2005.