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# NEWS

## ACPA Names Recipients of Annual “Excellence in Concrete Pavements” Awards

Rosemont, Ill. – The American Concrete Pavement Association (ACPA) has named recipients of its 28th Annual “Excellence in Concrete Pavements” awards, which recognize quality concrete pavements constructed in the United States and Canada.

The awards program encourages high-quality workmanship in concrete pavement projects, and serves as a way to share information about challenging and highly successful projects. This year’s 29 awards were selected from 78 total submittals. In all 21 contractors won awards for projects in 12 ACPA-affiliated Chapter/State areas.

Thirty-six judges representing various stakeholder groups throughout the transportation-construction community evaluate projects for the award consideration. The program recognizes contractors, engineers, and project owners who completed outstanding projects. The program requires projects to be completed in the calendar year prior to judging (2017). The recipients of the 2017 ACPA Excellence Awards are:

### Reliever & General Aviation Airports

**(Silver Award)** Jack Edwards National Airport Improvements, Gulf Shores, Ala.

Contractor: A.G. Peltz Group, LLC

Owner: Jack Edwards National Airport

Engineer: Barge, Waggoner, Sumner and Cannon, Inc.

As tourism in this resort city and overall region has increased, the Jack Edwards airport has seen increased demand for additional aircraft apron areas that can accommodate all types of aircraft, including heavy aircraft. In response to these increasing demands, the Federal Aviation Administration granted funds to construct a new heavy aircraft apron.

A.G. Peltz Group\* won a competitive bid to construct the new heavy aircraft apron. The scope of work included taking a greenfield site and performing the required grading, drainage, base, pavement, aircraft tie downs, and lighting for the new apron. The pavement section consists of a 6 in. P-304 cement treated base layer and a 15 in. P-501 plain jointed concrete pavement layer.

A.G. Peltz performed both the cement-treated base and concrete paving required to complete the project. The pavement was constructed in 30 ft paving widths to shorten the duration of the pavement placements and try to recover time lost during the grading phase of the project. In spite of an unusually wet spring that caused delays, the 27,555 SY heavy aircraft apron now serves the air travel needs of the region, and allows aircraft up to 737 class. This apron will now allow the airport to accept a larger volume and larger size of aircraft.

**(Gold Award)** Reconstruction Project at Northwest Missouri Regional Airport, Maryville, Mo.

Contractor: Ideker, Inc.

Owner: City of Maryville, Missouri

Engineer: Aviation, Inc.

Pavement evaluations on Runway 14-32 at the Northwest Missouri Regional Airport in Maryville, Missouri, resulted in low Pavement Condition Index numbers for a portion of the runway, north turnaround, and the northernmost taxiway connector from the apron. Also, deterioration of the north 4,000 ft. of the runway since 2011 required emergency replacements of select concrete panels on an annual basis.

Ideker, Inc. proved they were up to the task of completing this challenging project. Because of these factors, a comprehensive reconstruction project was required and involved the removal and replacement of the existing pavement. The project involved pavement demolition; fly ash stabilization

of the subgrade; in-place recycling of the existing 6 in. concrete and reuse as aggregate base course; drainage pipe installation; underdrain construction; and a new edge lighting system.

The airport was closed for the duration of the project to allow for the complete removal and replacement of the northernmost 4,000 ft. of runway pavement. In all, 38,000 SY of 6 in. concrete pavement was placed over the recycled concrete aggregate and subgrade. A geotextile fabric between the subgrade and base course minimized the amount of fines entering the base course.

Weather delays and unanticipated poor subgrade conditions complicated the project, but the contractor and other project partners worked through these issues together to keep the project moving forward with minimal delays.

Ideker used stringless grade control for establishing the finished subgrade elevations, finished recycled concrete base course elevations, and placement of the concrete. Ideker also sequenced paving lanes so to avoid driving on the subbase during paving.

The consistent thickness results and profilograph results—with no deficiencies to correct—are a testament to the tight grade control and attention to detail that was achieved during the project. In addition, the specifications were exceeded for flexural strength gain for this project. The smooth ride of the new runway exhibits the high quality of workmanship that was achieved on this project.

### **Commercial Service & Military Airports**

**(Silver Award)** Runway 14-32 Rehabilitation, Pittsburgh International Airport, Findlay Township, Pa.

Contractor: Golden Triangle Construction Company, Inc.

Owner: Allegheny County Airport Authority

Engineer: Michael Baker International

When bids were let for the reconstruction of the cross wind Runway 14-32, Golden Triangle was the successful bidder on all six construction bids.

The project involved removal and replacement of 185,936 SY of concrete pavement. All the concrete was produced using Golden Triangle's portable batch plant set up on airport property about 20 minutes from the project site.

In addition to the concrete pavement replacement, the project included subgrade, base, and drainage improvements along with complete asphalt shoulder replacement, as well as electrical circuit, lighting, and airfield signage replacement.

The original concrete pavement was crushed to a 2A or R4 gradation and was either used on the project or was stock piled on airport property for future reuse by the owner. All the bituminous asphalt was milled and stockpiled on site for future reuse by the owner.

Precise grade control was a must as the runway intersected with two other parallel runways and intersected with 10 taxiways. The initial phases used traditional string line paving techniques, and then transitioned to GPS and stringless technology.

Close coordination was required with multiple subcontractors, as well as multiple prime contractors on adjacent airport projects. There were also rigorous quality control requirements to meet FAA specifications, and testing results confirmed consistency.

Making this project even more challenging were the many sub-phases of each of the six construction phases, which led many working restrictions and extremely tight time frames. In spite of all these factors, project milestones and completion dates were met and the owner and air travelers to the region now have a reliable, high quality facility.

**(Gold Award)** Runway/Taxiway Reconstruction, Wayne County Airport, Romulus, Mich.

Contractor: Ajax Paving Industries, Inc.

Owner: Wayne County Airport Authority

Engineer: RS&H

Arguably one of the greatest challenges facing the Wayne County Airport Authority recently was the reconstruction of Detroit Metro Airport's Runway 4L/22R, which is vitally important to the airport, as well as air traffic in southeastern Michigan.

Located in the world's automotive capital, the airport commonly known as Detroit Metropolitan Airport (DTW) serves more than 30 million passengers per year. As one of the busiest airports in the region, the facility generates over \$10 billion in economic impact annually.

The project consisted of nearly 450,000 SY of concrete pavement, encompassing 6.5 miles of airfield space, making this project the largest airport concrete pavement project constructed in the United States at the time. The runway is 10,000 ft long and 150 ft wide, and in high demand, so the airport authority had to "fast track" the design and construction.

Typically, the runway is used for aircraft arrivals and can accommodate operations in low-visibility conditions, making it critical to the airport's operational efficiency and business continuity. The project also involved reconstruction of the associated taxiway system, providing a safe connection for aircraft from the runway to the passenger terminals at Detroit Metro Airport.

In addition to quick and efficient design and construction, the planning, design, and construction incorporated sustainable practices, including the re-use of stormwater for dust control during construction, along with other initiatives proposed by the contractor during construction. This monumental project was completed on schedule, allowing Ajax to achieve the maximum allowable incentives outlined in the contract.

In July 2016, ACPA hosted its Airport Pavement Design & Construction Best Practices Workshop near Detroit Metro Airport. As part of the workshop, the project was highlighted and workshop participants had the opportunity to tour of the construction.

### **Roller Compacted Concrete (Industrial)**

**(Silver Award)** Bayport Container Yard, Seabrook, Texas

Contractor: A.G. Peltz Group, LLC

Owner: Port of Houston Authority (POHA)

Engineers: LAN Engineering | HVJ Associates Inc.

A.G. Peltz Group, LLC was contracted by the POHA to place 98,000 SY of 18” Roller Compacted Concrete (RCC) pavement. This marked the fourth large project for the port authority to use RCC, and several additional projects also are planned.

By 2020, the Port is expected to have 380 acres of mostly 18-in.-thick RCC, making it the largest RCC site in the United States. Just how much RCC is this? This amount of RCC would form a 6-in. thick, single lane road stretching more than 800 miles from the state’s easternmost city of Orange to El Paso in the far west corner of Texas

Since 2007, RCC has filled a key role in the port authority’s Bayport Container Terminal expansion, and integral part of a capital improvement program that totaled about \$314 million in 2016. High-performing, low-maintenance RCC pavements are strong and dense, so they can handle the weight of heavy container-handling equipment such as gantry cranes that load containers on and off ships.

“The goal was to reduce cost and ensure long-term durability, and port leadership at that time believed RCC offered a sound solution,” said POHA Chief Construction Engineer, Brock Lewis, who commented that the environment, working with surrounding jurisdictions, meeting numerous business requirements, and excessive rainfall in the Houston area were challenges during construction. “By placing RCC, we were able to return to business sooner than expected while also minimizing down time.” POHA was also able to reduce the construction schedule by four months, while keeping maintenance to a minimum.

This facility and POHA’s overall increased container-handling capacity is keeping pace with increasing demand, including more and larger ships that pass through its waters, thanks in in part to the Panama Canal expansion.

**(Gold Award)** Walmart Distribution Center, Mebane, N.C.

Contractor: Morgan Corp.

Owner: Wal-Mart Stores, Inc.

Engineers: Kimley-Horn

The successful completion of the RCC pavement at Wal-Mart's Distribution Center #6858 marked a significant milestone in advancing RCC pavements. It was the first RCC paving project ever built by the world's largest retail company, and building on the project success, Wal-Mart Stores, Inc. is now specifying RCC for many other distribution centers in the United States.

Since Morgan Corp. completed this project, the giant retailer has since specified RCC for its distribution centers in Mobile, Ala.; Bentonville, Ark. near the firm's headquarters; and Cocoa Beach, Fla.

The Mebane distribution center project used 83,300 SY of 10.5-in. thick RCC; 7,100 SY of 6-in. thick RCC; 5,400 SY of 11-inch reinforced concrete dolly pads; and 2,450 linear ft of curb and gutter.

Construction was completed in just over six months, in spite of many difficulties including delays by other parties with site preparation; severe winter conditions; the complex details of reinforced concrete dolly pads, which used a combination of PNA Construction Technologies\* patented dowel baskets and square dowels.

Morgan Corp. has been awarded the contract to build the second Wal-Mart RCC project at its Super Distribution Center in Mobile, Ala. This upcoming project encompasses 380,000 SY of 10-in. RCC, and is scheduled for completion in mid-2018.

### **Industrial Paving**

**(Gold Award)** Circle Test Track Reconstruction at GM's Milford Proving Ground, Mich.

Contractor: Ajax Paving Industries, Inc.

Owner: General Motors

Engineer: PEA, Inc.

In 1924, General Motors (GM) original Milford Proving Grounds (MPG) started with only 1,125 acres of land with 7 miles of tests roads.

In November 1963, the MPG opened a Circle Test Track, which had an expected service life of 30 to 50 years. By 1964 the grounds grew to 4,011 acres of land with 73 miles of roads that included the test

track. Today the track is busiest and most important test track at MPG. It is used for both development and durability testing of approximately 900 vehicles per year, during which time an estimated 1.5 million miles are test driven.

The original track consists of an upper concrete shoulder, five concrete driving lanes posted for speeds up to 100 mph, and inner asphalt shoulders. The upper driving lane has a 30 percent bank angle. The parabolic banking track measures about 4.5 miles long. MPG lays claim to the only concrete circle parabolic test track.

A reconstruction project performed by Ajax Paving Industries, Inc.\* included: patching of lane 5; removal and replacement of four concrete driving lanes and an inner asphalt shoulder, milling and replacement of asphalt ramps to the test track, resealing existing joints in upper shoulder and lane 5; installation of edge drain outside of the inner shoulder; subgrade improvements; and improved signing, electrical and striping

The 8 in. thick pavement design included the latest Michigan DOT special provisions for high performance concrete and quality control for concrete. GM required a dolomite aggregate used in the original mix to be used in new high performance mix. The transverse and longitudinal joints were modified to be coated with an enhanced epoxy. GM used the original 20 ft transverse contraction joint spacing, however the design required four transverse expansion joints to be placed at equal distance around the track.

The latest technology was also incorporated into the means and methods of paving. Numerous hours were spent with and by the paving equipment manufacturer to make modifications to paving equipment to ensure concrete placement with automated grade control to the correct vertically location and horizontal grade, but also to achieve the best possible ride measurement.

GM required ride quality measurement of the new pavement surface. Based on the actual field MRI measurements and the “seat of your pants” ride measured by GM test drivers at speeds in excess of 150 mph, the newly placed pavement only required corrective action at one location in one lane of 18 lane miles of paving. Reopening just short of the 53<sup>rd</sup> anniversary of the original opening date, the reconstructed track will continue to serve GM’s world-class automotive proving grounds.



## **Roller Compacted Concrete (Special Application)**

**(Silver Award)** Crossgate Road, Port Wentworth (Savannah), Ga.

Contractor: A.G. Peltz Group, LLC

Owner/Engineer: Georgia Department of Transportation

The existing section of Crossgate Road in Port Wentworth, Ga., was a two-lane hot mix asphalt (HMA) roadway with weight limit restrictions. According to GDOT personnel, replacing the existing HMA with 10 in. of Roller Compacted Concrete (RCC) would increase the structural capacity of the roadway, opening its use to heavy truck traffic. This was especially important to GDOT as they expected traffic counts to increase from an ADT of 7,800 in 2013 to 10,500 by 2023.

Placed by A.G. Peltz, this section of roadway was GDOT's inaugural project for RCC as the riding surface on a state travel lane.

The majority of the main roadway is 24 ft wide. The RCC was placed in a single pass, which required the roadway to be shut down and throughput traffic to be detoured. To ensure uninterrupted access to businesses along the roadway, the RCC was started in the middle of the project limits, which greatly helped with the traffic routing. In addition, the rapid strength gain of the RCC (3000 PSI within two days) allowed local traffic to utilize the pavement within 48 hours. To meet the ride specifications for this state project, the RCC was diamond ground to achieve greater smoothness.

According to Georgia Ports Authority personnel, there are roughly 325 acres of undeveloped property along the existing roadway. So now, with the improved structural capacity, the RCC roadway will spur industrial and commercial development along the corridor, thereby increasing the local tax base.

The RCC was relatively quick to place, and provided ports authority, the DOT, and road users with an economical, durable, and low maintenance concrete pavement that will carry heavy traffic for years to come.

**(Gold Award)** Brickhaven Ash Unloading Facility, Moncure, N.C.

Contractor: Andale Construction, Inc.

Owner: Green Meadows, LLC

Engineer: HDR Engineering

A materials supplier to the power industry, Charah, LLC, along with HDR Engineering, contacted Andale Construction to help them with a unique situation. They needed to build a heavy-duty haul road capable of supporting 160,000 lb. off-road haul trucks that would travel the haul road 350 times per day.

That may not seem like a monumental challenge, but the haul road had to be constructed on top of a 60 mil high-density polyethylene liner without inflicting damage. Adding to the complexity were two ramps with a 10 degree incline in and out of the loading area. In addition to the project complexities, the work would have to be done during the winter ... and the paving would have to be finished within two weeks.

Andale Construction worked closely with HDR Engineering to come up with the pavement design, as well as a plan to construct the pavement without damaging the liner, and to do so safely and quickly so the roadway could be put into service within days of completion. Andale also was tasked to construct a subway trench for the rail cars before any of the pavement could be installed.

Andale's solution was to install a 1-ft thick cement treated base on top of the liner. Cement treated base (CTB) was chosen for the subgrade because it was determined to be the only product that could protect the liner during construction, while also supporting all of the traffic that had to use the area to construct the rest of the project.

Andale installed the majority of the base and then used it to construct the 1,000-ft long by 30-ft wide concrete subway. The subway construction involved 2,000 CY of concrete and 250,000 lbs of steel reinforcement—and was completed in 20 days.

The 1-ft thick, double layer roller compacted concrete was placed simultaneously. On an average day Andale placed 1,500 CY of RCC, and 2,500 CY of CTB. With 250 people working in an area that spanned about five acres, Andale completed the RCC pavement in six paving days between Christmas and the New Year.

In all, Andale logged nearly 100,000 man hours to complete this work in under one month without a single incident. The pavement was put into service within a few days of completion and now supports the client's operations around the clock, seven days per week.

### **Concrete Pavement Restoration (CPR)**

**(Silver Award)** Douglas County Concrete Pavement Preservation Program, Highlands Ranch, Colo.

Contractors: Villalobos Concrete Company\* | Chato's Concrete, LLC\* | Interstate Improvement, Inc.\*

Owner/Engineer: Douglas County, Colo.

When the 22,000-acre, master-planned community of Highlands Ranch, Colo., was founded in 1981, arterial roads throughout the community were paved with concrete, with most of the pavement placed directly on clay subgrade.

As the roads reached the end of their expected life, Douglas County officials looked for a cost-effective solution to repair the roads that had a range of problems – broken and shifted panels, joint separation, transverse joint faulting and cracking.

After an assessment of the roads, county engineers determined that a variety of factors contributed to the movement that was causing the panels to break, separate and crack. The 7.5-inch thick pavement was originally built when the volume of traffic and speeds were lower, and the pavement was built without dowel bars to transfer the loads.

Grinding alone could not address all of the issues, so the contracts for the pavement preservation included repair or replacement of panels as needed, as well as resealing joints. The contractual grinding specs were to meet a Half-car Roughness Index (HRI) specification of less than or equal to 150 in. per mile at a maximum grind depth of 0.5 in.

If the concrete pavement smoothness could not meet this specification, then the contractor had to meet a HRI percent improvement of 50 percent or greater per segment per travel lane. If the pavement already had an HRI of less than or equal to 150 inches per mile, the contractor had to meet an HRI of less than or equal to 80 inches per mile without exceeding the 0.5 in. maximum grind depth.

Lessons learned in the first year of the four-year project were applied to subsequent years to address resident concerns, including phasing of lane closures, noise management, and communication with neighboring residents and businesses.

The four-year program included multiple contracts and contractors, and in all, resulted in the improvement of 155 lane-miles of concrete pavement. The pavement grinding was the largest concrete pavement such effort to date in Colorado. As a result of this project, the pavement life is expected to be extended by up to 20 years. The project also has provided the community with a much smoother road, increased skid resistance, and a quieter pavements.

**(Gold Award)** State Highway 52 CPR Project, Winneshiek County, Iowa

Contractors: Wicks Construction Inc. | Iowa Civil Contracting, Inc.

Owner: Iowa Department of Transportation

Engineer: WHKS & Co.

The majestic hills of Northeast Iowa are a phenomenally beautiful attraction for the region's tourists, especially in the fall of the year. The problems of a distressed highway running through this area can detract from the beautiful landscape and wreak havoc with visitors and residents. Not only is the pavement smoothness and noise an issue, but another challenge is how to solve those issues with the least possible impact on traffic.

This was the problem the Iowa DOT faced near Decorah, Iowa, and the owner addressed the issues with an effective patch and grind project that also included partial-depth repairs, full-depth repairs, shoulder retrofits, dowel bar retrofit, diamond grinding, and joint resealing.

The prime contractor, a joint venture between Wicks Construction\* and Iowa Civil Contracting, was up to the task, even when the scope of the work increased after letting.

After the project was under contract, the Iowa DOT and Wicks Construction/Iowa Civil Contracting discovered additional pavement restoration would be needed. This resulted in about 50 change orders, which added \$2.5M to the original \$6.2M contract. Full-depth patching figures doubled and partial-depth repairs increased almost 13 times the original square yardage.

Along with the challenge of increased work, the project still needed to be completed under traffic. Direct detour routes would have been impractical, because the estimated out-of-distance travel for a detour would have added 20 miles to a motorist's trip.

Fortunately, CPR with diamond grinding expedited project completion and opening to traffic in the shortest possible time. Now, tourists and residents not only have a scenic area to enjoy—they also can do so while traveling on a roadway that is in good condition, and features low noise, adequate friction, and a smooth ride.

### **Municipal Streets & Intersections (>30,000 SY)**

**(Silver Award)** State Route Rehabilitation Project, Curry County, N.M.

Contractor: K. Barnett & Sons, Inc.

Owner: New Mexico Department of Transportation

Engineer: CH2M Hill

This \$2.54M project consisted of new underground storm drain, lime stabilized sub-grade, 8 in. base course material, 10 in. concrete, curb & gutter, and sidewalk. The project involved 7.5 lane miles along a 1.5 mile-long section of highway in Clovis, N.M.

There were a total of 420 contract days for the project, but K. Barnett & Sons\* completed the project in 243. The four lanes of traffic were condensed to two lanes, with two way traffic flowing during construction. Some 52 businesses along the route were opened and allowed access during construction, and to help with outreach and communications, the contractor sent letters informing business owners and managers ahead of the project.

Most of the work was completed during the span of time from 7:00 p.m. to 7:00 a.m. to take advantage of higher humidity, lower temperatures, and less traffic.

An average of 3,500 vehicles including semi trucks and pedestrian vehicles passed through the construction site daily. In spite of the challenges of paving under traffic, limiting paving to night hours, and dealing with a significant amount of traffic and dozens of businesses in the area, the contractor finished the work ahead of schedule and produced a quality pavement that will serve the area for many years.

**(Gold Award)** I-49 & Peculiar Way Interchange Improvements, Peculiar, Mo.

Contractor: Emery Sapp & Sons, Inc.

Owner: Missouri Department of Transportation

Engineer: George Butler Associates, Inc.

The I-49 Interchange with Peculiar Way is in growing area of Cass County, Mo. The City of Peculiar and the Missouri DOT partnered to fund the new interchange that has allowed the community to have improved access to schools from Interstate 49 and west of the highway.

This Diverging Diamond Interchange (DDI) allows traffic to cross from the right side of the road to the left side at two signalized intersections on either side of the interchange. These crossovers allow for free flowing right turns in advance of the cross-overs, and free flowing left-turns between the cross-overs. The design enhances the safety and capacity of the interchange.

Additionally, Peculiar Way was extended from School Road through the interchange to Peculiar Drive, thereby creating new access to the northern region of Peculiar.

The project involved more than 130,000 CY of excavation; 4300 feet of storm sewer; a new overpass; two signalized intersections; 6500 SY of sidewalk and median islands; 17,000 feet of curb & gutter; and more than 50,000 SY of concrete paving.

The DDI was completed with minimal impact to travelers and is one of the few such interchanges in Missouri to feature all-concrete construction. The only stringline set up on the job was for the auto-widener on the paver, which paved lanes that varied from 12 ft to 16 ft wide through the DDI.

This \$9.4 million project took 13 months to complete, and when it was complete, the community praised the contractor for opening the fully-functional Interchange more than two months early. The new interchange has greatly improved access, and is expected to open the region to more economic development.

### **Municipal Streets & Intersections (<30,000 SY)**

**(Silver Award)** Diagonal Highway Reconstruction, Boulder, Colorado

Contractor: Castle Rock Construction Company

Owner: City of Boulder (Public Works Dept.)

Engineer: Loris and Associates

The City of Boulder Transportation Department collaborated with CDOT on this local agency project to design an impressive new “Gateway” into Boulder. This section of SH 119, also called the Diagonal Highway, used to be on the outskirts of the city, but has become a very busy area with what was a deteriorated asphalt road and no pedestrian or bike facilities.

Castle Rock Construction managed and built a complex project with an extensive new drainage system, off-street bike lanes, multi-use path, improved transit facilities, various colored concrete aesthetic components, durable concrete roadway, landscape features and art plazas for the community to enjoy.

The project also involved coordination with multiple departments within the City of Boulder, as well as the Colorado DOT, Regional Transportation District, contractors on adjacent projects, and 20 subcontractors onsite.

In addition to the placement of 27,973 SY of 8.5 in. dowelled concrete pavement for the roadway, the project also involved 31,000 SY of full depth reclamation of the existing roadway, which was recycled into road base for the new concrete paving.

Some 11,600 SY of asphalt and concrete pavement were removed; 14,000 CY of embankment material was moved; and 10,700 SY of flatwork was completed, including a cycle track, multi-use path, sidewalk,

exposed aggregate, colored sidewalk and colored median curb skirt. The project also involved the construction of rain gardens, which not only added a touch of nature and beauty, but also serve to filter rain and storm water runoff. The project also included monument foundations and drainage systems for art features.

To accommodate the public during construction, lane closures occurred only during off-peak times throughout the week; bike routes were maintained at all times; and intersection reconstruction work was limited to weekends.

The Diagonal Reconstruction project is the culmination of work by talented contractors whose efforts will benefit Boulder residents and visitors for many years.

**(Gold Award)** State Highway 42, Sister Bay, Wis.

Contractor: Vinton Construction Company

Owner: Wisconsin Department of Transportation | Village of Sister Bay

Engineer: REI Engineering, Inc. | Village of Sister Bay

Winding through the northern half of Wisconsin's famed Door County and along the shores of Green Bay, the state's WIS 42 corridor is predominantly a two-lane highway connecting many communities where tourism is key. The corridor serves as both a 'travel through' roadway and a 'main street' to these communities, where both functionality and aesthetics are equally important.

Many of the businesses along the project make their living in only a few months of the year, so when reconstruction of a section of this important highway was needed in the Village of Sister Bay, the project requirements were carefully balanced with the needs of businesses and people in the area. In consideration of the business community, the importance of tourism, and the seasonal population influx, construction was split into eight separate stages.

Vinton Construction proposed a Cost Reduction Incentive (CRI), allowing for placement of high early strength permanent concrete pavement in lieu of temporary asphalt early in the project. Paving the 1.54 lane mile project with 20,389 SY of 8 in. concrete was completed 163 days ahead of schedule. In



addition to this major accomplishment, the construction cost was \$173,000 under the contractor's bid amount.

The project focused on safety enhancements, protection of the environment, minimizing future maintenance needs, and minimizing the disturbance to the local economy and tourism industry.

Public outreach was a priority to keep the local public officials and businesses informed of the progress. This included weekly updates; public informational meetings; and day to day communication with local business owners.

Collaboration among the entire project team was exceptional, and included the efforts by the contractor, the engineer, and Wisconsin DOT. Other hallmarks of the project included excellent design, planning and overall coordination with Village of Sister Bay staff and local businesses; 18 different contractors that were extremely attentive to their work and sensitive to the local businesses; and a Village Administrator who listened to and worked closely with the construction team and made timely decisions; and a construction engineering staff that understood and managed the intricacies and demands of this urban reconstruction project.

## **County Roads**

**(Silver Award)** Voca Road & US 69 West, Atoka County, Okla.

Contractor: TTK Construction Co., Inc.

Owner: Oklahoma Department of Transportation

Engineer: Southeast 3 Circuit Engineering District

Hidden among rolling hills of rock and beautiful landscapes of Atoka County, there is a small county that extends through southern Oklahoma that features some of the smoothest pavement the state has ever seen.

This project involved paving 5 miles of new county road for the local Bureau of Indian Affairs project and local home owners near the Dolese Coleman Quarry. The old asphalt, gravel, and dirt roadway—with its many layers—had begun to crumble under the constant stress of semi-trucks and passenger vehicles heading east or west.

As a starting point, an internal traffic control plan was established, with safety precautions outlined and safety meetings held to inform crew members of the major hazards. As with all TTK projects, proper personal protection equipment and safe construction practices are strictly enforced.

This approximately \$3M project called for more than 67,000 SY of fiber-reinforced jointed concrete pavement and the use of recycled asphalt millings for shoulders. Construction began with building a model for using GPS-guided grade preparation equipment. A few inches were milled off the asphalt to create a smooth base for new paving, and the millings were used for shoulders, under the pad liner, and to shoulder up the pavement next to the ditches. In addition to providing a stable base for paving, this sustainable construction practice also reduced environmental impact and saved money compared to using virgin aggregate.

One of the complexities of the project was to add 4 ft. of roadway width, while leaving in place an existing ditch along the roadside. To keep the traveling public and workers safe, the road was closed to all but local traffic during construction. The Oklahoma DOT used informational signs to help local farmers move equipment and crops through the area.

There were no funds for constructing detours for local traffic, so the contractor had to come up with creative ways to help homeowners returning home every evening. TTK's project manager met frequently with homeowners and worked on ways to get them home safely every night. In some instances, TTK paid for hotel rooms for several nights when the paving train blocked homeowner access.

There was no ride specification to meet, but TTK wanted to measure the pavement anyway. An average smoothness of 34 in./mi on a 0.0 blanking band was achieved with no grinding. This was particularly challenging to achieve because of the soft subgrade shoulders that were used for paver tracks.

Finishing touches included new signs, new striping, and shouldering with the millings from the old roadway. The project was completed on time and under budget.

**(Gold Award)** County Road M-56, Dickinson County, Iowa  
Contractor: Cedar Valley Corp., LLC

Owner/Engineer: Dickinson County, Iowa

The summer population of Dickinson County routinely swells to 100,000 people each year as vacationers and anglers gather in Iowa's Great Lakes region. Many tourists access the area using US Highway 9. County Road M-56 is a heavily traveled north-south artery that intersects US Highway 9.

A new roadway was designed and was paved 30-ft wide with 2 ft earth shoulders. No shoulder access was available, so Cedar Valley Corp., LLC\* (CVC) trimmed and placed concrete with one machine. The modified dual-lane trimmer configured with a dumping belt placed the concrete and allowed the crew sufficient space to set contraction dowel baskets on the freshly trimmed grade before the concrete was placed ahead the paver. The trimmer/placer operator electronically manipulated a swinging dump chute to spread out the concrete in front of the paver and over the recently placed baskets, which also helped maintain a consistent head of concrete.

The day after CVC erected a portable plant, heavy rain began, dropping six inches of rain during eight of the following 12 days. The plant site was so saturated that CVC had to abandon its material drive-over. CVC worked around the problem by using a hopper conveyor belt to transfer aggregates from higher ground to be closer to the plant, as well as a bulldozer and motor grader to aid the movement of haul trucks in and out of plant site.

The project area was closed to through traffic, but CVC had to maintain local access, partly because of landlocked FedEx ground facility located in the middle of site. Dickinson County specified a temporary 2,325-ft long rock access road, but the 5 in. of rock placed on a virgin field required considerable effort, and the situation worsened with almost daily rains. Recycled asphalt base helped the trucks move in and out of the facility.

At the north end of the project, a landlocked subdivision also presented a challenge. Twelve property owners were impacted, so CVC and its grading subcontractor came up with solution. Using some nearby land owned by the subcontractor, CVC negotiated an extra work order with Dickinson County to construct a second rock detour that allowed alternate access for the homeowners.

In spite of weather issues and other complexities, CVC achieved excellent smoothness on the project and earned 86.36 percent of the maximum smoothness incentive bonus and an almost \$14,000 in thickness bonus. CVC crews also finished the project in only 35.5 working days, 14.5 days less than the 50 specified. Equally important, CVC crews worked more than 5,400 man hours with no recordable accidents or injuries.

### **State Roads**

**(Silver Award)** Route AC Construction in Perry County, Perryville, Mo.

Contractor: Emery Sapp & Sons, Inc.

Owner: Missouri DOT

Engineer: Missouri DOT-Southeast District

The Route AC project was needed to allow future expansion of an industrial park. Emery Sapp & Sons\* paved the two-mile stretch of highway using 32,000 SY of 8-in. concrete and 6,500 SY of concrete shoulders.

This project was constructed in an environmentally sensitive area that consisted of numerous sinkholes leading to one of Missouri's largest underground cave systems. The contractor had to be mindful of potential contamination of sink holes. Also, more than 60 percent of the project had substantial seed growth prior to the beginning of paving operations, so extra efforts were required to ensure no concrete was left in wash out pits or containers.

Missouri DOT also designed this project with an aggregate pavement backfill. The contractor seeded the project well in advance of paving operations, including the installation of lush green sod in the bottom of the ditches. This ultimately minimized exposure of sediment leaving the project during paving operations. Another advantage of using the aggregate backfill was that the 3 in. clean material allowed the sub-base aggregate material to be free draining, which in turn, will ensure good subgrade performance for years to come.

To meet smoothness requirements, the contractor used a high speed profiler and ProVal software, which helped determine that with minimal grinding, full incentive pay could be achieved.

Also, during almost a full month of the project, approximately 12 in. of rain fell, but in spite the challenge of a very wet August, the contractor completed the paving almost nine months ahead of schedule.

**(Gold Award)** US-56 Reconstruction, Gray, Kan.

Contractor: Koss Construction Co.

Owner: Kansas DOT

Engineer: Transystems

This project in Gray County, Kan., involved the reconstruction of US-56 in the towns of Ensign and Montezuma.

The “Hardroaders” at Koss Construction Co. and their team of subcontractors wasted no time in starting work on the project. The project scope for the 7.6 lane mile project included placement of 56,920 SY of 9 in. concrete pavement, supported by 4 in. of cement treated base (CTB), all to be constructed in four distinct phases.

Compliance with the strong specifications for erosion control has become a major factor in all highway construction projects, so during the grading and subsequent operations, there was considerable attention on controlling sediment from leaving the project site. Constant communication between Koss and the DOT was the key to successful sediment control.

Koss Construction produced both the CTB and concrete through a pug mill and a mobile plant. The contractor’s quality control department continually tested the concrete to ensure quality. During each test, ambient air temperature, concrete temperature, slump, air content, and unit weight are tested and verified to be within the specifications of the owner. Beams are made at the beginning and end of paving each day for strength verification, and random coring is performed to verify thickness.

With excellent communication and close coordination between the DOT and the Koss team, the project was completed within the 319 working day schedule, giving the owner and road users a high quality, durable pavement.

## Overlays, Streets and Roads

**(Silver Award)** Merriam Lane Reconstruction & Improvements, Wyandotte, Kan.

Contractor: Miles Excavating, Inc.

Owner: Unified Government of Wyandotte County and Kansas City

Engineer: Burns & McDonnell

Revitalization, beautification, practicality, and quality capture the essence of this Merriam Lane project, which extended from (24th to 10th Street), in Wyandotte, Kan. The existing roadway was at the end of its service life, and it was difficult to discern how business access was planned or managed along the route.

The design engineers, Burns & McDonnell\*, outlined key goals for the project, including constructing raised curbs and medians, bicycle lanes, ADA-compliant sidewalks and ramps, defined parking stalls, business access points, and new concrete overlay.

The contractor, Miles Excavating, Inc.\*, placed 40,705 SY of concrete overlay on the 2.73 total lane mile project. Businesses in the area required constant access, so a combination of blockouts and short hand paves were used to help address the access issues.

The original road was constructed with concrete and is said to be one of the first concrete roads built in Kansas. Over time, numerous hot mix asphalt overlays were placed over the original roadway. As a testament to the durability of the original concrete pavement, the asphalt overlays were milled off to reveal original concrete pavement, which was then used as the new pavement base.

Project challenges included utility delays, positive drainage issues, and business access throughout construction, but all were resolved by the hard work and extra efforts of the project team, which included the contractor, the owner, the engineer, and the Kansas DOT.

Thanks to this team effort, the rehabilitated portion of Merriam Lane is expected to provide the traveling public with an aesthetically pleasing, practical commute for years to come.

**(Gold Award)** Allamakee-B-38-Postville, Allamakee County, Iowa

Contractor: Cedar Valley Corp., LLC

Owner/Engineer: Allamakee County

Obtaining pavement smoothness on county overlay paving projects is always challenging because the county road system in Iowa was never required to meet the same design standards applied to primary highway and Interstate projects.

The 5.46 mile project in Allamakee County contained 17 horizontal curves and 23 vertical curves that closely followed a meandering, existing profile. Seven of the vertical curves exceeded 3 percent, and one approached 6 percent.

The county did not apply the Iowa DOT smoothness specification to this project, but CVC still ran a profilometer, results of which revealed an average smoothness of 2.39 inches per mile along the entire project length.

Cedar Valley faced several obstacles during construction. Allamakee County was deluged with 7.5 in. of rain in June alone, but then, the weather took a turn for the worse. Some 26.71 in. of rain fell between July and September, more than twice the average 12.53 in. of rainfall. The area was declared a state and federal disaster area.

The second major obstacle was providing access to the many local property owners. The traffic control plan for the job specified all adjacent property owners would be able to traverse through the project at all times. The most difficult traffic challenge was to keep the various property owners informed as to when their driveways would be impacted, as the roadway CVC was paving was the only access route for property owners in this hilly terrain.

A third challenge CVC crews faced was dealing with wide farm equipment and numerous grain trucks as the fall harvest was well underway during the construction of this project.

Before construction began, a public meeting was held at the county office to explain the construction process and discuss access. Area residents were invited to the meeting. CVC personnel detailed the

entire construction process, and explained how maturity testing would be used to determine the shortest time to open to traffic. As the job progressed, residents received updated paving schedules from CVC's project manager. At the end of every paving day, CVC reestablished access where strength had been reached. Crews removed stringline to allow driveway access.

The property owners were very appreciative that maturity testing enabled their access to be restored as quickly as possible. Cedar Valley's excellent communication with property owners allowed the contractor to complete the project while maintaining access to the highest degree possible.

Despite the wet weather, the large number of curves and other challenges, CVC completed a high quality pavement that is serving the county, along with property owners, farmers, and other travelers well. Also, in spite of traffic and other project complexities, CVC recorded almost 7,000 man hours with zero recordable accidents or injuries.

### **Overlays, Highways**

**(Silver Award)** State Highway 51, Blaine County, Canton, Okla.

Contractor: Duit Construction Co., Inc.

Owner/Engineer: Oklahoma DOT

The Oklahoma DOT originally designed this project as a 3 in. asphalt overlay to resurface this 5.52 mile section. It was bid twice, but because of asphalt oil prices and limited bidders, it appeared asphalt pavement was not a good choice for the project.

The Oklahoma DOT flipped the project to concrete overlay, and when they did so, they received four bids instead of the one they received when the job was specified asphalt pavement. With the new 5 in. concrete using the existing milled asphalt base, the pavement could prove to have a 50 year life.

Duit Construction\* faced many challenges with this bonded concrete overlay project. Strict placement specifications required the milled asphalt surface to be dry before placing the concrete. This limited the amount of moisture used in the milling operation and made timing critical to achieve the correct moisture for the bond.



Surface temperature and concrete strength specifications during the summer were hurdles had to overcome when placing the 98,485 SY of concrete with 39,700 lbs of fiber to be completed. Daily summertime temperatures of 94 degrees and higher on the milled asphalt put the concrete paving operation out of placement specification range. Also, the project had a 45 minute daytime limit for placement of concrete, and because of these factors, the concrete paving had to be done at night.

Duit Construction was able to use a trimmer capable of milling/trimming at least 1 in. of asphalt on a single, 16 ft. pass. By performing the trimming/milling during the day and concrete paving at night, the concrete paving was completed in 20 days for the 29,136 linear ft of two lane highway.

To help with access during construction, Duit set up a paving plan that determined which business driveways could be closed and which ones could remain open. The contractor also determined the section roads or intersections to detour traffic around the work zone. By doing so, Duit was able to determine limits for traffic restrictions and make the paving as seamless as possible.

Thanks to planning, communications, and persistence this 5.52 miles of roadway was completed about 90 days from the time of bid to final construction.

**(Gold Award)** State Highway 13 Resurfacing Project, Moffat County, Colo.

Contractor: Castle Rock Construction Company

Owner: Colorado DOT - Region 3

Engineer: Colorado DOT - Region 3– Craig Residency

Castle Rock Construction Co. (CRCC)\* was responsible for constructing the 6 in. concrete overlay on State Highway 13 north of Craig, Colo. The project was originally let as concrete or asphalt alternate, but during the bidding process, concrete pavement was determined to be the most economical material.

This area of the state traditionally uses only asphalt, but the project allowed the concrete pavement industry to break into the secondary road market, which had been impossible previously. Because

concrete was the first-cost low selection without any life cycle cost adjustment (\$650,000) confirms project owners can afford the long-lasting benefits of concrete paving.

To produce the concrete for this job, CRCC mined and processed 47,000 tons of rock and sand. The company's concrete batch plant provided the concrete for all 131,000 SY of concrete overlay. The existing asphalt surface was roto-milled to smooth both the profile and cross slope prior to paving. The milled asphalt was then placed as road base material for shouldering.

Pilot car traffic control was used to facilitate the half width paving approach. This system operated without major incident and only caused minor delays to traffic.

During excavation, the contractor had to clean out of a ditch and culvert pipes to create better flow and prevent the ditch and neighboring land from flooding. After the work was done, CRCC placed riprap to keep the slopes from eroding in the future.

This project serves as proof that concrete overlays can be and are competitive with the asphalt industry, both financially and in pavement smoothness. CRCC and the Colorado DOT worked partnered together on decision-making and other aspects of the project. This project will also serve as an example in future promotional efforts throughout the state. State Highway 13, which boasts a high quality, exceptionally smooth concrete overlay, will serve the people of northwest Colorado and the traveling public for decades to come.

### **Urban Arterials and Collectors**

**(Silver Award)** NY Gateway Connections Improvement Project – U.S. Peace Bridge Plaza, Buffalo, N.Y.

Contractor: Surianello General Concrete Contractors, Inc.

Owner: New York State Department of Transportation - Region 5

Engineer: Parsons Transportation Group of NY, Inc.

Surianello General Concrete Contractors, Inc.\* was awarded the contract to improve access to and from the U.S. Border Port of Entry at the Peace Bridge Plaza, in Buffalo, N.Y.

The project was awarded under the auspices of the Federal Highway Administration, in cooperation with the New York DOT, and in accordance with the *National Environmental Policy Act*.

The primary goal was to address the limited direct access between the Plaza and Interstate I-190. Existing direct access is limited and requires regional and international traffic to use the local street system. This limited access adds additional commercial traffic to the local streets, which were originally designed to only meet the needs of local traffic. The aim was to reduce the use of the local streets by interstate traffic and provide improved access to the existing plaza.

The project was bid as a "design-bid-build best value," as determined by an evaluation committee working under the direction of the New York DOT's Contract Management Bureau. Submissions were scored according to best value scoring criteria. A combination of the technical submission (comprised of five technical sections) and price proposal was used to award the contract based on "Best Value."

The \$5,4 million project included placement of 19,200 SY of 10 in. concrete pavement for a total of 2.72 lane miles. The existing pavement and foundation were removed and was found to consist of asphalt, concrete foundation pavement, cobblestones, and stone base material. The concrete foundation material was brought to a crushing operation and 12 inches of recycled base coarse material was installed and compacted.

The project proved to be more than the best value; it was incorporated innovation, creativity, and a commitment to sustainable construction practices. Surianello used recycled concrete as an alternative for the base course. The contractor also used colored concrete for a concrete roundabout, which was originally designed in asphalt.

Visitors and other motorists crossing the border at the U.S. Peace Bridge Plaza, as well as motorists and businesses in the surrounding area, now have greater access, thanks to high quality, durable concrete pavement.

**(Gold Award)** State Highway 119 Reconstruction, Longmont, Colo.

Contractor: Castle Rock Construction Company

Owner: Colorado DOT - Region 4

Engineer: Colorado DOT - Region 4, Boulder Residency

State Highway 119 between I-25 and County Line Road is a growing corridor north of Denver that connects Longmont to Boulder and the surrounding cities. This 4-mile highway project included placement of 200,000 SY of 9 in. dowelled concrete pavement; 75,000 SY of full depth reclamation; and placement of 18,000 CY of riprap. The project also included bridge resurfacing on two structures and the construction of new approach slabs; 75,000 CY of embankment material; and 135,000 SY of pavement removal.

The original completion deadline was the summer of 2017, but crews met high production goals and aggressive schedules, resulting in project completion in December 2016. This limited the adverse impact on the traveling public, and allowed the bridge to be open to traffic early, alleviating the need for dangerous work zones through winter and spring.

An innovative adaptive traffic signal system which reads traffic flows and changes the timing on signals also helped keep the traveling public moving during the project.

One of the challenges on this project was the complexity of work in live waterways. The 2013 floods in Colorado caused scouring around bridge piers in the St. Vrain Creek and the Idaho Creek box culvert.

The Colorado DOT's emphasis was not only on rebuilding the roadway, but also repairing flood damage, and preparing for future flooding. The design solution for the prevention of future damage was placement of riprap on the slopes for over a mile and around the structures in the waterways. CRCC used inflatable coffer dams to divert water and worked in phases in order to keep the water flowing as they completed the work.

In addition to completion well ahead of the schedule and on budget, the pavement is very smooth and along with the other work by CRCC, is very aesthetically pleasing. Safe guards were built into the project to prevent damages from another flood event, and so, this concrete highway is expected to serve the people of northern Colorado and traveling public for decades to come.

### **Divided Highways (Rural)**

**(Silver Award)** Wood County I-75 Reconstruction, Perrysburg, Ohio

Contractors: E&B Paving, Inc. | E.S. Wagner Co

Owner/Engineer: Ohio Department of Transportation - District 2

The Wood County I-75 reconstruction project began in July 2014 and continued to late 2016. The project included replacing and widening of pavement, drainage, signage, pavement marking, and new paving. The project also involved construction of one bridge, plus overlaying and replacing decks of existing structures.

E.S. Wagner\* was awarded the project and E&B Paving\* was the low bidder on the proposed alternate bid paving package, which included 369,203 SY of concrete, including 145,977 CY of 13.5 in. concrete.

The project required meeting annual milestones, a situation impacted by wet weather that threatened the schedule for the first two years.

In the first year, E&B Paving used concrete for temporary 9 in. pavement, which was constructed adjacent to the existing southbound lanes to allow all traffic to be placed in the southbound lanes, which in turn, enabled full width construction of the northbound concrete pavement in 2015. With the exception of the SR582 on and off ramp and the mainline pavement through the ramps the full width pavement was able to be completed with no outside traffic maintenance.

The SR582 concrete ramps and associated concrete mainline were completed in only 38 days of a 45-day scheduled closure. After the pavement was completed, all four lanes of traffic were switched to the northbound lanes before winter. This set the stage for southbound lanes to be constructed during the third year of the project.

In 2016, the third year of the project, the southbound lanes were built in a mirror image to the previous northbound lanes completed in 2015. Work progressed more quickly because only minimal weather days were experienced. The SR 582 concrete ramps and concrete mainline were again constructed under a 45-day closure, and once again, the work was completed in only 38 Days.

A major challenge was the consistent delivery of wet batch concrete to the paving operations because of car accidents that occurred, sometimes daily, in the bi-directional traffic configuration. In response, the contractor was able to establish a secondary route to allow production to continue in case of other delays.

Trucking also was an issue on the entire project. The DOT had several other projects progressing in northwest Ohio simultaneously, which made it difficult to find enough wet batch to make good productions. Working together, E&B Paving, E.S. Wagner and the DOT we were able to find alternative haul routes and more trucks from E.S. Wagner to assure the highest quality product possible.

In spite of the challenges, E&B Paving was able to achieve 31 percent of incentive dollars for smoothness based on average IRI readings of 54.31 for total project.

Local commuters, truck drivers, and the traveling public will benefit from the added travel lanes, as well as the more durable and sustainable concrete. The smooth ride and the noise reducing longitudinal tines also will provide added benefits for years to come.

**(Gold Award)** South Lawrence Trafficway (K-10), Douglas, Kan.

Contractor: Emery Sapp & Sons, Inc.

Owner: Kansas Department of Transportation

Engineer: HNTB Corp.

The South Lawrence Trafficway Project (K10) project scope entailed a six-mile, four-lane freeway that moved existing K-10 onto a new alignment, beginning at the south junction of U.S. 59 and the K-10 interchange and reconnected with existing K-10 on the east side of Lawrence.

Emery Sapp & Sons, Inc.\* was awarded the project, which also included the creation of more than 300 acres of new wetlands, as well as, bike paths. Also included were relocated sections of Louisiana Street, 31<sup>st</sup> Street, and Haskell Avenue that run alongside the Wakarusa Wetlands. On the east side of the city, 31<sup>st</sup> Street was also extended.

The challenges of this project proved to be no match for ESS, which along with 14 subcontractors and 13 suppliers completed the project on time and within budget. The project scope included 21 bridges; 4.35 million CY of grading; 527,000 SY of concrete paving; and 102,000 sq. ft of noise wall. The project also included large scale earthworks, drainage, soil stabilization, and utilities.

The 9.5 in. concrete pavement spanned 6.33 miles or a total of 43.23 lane miles. ESS self-performed approximately 70 percent of the \$138 million project. Although the project schedule spanned almost three paving seasons, careful planning, phasing and hard work allowed ESS to complete more than 85 percent of the contract work including paving within the first two construction seasons.

In terms of sustainability, the project used a combination of new technology and old-fashioned hand work to meet two objectives. The first was to meet environmental protective measures for the 927-acre Baker Wetlands. The contractor worked to avoid disruption to this area that resided within the project parameters in order to protect and preserve the wetlands ecosystem. Special measures included clearing and grubbing by hand, as well as placing recycled timber mats over the wetland area when hauling. Another critical component was that all equipment used to place foundation stabilization and lower the embankment was required to have less than 5 psi of ground pressure. Also, noise walls and landscaping were added to help create a barrier that would provide increased protection to the ecosystem.

The contractor also turned to state-of-the-art stringless paving to meet the second sustainability objective, which was to use energy-saving equipment/processes.

The project is expected to have an economic benefit to the region of \$3.7 billion, the largest of any project under the 10-year, \$7.9 billion Transportation Works for Kansas (T-WORKS) transportation program.

### **Divided Highways (Urban)**

**(Silver Award)** I-25, Lincoln Avenue to County Line Road, Douglas County, Colo.

Contractor: Interstate Highway Construction, Inc.

Owner: Colorado DOT

Engineer: Colorado DOT Region 1 - Lone Tree Residency

Interstate 25 from Lincoln Avenue to County Line Road is the last section of I-25 between Denver and Castle Rock to be widened to four through lanes in each direction. The roadway carries over 180,000 vehicles per day, including 13,000 commercial trucks.

This very complex \$27 million project had 307 pay items of work including 175,000 square yards of concrete pavement (25 lane miles). Work on the 441 working day project began in August of 2014, and the grand opening occurred on time in March of 2016.

The project might never have happened without the financial partnership of the Federal Highway Administration, Colorado DOT, and Douglas County, the City of Lone Tree, the Community of Meridian, the Park Meadows Metro District, and a huge contribution from DRCOG (Denver Regional Council of Governments).

The construction was managed entirely by Colorado DOT staff, which worked with IHC and subcontractors to keep their schedule flowing, and inspected at all times.

Traffic safety and unhindered flow through the project was a prime consideration. The DOT did not allow any reduction in travel lanes between 5:30 a.m. and 8:30 p.m. Nighttime lane closures and nighttime full Interstate closures were allowed. Construction was scheduled around schedules of the Denver Broncos' home games for two seasons, and in advance of the Christmas shopping rush, the northbound I-25 portion of the project was open to four lanes before Black Friday. During construction, traffic conditions, including speed, accident rates and travel times through the corridor, were no worse and, in some cases, better than pre-construction conditions.

Another complex aspect of the project was dealing with utility issues. The contractor had to work around fiber optic lines (including one transcontinental line that could not be moved), water lines, power lines, irrigation, and others.

The project can boast of many innovations and successful changes to the initial scope of the construction. The existing asphalt and concrete pavements were recycled and reused on the project, saving thousands of trucking miles and the cost of importing materials. Some concrete pavement was



recycled and used as aggregate in temporary concrete detour pavement, and then recycled again in permanent pavement.

Peak flow speeds before construction were 16 mph, but now are 48 mph, and according to the FHWA's road user criteria, this contributes about \$58,000 per day in road user cost savings. Based on this user cost savings, the project will pay for itself in approximately two years. Equally important, motorists in south metro Denver have a highway they can be proud of for 30 years or more.

**(Gold Award)** Grand Parkway Project, Houston, Texas

Contractor: Zachry Construction Corp. | Odebrecht Construction, Inc.

Owner: Texas DOT

Engineers: Parsons Transportation Group | The Transtec Group, Inc.

SH 99 is a proposed 180-mile circumferential highway traversing seven counties in the Greater Houston Area. The highway is divided into 11 segments. Zachry was the managing joint-venture partner of Zachry-Odebrecht Parkway Builders, the Developer and Lead Contractor, responsible for the development of SH 99 Grand Parkway Segments F1, F2, and G (the Project).

Zachry-Odebrecht Parkway Builders worked with the Texas Department of Transportation (TxDOT) to design, construct, and maintain 37.8 miles of divided two-lane controlled access toll road that intersects 19 major roads and includes 4 major interchanges. The project included more than 120 bridges; one river crossing; 1.8 million square yards of concrete paving; frontage roads and associated drainage; ROW acquisition management of approximately 480 parcels (2,127 acres); and the design, coordination and relocation of 177 utilities. Zachry-Odebrecht Parkway Builders challenged the team to develop and design a project approach that was innovative and tailored to meet the DOT's needs. The result was a value-added concept that brought technical solutions and cost reduction through the implementation of alternative technical concepts.

The aggressive schedule was one of the fastest to deliver a project of this magnitude. The project team accelerated construction through very careful planning and sequencing of activities, as well as, the use of an on-site precast yard to prefabricate beams and deck panels. The project was divided into three

construction segments with support departments, including paving, a casting yard, project administration, public information, ROW acquisition, environmental team, and utility team.

### **About the Excellence Awards**

The ACPA Excellence in Concrete Pavements awards are made possible, in large measure, because of the generous time commitment of independent judges from across the country. The judges each spend many hours reviewing executive summaries, project details, photographs, and other details and aspects of project submittals.

ACPA presents awards in both gold and silver levels. Judging is based on a point system, with independent judges awarding points for quality construction, addressing unique and unusual challenges, innovation, traffic management, and other criteria. In the case of ties, award judges present awards to co-winners.

### **About the American Concrete Pavement Association**

The American Concrete Pavement Association is the national trade association for the concrete pavement industry. The primary mission of the ACPA is to lead the promotion of concrete paving, and align its members, chapters/state paving association affiliates and partners for effective and valued concrete pavement promotion, advocacy and technical support on behalf of the concrete pavement industry.

Founded in 1963, the American Concrete Pavement Association is headquartered in Chicago at 9450 West Bryn Mawr Ave., Suite 150, Rosemont, Ill. 60018. Telephone: 847.966.2272. The Association's metropolitan Washington, DC-office is located at 3925 Chain Bridge Road, Suite 300, Fairfax, Va. 22030. Phone: 202.638.2272. Visit us on the web at [www.acpa.org](http://www.acpa.org).

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\* Denotes ACPA member.

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**Photos:** Photos of award-winning projects, along with award recipients, by clicking [here](#), or alternatively, by following this link:

[https://acpaorg-my.sharepoint.com/personal/bdavenport\\_acpa\\_org/\\_layouts/15/guestaccess.aspx?folderid=1695d44d5bd274771a580eaa40c495252&authkey=AS58MFRbrO30\\_q6F-ut064c&e=db5fc0205b204dc187b7bc28c483d514](https://acpaorg-my.sharepoint.com/personal/bdavenport_acpa_org/_layouts/15/guestaccess.aspx?folderid=1695d44d5bd274771a580eaa40c495252&authkey=AS58MFRbrO30_q6F-ut064c&e=db5fc0205b204dc187b7bc28c483d514). After activating the link, click on subfolders for individual awards. Please note: This system requires no user ID or password.

For more information or assistance, please contact: Bill Davenport, ACPA, at 847.423.8703 or [bdavenport@acpa.org](mailto:bdavenport@acpa.org).