

#1

**PROJECT:**  
I-29/35 kcICON Project

**LOCATION:**  
Kansas City, Mo.

**OWNER:** Missouri DOT

**DESIGNERS:**  
Parsons and TranSystems

**CONTRACTORS:**  
Clarkson Construction Co.,  
Massman Construction Co.,  
Kiewit Construction Co.

**COST:** \$245 million

**START DATE:** April 18, 2008

**COMPLETION DATE:**  
July 1, 2011



## Airing it up

Building vertically helps MoDOT overcome challenges

By Bill Wilson  
Editorial Director

There was no fighting for air. When it came to right-of-way acquisitions and design challenges on the I-29/35 kcICON Project, the claim for vertical space went uncontested, which certainly helped as crews wrestled with available land. Pinched in an urban/industrial environment, Missouri DOT officials had to figure out a way to modernize a 1950s floor plan, which was scuffed with short, steep ramps and short merge areas, while still abiding by a fiscally strict \$245 million budget.

Using a series of retaining walls (a total of 76,000 sq ft), MoDOT and prime contractor Paseo Corridor Contractors (PCC), a joint venture between Clarkson Construction Co., Massman Construction Co. and Kiewit Construction Co., built its way up and out of a potential problem. The result has been the execution of one of the most successful road construction projects in the history of the state, as well as a No. 1 ranking on ROADS & BRIDGES' 2010 Top 10 Roads list.

"Constructing a lot of MSE walls allowed us to provide a bigger surface up on top," Brian Kidwell, project engineer for MoDOT, told ROADS & BRIDGES. "The interchanges are rebuilt, so as part of that we have gentler curves and longer acceleration lanes. The worst part [of the old design] was those forced exits where if you are going down the left lane of a two-lane interstate it would force you off into an exit. You had all of these cars jockeying back and forth to either get to an exit or avoid having to take off on an exit they weren't trying for."

Taking the project vertical stunted the growth of right-of-way acquisitions. Officials had originally marked \$25 million toward the purchase of additional land, but only about \$6 million was actually used.

"We tried to stay away from all of the high-impact takings and really forced the design-builders into snaking their way through this corridor in an attempt to stay off the big industrial and residential impacts," Kidwell said.

The move was a brilliant offspring of MoDOT's fixed-cost, best-value, design-build process, a first-of-its-kind approach that involves taking the interests and needs of the impacted community and placing them in the hands of the design-build team, which can then shape them into the best transportation solution. The road builders ended up reaching into their travel bags for answers. According to Kidwell, past experiences from projects in other states have been applied to the I-29/35 kcICON Project. In turn, PCC has submitted over 40 equal or better-change proposals that have been approved by MoDOT. Kidwell also estimated that almost 600 design changes have occurred since project inception in April 2008.

"I don't know another DOT that had just a blank slate when they started procurement," he said. "We wanted to compile all of the best options that folks had experienced, and a lot of these guys work all over the country. We were just trying to capture all of that on our project."

Different looks started kicking in early in the life of the project, and perhaps the most significant one dealt with material prices a couple of years ago. With the price of steel threatening to make a financial mess of the project, the design-build team decided to turn the land bridges from steel over to

concrete. Crews were forced to stick with steel for the widening of a couple of railroad bridges, but instead of using H piles, concrete piles were used.

All of the five raised interchanges—half-diamond, partial diamond/partial clover leaf, single-point urban interchange, collector distributor and one that is being described as just an exit-entrance ramp—remain active, and the schedule remains well ahead of the July 1, 2011, completion date. When all is said and done, the 4.7-mile section will be widened from two lanes in each direction to three lanes, which should be able to carry the 102,000 vehicles a day without any pain for some time to come. The project also involves the construction of eight new bridges and the widening of five more. One of the new spans is the Christopher S. Bond Bridge, which has been named to the 2010 Top 10 Bridges list, which will be featured in the November issue of *ROADS & BRIDGES*.

Going down a different road was not an option when it came to maintaining traffic—two lanes in each direction—through the work zone. MoDOT divided the project into several phases to keep within the tight constraints of the playing field.

“We just keep scooching them left, scooching them right and keep moving them around,” Kidwell said. **R&B**



**2010 Top 10 Roads #8**

Route New Jersey 18 - Section 2F, 7E, and 11H  
New Brunswick, New Jersey

**2010 Top 10 Roads #4**

Interstate 80 Widening at Meander Reservoir  
Mahoning County, Ohio

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#2

**PROJECT:** U.S. 95 Sand Creek Byway Project

**LOCATION:** Sandpoint, Idaho

**OWNER:** Idaho Transportation Department

**DESIGNERS:** Washington Group International and CH2M Hill

**CONTRACTOR:** Parsons RCI Inc.

**COST:** \$103 million

**START DATE:** November 2008

**COMPLETION DATE:** November 2012



## Keeping soil in place

Erosion control challenges Sand Creek Byway Project

By Allen Zeyher  
Managing Editor

Parsons RCI Inc. has to dig deep to construct the U.S. 95 Sand Creek Byway.

Not because the project demanded all of the company's resources, but because the soils were so unstable. The project required 798,000 cu yd of excavation.

"In northern Idaho they have a lot of questionable soils. They're not very stable. They're not very good for structural use," Snaebjorn "Snowbear" Jonasson, project manager for Parsons, told ROADS & BRIDGES. "So what we do is we excavate them out, and in many cases we do go below water level to start the undersea walls, coming back up to spread the footprint and spread the load of the road that is then built on top of the undersea walls."

The constructor has to do a lot of deep soil stabilization and placement of cellular concrete as lightweight fill material. A good example of the use of cellular concrete is the area near Cedar Street, where there is an old railroad bridge over Sand Creek and a landmark railroad station built in 1907. Cellular concrete was placed adjacent to the building to limit ground vibrations and prevent settlement, which might damage the structural integrity of the building. At its deepest, the light yet strong cellular concrete was placed about 28 ft thick.

The project runs only 2.1 miles in the town of Sandpoint, Idaho, but it runs along a narrow spit of land with Sand Creek to the west and Lake Pend Oreille to the east.

Running alongside the highway is a working railway. Two critical aspects of the project are to prevent construction-disturbed soil from washing into Sand Creek and to prevent construction-related vibrations from disturbing any of the railroad equipment.

The level of water in Sand Creek is controlled by the U.S. Army Corps of Engineers and is 10-13 ft higher in summer than in winter. Because of the extremes in water level, soil erosion was a major concern. The constructor has to take extensive erosion-control measures to prevent storm water from carrying soil into Sand Creek.

They are using mainly well-known best-management practices for erosion control, such as silt fences to delineate the perimeter of the construction area. They spray a stabilizer onto exposed soil. They also use silt curtains installed in the creek to limit turbidity near where they are building cofferdams and piers for a bridge over the creek.

Storm water on the construction site drains into a sediment pond, where it is treated before being discharged in accordance with the project's storm-water pollution prevention plan.

The adjacent BNSF Railway carries an average of 80 trains every 24 hours. Keeping the trains rolling and preventing settlement of any of the railway equipment is critical.

Retaining walls are another important element of the U.S. 95 Sand Creek Byway Project. In all, 35 mechanically stabilized earth, precast and cast-in-place, retaining walls are being built.

Other structures being built as part of the project include two pedestrian underpasses and a pedestrian and bike path that parallels the highway and four steel-girder highway bridges, two over navigable waters. The other two carry U.S. 95 over existing roads. **R&B**

#3

**PROJECT:** Wacker Drive Reconstruction & Congress Parkway Interchange Improvements

**LOCATION:** Chicago

**OWNER:** Chicago Department of Transportation

**DESIGNER:** T.Y. Lin International

**CONTRACTOR:** F.H. Paschen/Cabo Joint Venture

**COST:** \$115 million

**START DATE:** Design: June 2000; Construction: June 2012

**COMPLETION DATE:** Design: December 2011; Construction: June 2012



## Into the future

Wacker Drive rebuild upgrades geometry and structures

By Allen Zeyher  
Managing Editor

Running down the western boundary of Chicago's downtown "Loop," Wacker Drive parallels the Chicago River and forms one of the Windy City's landmark structures, but it is suffering from aging structures and outdated design.

One of the landmark's most prominent features, its lower level, where in the old days boats on the Chicago River delivered goods to the downtown businesses, has become a liability.

At the southern end of Wacker Drive is an interchange with Congress Parkway, whose extension, the I-290 Eisenhower Expressway, is a major artery into downtown from the western suburbs. Commuters, tourists and commercial trucks use I-290 to reach the city's businesses and cultural attractions. Wacker Drive carries traffic from the interchange to the rest of the downtown area, including the North Michigan Avenue business district north of the Loop and Lake Shore Drive on the eastern edge of the Loop.

The trouble is that the Congress Parkway interchange is a mass of outdated geometry, inadequate lighting and degrading structures. The interchange consists of a 19-span double-deck, reinforced concrete frame structure, three reinforced-concrete box tunnel structures, a reinforced-concrete retained-earth structure and several reinforced-concrete retaining walls.

Among the improvements to the interchange are new lighting for the tunnels and roadways,

including transitional lighting from one to the other; moving the point where the eastbound Congress Parkway exit ramp splits to join Wacker Drive or Franklin Street to give drivers more time to prepare for the split; widening of Congress Parkway to allow for acceleration and deceleration lanes; and adding an acceleration lane for vehicles entering Congress Parkway from Wacker Drive.

By covering the roadway tunnels as much as possible, the Chicago Department of Transportation plans to turn the area into a park and a scenic gateway into the city.

At press time, crews had been able to get back on schedule after a strike halted all work from June 29 until July 21.

"The private utility companies are continuing with their work in the viaduct section of Wacker Drive," Douglas Jakalski, P.E., vice president and chief civil engineer at T.Y. Lin International, the project's designer, told *ROADS & BRIDGES*. "In this case, because it's so congested on lower Wacker Drive with utilities and foundation elements and everything else, it's extremely tight working conditions. Getting the utilities relocated down there in advance of doing all the foundation work is critical."

Utilities include private and public gas, water and electrical main service lines.

Work also is under way on foundation elements for the widening of the Congress Parkway Bridge and for the new pump station in the Congress Parkway Interchange. The pump station is needed to remove any water that seeps into the interchange tunnels, which are below the level of the nearby Chicago River. **R&B**

#4

**PROJECT:** I-80 Widening at Meander Reservoir

**LOCATION:** Mahoning County, Ohio

**OWNER:** Ohio Department of Transportation, District 4-0

**DESIGNER:** Gannett Fleming Engineers and Architects P.C.

**CONTRACTORS:** Anthony Allega Cement Contractor and Great Lakes Construction Co.

**COST:** \$95.3 million

**START DATE:** March 2006

**COMPLETION DATE:** September 2009



## Safe from the storm water

Widening features innovative drinking-water protection

By Elizabeth Lisican  
Associate Editor

In a time when environmentally conscious construction has more relevance than ever before, the I-80 Widening at Meander Reservoir deserves special recognition for its innovative sustainable features.

One of the largest and most challenging projects in the history of the Ohio Department of Transportation (ODOT) District 4-0, the \$95.3 million job improved safety and convenience for the traveling public and featured a spill-containment system design that protects drinking water for all of Mahoning and Trumbull counties.

The project took place between March 2006 and September 2009 with Anthony Allega Cement Contractor and Great Lakes Construction Co. serving as the contactors. Designed by Gannett Fleming Engineers and Architects P.C., the job entailed widening 4.5 miles worth of I-80 from S.R. 11 to the Ohio Turnpike from four to six lanes. It also widened shoulders and created longer merge lengths.

The need for spill containment arose out of concern for drinking-water quality, considering there had been tanker-truck accidents—in one instance a truck went over the side of the bridge and into the reservoir.

“They were concerned with hazardous material spills,” Paul Coblentz, P.E., Gannett Fleming Inc., told **ROADS & BRIDGES**. “So they worked with ODOT and requested that as one facet of the project, some type of system be designed and constructed to contain

any spills. The existing bridges were flat; they have many joints and any storm water that falls on the bridges just drops down into the reservoir through scuppers and down spouts.”

The new bridges crest midway over the reservoir, allowing any material spilled from vehicles to drain into inlet pipes and roadside ditches away from the bridges. The spillage then runs into two containment basins located at low points on both ends of the bridges. Each basin has shutoff valves that prevent contaminated materials from entering the drinking water reservoir.

The pavement utilized was a 13-in. portland cement concrete. The mix was standard ODOT, and subgrade work involved 12-in.-deep cement-stabilized subgrade in selected areas. In addition, 8,800 cu yd of grout was pumped below the subgrade to fill voids in the abandoned mines under the interstate.

The most challenging aspect of the project, Coblentz said, was performing the work under heavy traffic.

“We could not shut down any of the interstate,” he said. “So the best we could do was move traffic lanes from side to side and work around them.”

The project team overcame a slew of other challenges as well.

“We had to coordinate in our office many different groups of engineers—bridge, roadway, environmental, geotechnical, traffic engineers—so there was a lot of coordination required in our office and then, likewise, coordination with ODOT and all of their roadway and bridge and environmental and traffic and right-of-way people.”

“With the community and traveling public in mind, ODOT worked with local officials and emergency responders to design this project to achieve everyone’s goals,” ODOT District Deputy Director Eric Czetli said. **R&B**

#5

**PROJECT:**

East Genesee Avenue Reconstruction and Streetscape

**LOCATION:** Saginaw, Mich.

**OWNER:**

City of Saginaw, Mich.

**DESIGNER:**

Spicer Group Inc.

**CONTRACTOR:**

Pamar Enterprises Inc.

**COST:** \$5 million

**START DATE:**

March 8, 2010

**COMPLETION DATE:**

Aug. 27, 2010



## Reconstructing the past

Work blends needed updates with historical appeal

By Elizabeth Lisican  
Associate Editor

The East Genesee Avenue Reconstruction and Streetscape in the heart of Saginaw, Mich., officially began on March 8, 2010; but the project—set to finish up this month—is years in the making. From this month back to when funding was secured back in 2005, then dating all the way back to the original 1850 wood-plank road that was uncovered and preserved, the timeline on this project runs especially long.

The road had been constructed by the city's founder, thus the city worked with local historians on that component. The pavement on this job is a five-lane concrete road curb-and-gutter. It is 9 in. of reinforced concrete over 8 in. of crushed limestone and a foot of Class 2 sand. It includes Michigan Department of Transportation Standard P1 mix.

Designed by Spicer Group Inc. and contracted to Pamar Enterprises Inc., the job totaled \$5 million.

"The greatest challenge was the funding, trying to combine the funding," Phillip Karwat, project manager, told *ROADS & BRIDGES*. This project started back in 2005 with an earmark and came together initially when the city of Saginaw received in the 2006 appropriation bill a \$1 million earmark to just do streetscaping.

"The big concern I had was that the road was one of the worst roads in the city of Saginaw, especially down in the downtown area. So it wouldn't have made any sense to just go out and spend a million dollars to try to streetscape around a five-lane road that probably rated a 1 on the Pazer rating

that we use to rate our streets."

Ultimately, funding from President Obama's American Recovery and Reinvestment Act of 2009 made the project what it is today, Karwat said.

"Just by chance a year or two ago I was getting ready to cut this project back, and then Obama announced the stimulus package, so I was able to pull some of that money together," Karwat said.

The other challenge was working in an old downtown with unknowns under the road, Karwat said. One thing he did not anticipate was running into so much old steam line.

"The city of Saginaw had old steam heat and then all these lines are wrapped in this asbestos," he said. "On the subgrade we ran into all kinds of things . . . It was just stiff clay so we just excavated for the cross-section and we did run into some old steam pipes that were wrapped in asbestos that were actually in our subgrade, so we had to remove them.

"Many of the utility companies did replacements but because of the shallow depth of a lot of the other pipes that were in the ground, they put in all their new utilities really shallow, too, so we had to work around a lot of concrete ducts and it's been extremely challenging."

Still, the biggest hurdles came down to funding and working with the community and businesses to get them to understand that the only way to rebuild the road was by shutting it down.

"Retrofitting that old of an infrastructure into an updated system wouldn't have been possible without everyone's full cooperation," said Paul Acciavatti, president of Pamar Enterprises Inc. "We've worked with other municipalities on projects of this size and magnitude and they don't typically flow as smoothly." **R&B**

#6



**I-410/U.S. 281 INTERCHANGE**

San Antonio, Texas  
**COST:** \$160 million  
**LENGTH:** 7.9 centerline miles  
**DESIGNER:** HNTB Corp.  
**CONTRACTOR:** Williams Brothers  
**OWNER:** Texas Department of Transportation, San Antonio District

San Antonio will soon have one of the largest spurs in the U.S. This four-level, fully directional interchange should definitely urge motorists to move. The project includes the addition of eight direct connection ramps and approximately 7.9 centerline miles of freeway, cross street, ramp and ITS improvements. Working next to the airport capped the height of the structure so as not to impose on air navigation restrictions. This required the use of “framed-in” caps.

#7



**I-87/I-84 INTERCHANGE RECONSTRUCTION**

Newburgh, New York  
**COST:** \$136 million  
**DESIGNER:** PB Americas Inc.  
**CONTRACTORS:** The Pike Co., A. Servidone Inc./B. Anthony Construction Corp.  
**OWNER:** New York State Thruway Authority

Falling between 84 and 87 was 300. The local arterial route was used by motorists to link I-87 and I-84. The reconstruction provides direct connections, through a new toll plaza, between the two interstates while still maintaining access to Rte. 300. A new maintenance facility was designed for LEED Silver Certification. The civil site features wetlands and innovative use of recycled materials.

#8



**RTE. 18—SECTION 2F, 7E AND 11H**

New Brunswick, N.J.  
**COST:** \$215 million  
**LENGTH:** 2 miles  
**DESIGNER:** Gannett Fleming Inc.  
**CONTRACTOR:** Conti Enterprises Inc.  
**OWNER:** New Jersey DOT

Sometimes the new need a shiny coat. This corridor safety improvement project in New Brunswick carried an intensive context-sensitive approach that included extensive public-out-reach efforts. It consisted of four new grade-separated interchanges with express lanes. At the center of it all was the reconstruction of the George Street Bridge. Multiuse pathways and pedestrian bridges have reconnected Boyd Park to the city.

#9



**PIONEER CROSSING DESIGN-BUILD**

American Fork, Utah  
**COST:** \$172 million  
**LENGTH:** 6 miles  
**DESIGNER:** Parsons Transportation Group  
**CONTRACTORS:** Kiewit Western Co./W.W. Clyde & Co.  
**OWNER:** Utah DOT

American Fork has one less sticking point. A diverging diamond interchange (DDI) bridge at I-15 replaces the existing diamond interchange and includes new ramps and I-15 widening. The DDI, which provided a cost savings of \$17 million, includes twin, two-span prestressed concrete girder structures. The spans marked the longest and heaviest documented of its kind moved by self-propelled modular transporters in the U.S.

#10



**I-15 WIDENING**

Salt Lake City, Utah  
**COST:** \$115 million  
**LENGTH:** 4.1 miles  
**DESIGNER:** Parsons Transportation Group  
**CONTRACTORS:** Kiewit Western Co./W.W. Clyde & Co.  
**OWNER:** Utah DOT

This project consisted of widening the main-line highway with an express lane and three general-purpose lanes. Three bridges also were replaced, calling for the longest prestressed concrete girders set in the U.S. at 197 ft in length. Several structural innovations were used, including the tip-grouting of drilled shafts to increase vertical capacity. The I-15 bridge over Beck Street is the first UDOT operational seismic bridge design.