

Indiana Concrete Pavement Solutions

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PAVEMENT

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South Bend upgrades Miami Road

**Re-Build Runway 5-23 and
they will come...**

**INDOT Uses Concrete Overlay
to Rehab SR 161**

Reconstruction of I-465



INDIANA CHAPTER

South Bend upgrades Miami Road

“Concrete is the preferred material for arterial routes in South Bend, because of the pavement’s durability and requirement for less maintenance. This helps us meet the goal of keeping roads open and not closing to fill cracks and perform other maintenance and repair.”

Carl Littrell, City Engineer, South Bend, Ind.

The City of South Bend, Indiana made good use of federal stimulus funding when they tackled a long-awaited road reconstruction project on Miami Road. This north-south arterial connector is located one and a half miles east of US 31 south of the US 20 Bypass.

The reconstruction project was designed for the City by South Bend-based engineering firm Ken Herceg & Associates; the Paving Contractor was Reith-Riley Construction Co. Inc., Goshen, IN.; the General Contractor was Hoffman Bros., Inc., of Battle Creek, MI, and construction inspection was provided by Lawson-Fisher Associates, P.C., also from South Bend.

“We did the work in four main pours, a half mile on the south, a half mile on the north, and then, flipped direction to do four quadrants, two lanes at a time,” says Gene Yarkie, Reith-Riley Construction Company’s Regional Vice President for Northern Indiana.

Except for some minor delays associated with utility work, the project was very straightforward and presented

no major challenges, he said. An inherent advantage to placing concrete pavement is that it is placed in a single pass so actual paving operations take less time (and fuel) than full-depth bituminous pavement, which must be placed in layers.

As a new concrete arterial, Miami Rd. is a great example of a federal stimulus project that will serve future generations for years to come.

Traffic control played an important role in the project as crews worked closely with the school and local residents to accommodate safe access to properties located within the project limits. Detours, local media announcements, message boards and off-duty law enforcement were employed to insure a safe environment for residents, motorists, and construction crews.





The project consisted of a total of 30,273 square yards of Portland Cement Concrete Pavement (PCCP) designed using the Indiana Department of Transportation's Quality Control / Quality Assurance (QA/QC) specifications. QA/QC specifications include stringent material sampling and testing requirements. These specifications also include "Pay Factors" for flexural strength, air content, thickness and smoothness.

Failing to meet specification "Pay Factors" result in reductions in contract payments to the contractor. Exceeding the thickness or smoothness "Pay Factors" can result in limited bonus payments to the contractor.

Reith-Riley located their portable dedicated concrete batch plant approximately four miles from the project. Concrete from the central mix plant was trucked to the site in tri-axle trucks. A Rex belt placer distributed the concrete on the grade over dowel baskets placed on 18-foot centers.



Concrete pavements are inherently sustainable...cooler, less energy used during construction, more visible at night requiring fewer street lights, 100% recyclable...

The company's TEREX/CMI 350 paver consolidated the slab and the crew floated and straight-edged the surface. The resulting pavement earned Reith-Riley the maximum five percent bonus for exceeding the specified thickness.

After years of anticipation, residents of Miami Rd. on the south side of South Bend have a new four-lane arterial that is safe, cool, durable, economical to build and less costly to maintain. Miami Rd. represents a federally funded stimulus project that will serve future generations for years to come. ●



Re-Build Runway 5-23 and they will come...

Upgraded runway results in increased revenue for Columbus Airport

The 6,400 foot long Runway 5-23 at Columbus Indiana Municipal Airport was due for major rehabilitation. The original Portland Cement Concrete Pavement (PCCP) placed in 1942 had been overlaid and extended with hot mix asphalt (HMA) over the past several years, however the increasing frequency of spot repairs had become a nuisance to airport operations. Initial rehabilitation options involved both full and partial depth repairs with a five-inch “mill and fill” HMA overlay that would be placed over two or three seasons depending on available funding. Designers also considered the feasibility of a ten-inch PCCP overlay but initial cost estimates suggested that the total cost could exceed \$8M if placed over a three-year period, well beyond the airports anticipated budget.

In their effort to explore all possible options, Airport Manager, Rod Blasdel and engineers at RW Armstrong consulted with the Indiana Chapter – American Concrete Pavement Association (IN-ACPA) to gather additional information about possible PCCP solutions. Asphalt prices had risen sharply during the past few years and other Indiana airports have had recent success with PCCP overlays, so Columbus officials decided to take a closer look. Of particular interest

Concrete overlays can be built quickly, minimizing down time for the airfield.

was the potential economic benefit of building the project in a single season rather than spreading it out over several years. As a result, an alternate-design / alternate-bid package was bid in July 2009. Four PCCP bids and one HMA bid were submitted. The low PCCP bid was just under \$5M, nearly 38% below the “three-season” PCCP rehab estimate. After discussions with the FAA, Columbus officials agreed to re-bid the project specifying only the PCCP rehabilitation solution.

The project was re-bid in January 2010 specifying a ten-inch PCCP overlay along with some electrical upgrades for the airfield lighting system as “add alternates”. Six competitive bids were received and E&B Paving, Inc., Anderson, Ind., was awarded the contract with a bid of \$4.7M.

Initial construction phasing called for E&B to place the ten-inch thick PCCP overlay in three separate phases over



the 6,400-foot long runway. Intersecting Runway 14-32 would remain available for aircraft during the rehabilitation project, allowing the airport to remain open, except for the period required for reconstruction of the intersection itself (planned Phase II). E&B worked with the airport and their consultant to revise the plan combining the first two phases into a single phase. As a result, the required closure of runway 14-32 was minimized, the total number of paving days was reduced and E&B crews were able to achieve an extraordinarily smooth transition through the intersection.

Construction started in late July as crews began milling operations, removing approximately seven inches of existing asphalt from the runway. Other pre-paving preparations included full-depth repair of approximately 2,200 square yards of sub-base as well as repairs to over 16,000 lineal feet of cracks.

Paving operations began August 12 during a significant heat wave. Due to the extreme heat, the contractor shifted paving operations to the cooler hours after dark to reduce the concrete mix temperature and ensure quality. Concrete was produced at E&B's portable batch plant located a few miles from the airport and hauled to the paving spread in tri-axle dump trucks.

Concrete overlays provide superior durability, improved night time visibility and reduced maintenance costs.

Crews placed a total of 106,733.21 square yards of concrete (31,288 cubic yards) on runway 5-23 over eighteen paving days, completing the paving operations on September 3. Slip-formed PCCP is typically placed in a single pass regardless of pavement thickness, providing opportunities for cost efficiency and rapid completion. E&B's crews achieved an average of nearly 6,000 square yards per day or over 1,700 cubic yards/day for the project. Post-paving items included joint preparation and sealing, earth work

(grading and seeding), surface texture grinding (transverse grooves), and application of pavement markings. The newly rehabilitated runway 5-23 was re-opened on schedule in October 2010.

An unexpected benefit was realized soon after the runway re-opened. Local military operations determined Runway 5-23 to be well suited for the training of Lockheed C-130 Hercules crews. After proper evaluation and confirmation, pavement markings were reformatted to serve both military and corporate-general aviation traffic.

The initial concrete pavement on runway 5-23 was built to serve military aircraft operations in 1942. It seems fitting that a concrete overlay played a role in bringing military operations back to Columbus Municipal Airport in 2011. In addition, this project will be recognized in December 2011 by the American Concrete Pavement Association as their Silver Award Recipient for Concrete Overlays (Airports) through the national ACPA Excellence in Concrete Pavement Awards Program. ●





INDOT Uses Concrete Overlay to Rehab SR 161

The rehabilitation of Indiana State Road 161 near Holland, Ind. showcases the first concrete overlay in Indiana built under Indiana Department of Transportation's (INDOT) new Standard Specification "Section 509 – QC/QA, PCCP Overlay." This specification was developed in 2009 to incorporate thinner concrete overlays as a viable and economical construction alternative.

The 3.77 mile long, two-lane project began near Holland, Ind. and terminated at Indiana State Road 64. State Road 161 runs south from SR 64 to I-64 and carries approximately 5,200 vehicles per day. Over ten percent of this volume is truck traffic. SR 161 serves as a local truck route bypassing the cities of Huntingburg and Jasper located a few miles to the east on US 231.

The 25-year pavement design called for six inches of concrete overlay placed directly on the existing asphalt pavement. The existing asphalt pavement was profile scarified prior to placement of the concrete overlay.

The project was let by INDOT in February 2010 and five bidders responded. Gohmann Asphalt & Construction, Jeffersonville, Ind., was the successful bidder with a price of \$2.532M. The concrete overlay was bid at \$14.00/ sys or \$2.33/sys/in of thickness.

Concrete overlay provides an economical structural enhancement without having to remove the old pavement.

INDOT's Vincennes District personnel held several informational meetings with the affected community. Approximately 30 residents live within the project limits and they discussed the construction schedule and traffic arrangements.

In order to minimize the creation of "gap pours," the project specifications allowed the contractor to accommodate residential access over the concrete overlay at approximate right angles as early as eight hours after placement.



One-way-south-bound "local only" traffic was to be maintained while Gohmann placed concrete on the southbound lane. One-way traffic was then moved to the new pavement and crews placed concrete on the northbound lanes, completing the overlay.

After the existing asphalt surface was prepared, Gohmann began paving operations on August 2, 2010. Loose material was swept off of the scarified asphalt surface per INDOT specifications and the surface was cooled with water prior to concrete placement.

Gohmann set up their portable batch plant at US 231 and I-64 and hauled the INDOT QC/QA concrete in tri-axle dump trucks to the jobsite. Concrete was placed in front of their slip-form paver with a belt placer. After floating and finishing the surface, joints were cut at ten foot transverse spacing using a 1/8-inch saw blade. No sealing material was placed in the joints.

Paving operations were completed on the 3.77-mile – 70,973 square yard project in just 16 days. Residents were pleased with the thorough planning and traffic control and are "proud as peacocks with their new highway." ●

Reconstruction of I-465

Traveling Public Benefits from Concrete

The three-mile section of I-465 on the north side of Indianapolis between the Meridian Street and the Allisonville Road interchanges was in need of major reconstruction. Additional travel lanes were needed to accommodate the increased traffic and the riding surface was showing its age. The Indiana Department of Transportation (INDOT) elected to completely replace the pavement. The new project requires the replacement of six bridge decks, the removal of one bridge deck (replaced with a pedestrian box culvert) and 347,500 square yards of mainline paving of Portland Cement Concrete Pavement (PCCP).

Indianapolis-based Milestone Contractors, L.P. was the successful bidder on the \$72 million project. Milestone awarded the concrete paving portion of the contract to Berns Construction Company, an Indianapolis-based, concrete paving specialist.

A critical component of this project was the maintenance of a smooth and safe flow of three lanes of traffic in each direction throughout the complete reconstruction. The project was divided into three stages. Stage One employed six traffic lanes and a high-speed "express lane," while the four eastbound outside lanes were constructed. The center lanes (the three inside eastbound lanes and westbound inside shoulder) comprised Stage Two. Traffic flow was on either side of the work area during this stage. Stage Three was the final stage: the remaining westbound lanes were built with traffic utilizing the previously constructed eastbound lanes. The single pass, full depth high volume placement capability of concrete pavement, combined with achievement of concrete strengths to carry traffic in two days, were instrumental in allowing the project to construct the three project phases while allowing traffic to continue to move through the project.

In each of the three stages the existing pavement was removed and the sub-grade soils were lime-stabilized to a depth of 16 inches for increased impermeability and load-

Concrete pavement's single pass construction provides rapid construction. Over 47.5 lane miles of new pavement were placed between April and November - resulting in only a single season of interrupted traffic.

bearing capacity. INDOT's sub-base for PCCP was placed on top of the treated subgrade – providing a positive drainage layer under the newly constructed concrete pavement.

Berns Construction erected a Rex portable concrete batch plant on site dedicated to producing INDOT QC/QA concrete for this project. Paving operations began on April 15, 2010. To facilitate productivity in placement of new pavement, Berns utilized their state-of-the-art Leica 3D stringless paving train guidance system for a large portion of the project. The computerized grade and slope control system allows the accurate control of their GOMACO paver without the cost of installing guidance stringlines. Batched concrete was hauled in tri-axle trucks to the CMI belt placer and spread over prepared grade with dowel baskets set on 16-foot centers. The GOMACO GHP-2800 two-track slip-form paver consolidated and provided the initial finish to the concrete. Skilled Berns personnel hand-floated and straight-edged the slab, insuring a smooth and consistent surface. The GOMACO texture/cure machine tined and cured the fresh concrete surface, thereby providing an anti-skid and hydroplane-free pavement for the driving public.

After a difficult start because of weather and an extraordinarily complex construction schedule, Berns completed 47.5 lane-miles (347,500 square yards) of 13-inch PCCP on October 16, 2010, nearly three weeks ahead of schedule. The award-winning project is a tribute to the teamwork and dedication of INDOT and all of the contractors participating in the re-construction of this segment of I-465.



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Calendar of Events

Nov. 29 - Dec 1, 2011

Indiana County Commissioner Association Annual Conference

Jan. 16, 2012

Indiana Concrete Pavement Workshop

Feb. 24 - Mar. 2, 2012

Indiana Construction Industry Conference

Mar. 6 - 8, 2012

98th Annual Purdue Road School



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