

# ASPHALT TODAY

Scranton Gillette Communications

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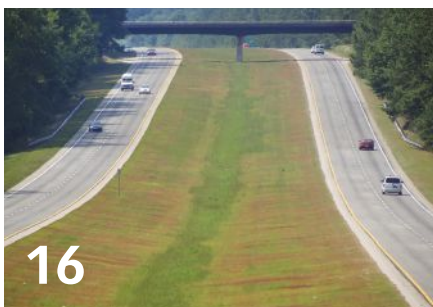
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# Thoroughbreds, thorough work

Crews execute extensive asphalt-paving work on Hwy. 60 in Kentucky

By Rick Zettler  
Contributing Author

**T**he stretch of U.S. Highway 60 connecting Lexington to Kentucky's capital, Frankfort, carries many high-profile commuters.

State lawmakers take the route for their work; celebrities can be spotted on their way to take in horse racing; and "many Kentucky Transportation Cabinet employees travel this important highway twice daily during the work week," said Nick Rodgers, marketing director for the Plantmix Asphalt Industry of Kentucky (PAIKY).

This scenic route allows passengers to take in a castle sighting and million-dollar horse farms on their way to Lexington's Blue Grass Airport. "It's also the primary thoroughfare for tens of thousands of visitors to historic Keeneland Racecourse, where the movie *Seabiscuit* was filmed," added Rodgers.

There was a problem, though. The prestige of the area was not equaled by the condition of the deteriorating four-lane road. The 50,000 vehicles traveling

the highway each day in 2012 added to the beating of the decades-old concrete road, and efforts to repair damaged sections were not making the grade. "The concrete road was failing, and the driving surface required replacement," said Brian Billings, vice president of engineering operations for ATS Construction LLC of Lexington.

## A safe bet

In 2012, the Kentucky Transportation Cabinet let a bid to replace/resurface a 6.2-mile stretch of Highway 60 east of Lexington, running through Fayette and Woodford counties. "It was just under 30 lane-miles of reconstruction and rehabilitation," said Jeff Monohan, executive vice president of The Allen Co. Inc. of Lexington, sister company to ATS Construction.

The complex project posed a number of challenges for the contractor ultimately receiving the contract. Due to the high vehicle counts, four lanes of traffic flow had to be maintained throughout most of the project, with only a few special concessions made for





In all, 232,000 tons of asphalt base and surface mixes were paved and compacted along the 6.2-mile stretch of Kentucky's Highway 60.



closing the road to two lanes. "There were also 60 entrances and three major intersections that had to be quickly paved," added Billings.

Then there were periodic upticks in vehicle counts. The spring season at Keeneland in April would bring an additional 40,000 visitors to the region over a four-week period at the beginning of the construction cycle. Book-ending the latter part of construction, the main horse-racing season would open in October, again adding tens of thousands of vehicles to the traffic flow. "Traffic controls were obviously a critical concern for the project owner," added Monohan.

Contract duration would be the biggest hurdle for the winning contractor. With the established bid award date in December 2012, the project had to be completed by Dec. 1, 2013. "A \$20,000-per-calendar-day disincentive was in the bid for each day the project extended beyond the deadline," mentioned Billings.

ATS Construction and sister company the Allen Co. both had vast

experience with large paving projects. They also had history on their side for paving Highway 60 with asphalt. Many concrete highways paved in Kentucky during the expansion of the highway system in the 1950s and '60s required rehabilitation and replacement in the 1980s and '90s.

"The state experimented with the crack-and-seat (where the concrete road is fractured into smaller sections and an asphalt overlay is paved) rehabilitation method in the 1990s," said Billings. Today, there are many miles of roadway upgraded using this method, due to the success achieved over the years.

ATS Construction, the lone asphalt bidder, and one concrete-paving contractor competed for the project. The Transportation Cabinet calculated life-cycle costs for both asphalt and concrete alternatives and applied the difference to the asphalt bidders. "This was the largest advantage for paving adjustment for concrete I've seen," said Monohan. The difference in bidding asphalt and concrete was \$1.2 million in favor of concrete. Billings added,

"Even with the adjustment, we still came in under the concrete bid by several million dollars with asphalt."

In December 2012, the nearly \$21 million project was awarded to ATS Construction as the prime contractor. The company handled two-thirds of the work in Fayette and Woodford counties, with The Allen Co. handling the other third.

## Head start

As luck would have it, early February warming allowed both contractors to jumpstart paving activities. "With the short cure time of asphalt, this allowed us to take advantage of several warm days in February," said Billings. Monohan added, "It would not have been realistic for concrete paving to start in these conditions due to freezing nighttime temperatures."

Work began by paving the median so traffic could be diverted to maintain two eastbound and westbound traffic lanes. Two temporary 10-ft lanes were constructed down the center of the existing roadways using 3.25 in. of a

Class 3-75 Gyrations Superpave asphalt base course with a 1-in. minus aggregate and PG 64-22 binder.

With the median paved, ATS Construction and The Allen Co.'s crews focused on the main roadway reconstruction and rehabilitation. The process began with subcontractor Antigo Construction Inc. of Antigo, Wis., fracturing the 10-in.-thick concrete pavement prior to receiving the overlay. "This minimizes the occurrence of reflective cracking in the overlay," explained Mike Kvach, executive director of the Asphalt Pavement Alliance.

Billings added, "Approximately 70% of the project was crack-and-seat overlay."

The asphalt overlay of the 12-ft-wide driving lanes and 10-ft shoulders began with 4.5 in. of a Class 4-100 Gyrations Superpave asphalt base course with a 1-in. minus stone and PG 64-22 binder. "We had to pave a leveling course first over the crack-and-seat in order to achieve spec densities," commented Monohan.

The base course was followed by 4.25 in. of an intermediate lift with 1-in. stone and PG 76-22 binder. The surface course included a skid-resistant 0.38-in. aggregate with PG 76-22 binder, paved at a 1.25-in. lift thickness.

At the height of production, ATS Construction and The Allen Co. used a total of four paving crews, and there were at times four asphalt plants supplying the

mix. "Vulcan Materials did a nice job supplying the aggregate so we could maintain required asphalt production," said an appreciative Billings.

The paving trains were led throughout the majority of the project by material-transfer vehicles to develop nonstop paving and reduce particle and thermal segregation. Three tandem vibratory rollers followed each 10-ft mainline rubber-tire paver, laying 12-ft-wide mats on the travel lanes and 10-ft-wide shoulders. Operators ran all three rollers in vibratory mode and the finish roller in static mode at the end to clean up any marks. Spec densities of 92% to 95% compaction were achieved, so ATS Construction and The Allen Co. earned full payment for achieving project specifications.

The remaining 30% of the project required complete removal of the concrete road and some of the base material. Total reconstruction occurred where the concrete road was severely damaged and at major intersections like Highway 60 and Man o' War Boulevard, which intersect at Keeneland's main entrance. "We removed 61,000 sq yd of concrete on this project and donated it to the airport and to a local church as fill material for an amphitheater project," mentioned Billings.

New road construction using the flexible asphalt pavement required approximately 19.5 in. of base mixes

plus the surface course. Four inches of dense-graded aggregate (DGA) with a 1.6-lb/cu-yd asphalt curing seal and 5-lb/cu-yd sand for blotter served as sub-base.

Crews then placed a 4-in. open-graded, asphalt-treated drainage lift followed by two 4-in. Class 3 asphalt base lifts consisting of a 1-in. aggregate with PG 64-22 binder. This was followed by a Class 4 asphalt intermediate lift with a 1-in. stone and PG 76-22 binder, paved at a 3.5-in. thickness. Crews capped these lifts with 1.25 in. of a Class 4 surface mix consisting of a 0.38-in. skid-resistant stone and PG 76-22 binder.

It was at the intersections where both Billings and Monohan mention asphalt's advantage over concrete in terms of speed of completion. "With the requirements to maintain traffic through these intersections, the ease of asphalt pavement to do part-width construction helped to speed up the process," said Billings.

Keeneland allowed its main entrance at Highway 60 and Man o' War Boulevard to be completely closed in June. "We were able to tear into the concrete, pave the necessary lifts and opened the road up to traffic in two days," mentioned Billings. The extended cure time of concrete and additional time to make width changes significantly extends this process from days to weeks.



Keeneland allowed its main entrance at Highway 60 and Man o' War Boulevard to be completely closed in June.



## Under the wire

In all, 232,000 tons of asphalt base and surface mixes were paved and compacted along the 6.2-mile stretch of Kentucky's Highway 60. Because of the extraordinary efforts by all parties involved, the project was completed on Sept. 14, 2013, more than two months ahead of the Dec. 1 deadline. "From the beginning, we had early October as a target finish point, so we could be done prior to Keeneland's season opening," said Billings.

The Transportation Cabinet uses a 40-year period for comparing pavement life, similar to that of the concrete road that was at the end of its life and in poor condition. At 15- to 18-year intervals, the asphalt surface course will be milled and replaced with an overlay as a quick maintenance item. "While we project 40 years, there is no reason why the road could not be a perpetual pavement (where the main pavement structure remains intact beyond the 40 years) with proper



Antigo Construction Inc. fractured the 10-in.-thick concrete pavement prior to receiving the overlay to minimize the occurrence of reflective cracking.

periodic maintenance to the surface," said Monohan.

Monohan also sees the U.S. Highway 60 project as a prime example of asphalt's advantage in terms of the contract's nature, timing, variable-width paving and expeditious work. "If the road had been asphalt in the first place, we wouldn't have had to do as much work and

the state wouldn't have had as much expense to rehabilitate the highway," he said. "Road owners have a balloon payment at the end of a concrete road's life. You most often have to remove and replace it," which is far more expensive than a mill-and-fill maintenance approach. **AT**

Z9ettler is a freelance writer in Cedar Rapids, Iowa.

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