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A PUBLICATION OF THE PLANTMIX ASPHALT INDUSTRY OF KENTUCKY AND THE KENTUCKY ASPHALT PAVEMENT ALLIANCE

Kentucky Highway Network Ranked Seventh in the Country

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A recent independent report ranks Kentucky's highway system as one of the nation's most efficient. The state's highway network is ranked 7th in the 15th Annual Performance of State Highway Systems report, published by the Reason Foundation.

The ranking is based on performance during 2004, and reflects a considerable improvement from 2003 when Kentucky's highway system ranked eight spots lower. It is no surprise that a state that relies heavily on hot mix asphalt pavements would score so well in an unbiased ranking. Hot mix asphalt pavements provide the best product for the taxpayers of Kentucky due to its cost effectiveness, smoothness and durability.

The annual report looks at cost versus performance of highway systems nationwide. Researchers compare state budgets (per mile of responsibility) with system performance to determine relative performance. According to David T. Hartgen, author of the Reason Foundation report and professor of transportation studies at the University of North Carolina at Charlotte, at nearly 28,000 miles, Kentucky's highway network is the 8th largest in the United States, but its budget is the 16th largest.

Kentucky received its honor in part, because of legislation passed by the state government. The legislation helped

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Keeneland Celebrates 70 Years of Racing



In celebration of Keeneland's 70th anniversary this year, Keeneland unveiled a new look during the October Fall Meet that included a revolutionary track surface. Renovation began in May and was completed in early September, resulting in significant changes to improve racing for both horses and fans.

One noteworthy improvement was replacing the conventional dirt track with a Polytrak racing surface. Keeneland installed Polytrak on its five-furlong training track in 2004 and is now the third North American racetrack to install it as its main racing surface. Turfway Park in Florence installed the surface in 2005, and Woodbine, in Toronto installed Polytrak earlier this year.

The surface's top layer is made up of silica sand, carpet fibers and recycled materials that provide a soft cushion for horses and jockeys. That material is covered in a wax coating that enables water to flow freely through the top surface to the sub layers below. In addition, it helps prevent the racetrack from freezing or becoming inconsistent, even in cold or wet weather.

The sub layers of the Polytrak include porous macadam (hot mix asphalt) and aggregates that provide a solid foundation while vertical drainage pipes carry water away from the track.

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Kentucky Highway Network (continued)

provide funding to the the Kentucky Transportation Cabinet in order to perform necessary projects throughout the state. The Kentucky Transportation Cabinet (KYTC) is working to address future concerns and recently added \$100 million in additional funds to better maintain existing roads and bridges. KYTC is also working to reduce traffic congestion across the state.

In addition, KYTC and Governor Fletcher are working to improve highway safety. Earlier this year, Fletcher supported three bills aimed at saving lives across the state that are now law: primary seatbelt, graduated driver licensing and quick clearance. Fatalities are at a five-year low, with nearly 70 fewer deaths year-to-date than last year.

KYTC has made some other significant accomplishments since 2004, including:

- Aggressive highway construction program, with an expected \$3.2 billion total investment through 2007 and nearly \$1 billion investment projected in each of the next two years
- \$150 million awarded to local governments for city street and county road improvements
- 25 percent reduction in roads with poor pavement conditions

This latest rating from the Reason Foundation matches the state's previous highest ranking, achieved in 1997. It reflects significant improvement over Kentucky's relatively low performance throughout the report's 15-year history. The full report is available online at www.reason.org/ps350.pdf.

Keeneland (continued)



Crews from ATS Construction paving the porous drainage layer for the track.

Hot mix asphalt is routinely used as a drainage layer below highway pavements but paving beneath horse tracks is a rather unique application.

The paving subcontractor on this project was ATS Construction, located in Lexington, Ky. Despite the unusual application and the beautiful Keeneland backdrop, paving operations were rather conventional. The contractor utilized traditional asphalt paving equipment for placement. However, the track designers did not allow the asphalt mixture to be compacted with rollers in order to make the mixture more porous. The asphalt pavement – while buried beneath the synthetic materials – plays a critical role in the performance of the new Polytrak surface.

Statistics also show that Polytrak is a safer riding surface for horses' joints and legs. Since installing the surface at Turfway Park, safety has improved for both the horse and rider; and has increased the number of starters while decreasing the number of canceled racing dates due to track or weather conditions. The following table illustrates improvements from Polytrak since it was installed at Turfway Park in fall 2005.

In addition to Polytrak, numerous other changes were

CONSTRUCTION MATERIALS

- 16,000 tons of Polytrak
- 90,000 tons of limestone
- 4,500 tons of porous asphalt
- 60,000 cubic yards of earthwork
- 600 cubic yards of concrete
- 2 1/8 miles of rail (not including outside rail of turf course)
- 5.7 miles of drainage pipe
- 15.5 miles of conduit for electric, telephone, teletimer and fiberoptic cable
- 5.5 miles of irrigation pipe

Keeneland *(continued)*

made to Keeneland’s racetrack. This included reconfiguring the racetrack to widen the turns and make them more symmetrical; improving the lighting around the track to improve safety during the morning training hours; installing a state-of-the-art tote board with more than 1,500 digital LED tiles; adding a larger winner’s circle and planting additional trees, shrubs and other landscaping.

Keeneland officials say the renovation will help them move closer to their goal “to be one of the world’s safest and most beautiful racetracks while adhering to its original mission of being a model racetrack.”



Close-up of synthetic Polytrack surface.



Aerial view of Keeneland's main racetrack.

Pound Gap (“Jenkins Cut”) Named Distinguished Geological Site

Many people take the roads they drive on for granted, but one Eastern Kentucky highway is getting some acclaim; US 23 in Letcher County. The highway runs through Jenkins Cut into Pound, VA, which was an important passage into Kentucky for late 18th and early 19th Century settlers.

Pound Gap rests on Pine Mountain, which is a linear mountain that runs nearly 125 miles along the Kentucky and Virginia border in three Kentucky counties: Letcher, Harlan and Bell.

The Gap used to be the only place to cross over the mountain easily. This can be attributed to a fault that bisects the mountain at the Gap. Over time, the fault created a “hole in the ridge” through weathering and erosion. Highway engineers have since used that “hole in the ridge” to improve roads within the area.

While constructing a new section of US 23 that runs through the Gap, a wonder of nature known as the

Pine Mountain Gap Thrust Fault was discovered.

A thrust fault is a tear in the upper part of the Earth’s crust and occurs when one block of strata, or rock layers, is pushed up and over another block of strata. More than 275 million years ago, the North American continent collided with Europe and Africa, forming the Appalachian Mountains and the thrust fault at Pound Gap. Geologists say the exposed strata that can be seen there today would normally appear about 2000 feet below the surface of the earth.

The construction of US 23 in Letcher County has given people the opportunity to study and admire the unique history and formation of the Appalachian Mountains and the thrust fault that could not have been seen otherwise. The Gap is the first site in the state designated as geologically significant. It was chosen to be a Distinguished Geologic Site by the Kentucky Society of Professional Geologists.



Aggregates

With 120 aggregate producing sites and more underground mines than any other state—Kentucky is the 10th largest producer of aggregates in the nation.

Aggregates are commonly known as crushed stone or gravel. Stone deposits such as dolomite, limestone and granite are often used in the complex and multi-faceted production of crushed stone aggregates.

Limestone is a sedimentary rock composed mainly of calcium carbonate. An important resource to Kentucky, it is the principle source of crushed stone used in construction, agriculture and other industries.

Dolomite is a rock that contains

a large percentage of magnesium and is similar to limestone. Both sedimentary rocks are formed from the consolidation and cementation of the products of weathering of other rocks and calcium-rich elements found in bodies of water.

Limestone in Kentucky is typically mined in open-pit quarries or underground mines. The materials are blasted into boulder-sized pieces, and then the boulders are loaded into dump trucks and hauled to a crusher – a mechanical device that breaks the larger boulders into smaller pieces. Materials are then screened and separated by size before being stockpiled and ready for use in hot mix asphalt or other applications.

AGGREGATE FACTS

- Aggregates make up 94 percent of hot mix asphalt
- About 38,000 tons of aggregates are needed to construct one mile on a single interstate highway lane
- 90 percent of aggregates are used within 50 miles of their place of extraction
- The average American will use about 750 tons of aggregate in his/her lifetime
- The average American home will require nearly 400 tons of aggregate in its construction
- The majority of rocks in Kentucky are sedimentary: limestone, dolomite, sandstone and shale
- Much of the limestone and dolomite produced in Kentucky are mined from the Ordovician and Mississippian age rocks

Source: Kentucky Crushed Stone Association

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