

Build It Right and

Barriere Construction Teams with DOTD to Construct Long-Lasting Road

By Chuck MacDonald

Jimmy Fulton, paving superintendent for Barriere Construction Co. LLC, squints into the morning sun watching the paving crew place an overlay on a 4.2-mile section of Belle Chasse Highway (Highway 23) southeast of New Orleans. This is not just another project for Barriere, but one that the company built in 1981 using full-depth asphalt and in 2008 won the contract to do the first resurfacing of the highway since then. "It's an amazing to think that this road has held up so well for so long," said Fulton.

His crew is using a Superpave mix that the Louisiana Department of Transportation and Development has designated for high-volume traffic applications. The paver is being fed mix from a material transfer vehicle, and the rollers are using intelligent compaction. The 1.5-inch-thick wearing course contains polymers. Of course, none of these special elements were available when the road was first built.

In 1981, Fulton and Bert Wilson did not know that they were about to become involved in a remarkable road-building project. At the time, Fulton was a screed operator on Barriere's pavers. Wilson had recently completed college and was working for Barriere as a mechanic's assistant and truck driver. The road would win NAPA's Sheldon G. Hayes Award and continue in service for 27 years before maintenance was needed.

The original two-lane road led southeast from New Orleans toward offshore oil well platforms and refineries in the Gulf of Mexico.

Barriere Construction's asphalt plant in Boutte produced both the binder course and wearing course materials used in the overlay work for the project. Barriere has been a NAPA member for 29 years.



It Will Last:

The new road was a 14-inch-thick pavement with two lanes in each direction, separated by a grass median. The inside shoulder was 4 feet wide and the outside shoulder 10 feet wide.

The following year, 1982, the Louisiana DOTD and Barriere were awarded with the asphalt pavement industry's top road-building honor, the prestigious Sheldon G. Hayes Award. The award attests that the highway meets the highest standards for construction, smoothness, and durability.

In 2008, the Louisiana DOTD released a bid for an overlay on both the northbound and southbound lanes of Highway 23 at Pointe à la Hache, near Port Sulphur, La. The project called for a contractor to mill and fill 1.5 to 1.75 inches of the travel lanes of a 4.2-mile-long section. The contractor would then construct a 1.5-inch wearing course over the travel lanes and shoulders. The wearing course specified sandstone to aid skid resistance. Barriere Construction was the winning bidder for the overlay project. The contract allowed Barriere to keep 75 percent of the millings for other projects and donate 25 percent to the local parish for its use.

This type of long-life, low-maintenance pavement is exemplary of the Perpetual Pavement concept. The thick asphalt pavement structure gives the road the ability to resist deep structural distress, and the "mill and fill" approach to surface renewal means

that the Louisiana DOTD is minimizing the use of materials and traffic delay over the pavement's life. After exceptional service over 27 years, there is little doubt that this pavement will be eligible for the Perpetual Pavement recognition in another 9 years and continue to serve long beyond that.

History of the project

Company leaders and workers were pleased to work again on a project they had built. "We are extremely proud of our company's role in building this highway," said Bert Wilson, who is now one of the owners of the company. "The project had a number of challenging elements when we built it in 1981."

Highway 23 is located next to the Mississippi River levee and is surrounded by marshes—hardly an ideal subgrade. The Barriere crew began building the new road by constructing a clay embankment for the subbase, surrounding an existing 6-foot layer of sand which had been pumped from the nearby river some years before and allowed to naturally consolidate. After fine grading and compacting this subgrade, the crews put in a 6-inch asphalt base course using bulldozers and asphalt rollers. The final 8 inches of the road was built in a conventional manner in three lifts with 0.75-inch maximum aggregate size.

Quality materials played an important role in the durability of this road. "This was one of the earliest

What is a Perpetual Pavement?

Highway 23 in Louisiana is one of many existing roads around the country that will qualify as Perpetual Pavements. Even though it was constructed long before the concept of the Perpetual Pavement was born, it embodies the characteristics of long life, durability, and recyclability. When needed, rehabilitation of a Perpetual Pavement can be performed quickly because distresses occur in the top layer, which can be milled off for recycling and replaced with an overlay. Because repairs are inexpensive and infrequently needed, Perpetual Pavements serve the traveling public well.

For a road to qualify for the Asphalt Pavement Alliance's Perpetual Pavement Award, it must be at least 35 years old, be built with hot-mix asphalt binder and surface, and have lasted without any failure of the base. Another stipulation is that resurfacing must not have been performed more frequently than an average of every 13 years. DOTs and agencies around the country are designing the Perpetual Pavements of the future using PerRoad (version 3.2). It is available for free download from the Asphalt Pavement Alliance at www.asphaltalliance.com.

projects in the state to use limestone instead of gravel as the aggregate," said Wilson. "The limestone didn't absorb the asphalt as readily, so we were able to use about 1 percent less asphalt in

The paver is moving along steadily at 35 feet per minute, creating a smooth mat for Highway 23 in Louisiana. The overlay was built in two lifts.



the mix than we usually used in a gravel mix.” The asphalt mix was produced on site using a portable plant.

Current project

On a morning in early May, the Highway 23 project is running smoothly. The previous day, the crew laid over 2,400 tons of asphalt. The milling of the four travel lanes is finished and the binder and surface courses have been paved. The project is less than 30 working days into its 85-working-days contract, and the job is already about 80 percent complete.

“One of the few areas where this road had problems was where the 96-inch triple-barrel culvert that ran under the road,” said Fulton. “The weight of the culvert had caused some settling into the subgrade, lowering the road as well. It could take nearly 2,000 tons of asphalt to level those areas.”

The total project is expected to use approximately 35,000 tons of asphalt. The original road required some 124,000 tons to build as a full-depth asphalt pavement.

The binder course of the current project contains 15 percent RAP, with a 0.75-inch nominal maximum aggregate size (NMAS). This layer needed an average of 2.5 inches of asphalt to bring the road up to the proper slope. The surface mix contains a 0.5-inch NMAS. The asphalt was produced at the company’s plant in Boutte and trucked some 60 miles to the paving site.

Two vibratory rollers trail the paver, followed by a



Jim Breland, L.W. Divinity, and Bert Wilson admire the 14-inch core from Highway 23 that they helped build 27 years ago.

pneumatic roller. A static steel-wheel roller completes the rolling work. “This has been a good rolling pattern for compaction and for giving the road a finished look,” said Fulton.

In addition to the use of electronics with the paver and rollers, Barriere uses a light-weight profilometer to check smoothness. The profilometer is calibrated each day by Sam Hester, Barriere’s director of quality control in the field. The profilometer is built on a small vehicle that looks like the grown-up cousin of a golf cart. Though it looks tiny following the massive rollers and paver, the cart provides



Jimmy Fulton was a screed operator when the road was built in 1981. Today, he is the superintendent on paving jobs.

big information. Hester reported that the international roughness index (IRI) is required by the DOT to be less than 65 on this project. The new pavement is well within these limits, averaging about 50. Electronics also help Hester make sure that compaction is on target. "We want compaction to be over 92 percent, but we like consistency. On this job, the compaction has been consistently 93-94 percent."

Building long-lasting pavements like Highway 23 requires not only quality materials but also quality people.

Experience adds up to expertise with people like Bert Wilson, Jimmy Fulton, and other veteran people working together on projects. Project manager Jim Breland has seen this blend of experience and expertise add up to many successful projects through the years. His grandfather worked for Wilson's grandfather and Breland's father worked at Barriere for some 40 years. Now both he and his brother, Bart Breland, work for the company. "To see a road hold up for 27 years says a lot about the company that built it," said Breland. "When you build a road right and use quality people, you get a good result. And we believe this new project will be more of the same for the people of the state."

The Louisiana DOTD has been a true partner in working with Barriere through the years. "Highway 23 was a top-notch project, well designed with quality workmanship and materials," said Bruce Perdue, assistant district administrator for engineering with the DOTD. Perdue joined the DOT in 1979 and was the field engineer on the project when it was constructed in 1981. "A long-lasting, full-depth asphalt pavement like this is great for the public in terms of cost, and it avoids the inconvenience of road repairs. I believe the public was well served by that project and will be by the new construction as well." **HMAT**

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