

Perpetual Pavement on I-40 in Oklahoma



Two sections of I-40 in downtown Oklahoma City are a showcase of the concept of asphalt Perpetual Pavements. The two stretches of asphalt pavement are more than 33 years old and have performed remarkably well from the day of their construction. They were built in 1967 and have been maintained with overlays.

Each of the two sections withstands 3 to 3.5 million Equivalent Single Axle Loads (ESALs) per year. Although they are 33 years old, they look like new. They support average daily traffic (ADT) of over 100,000 vehicles with approximately 30 percent heavy trucks. Each of the sections has been overlaid but the base course structure has not been touched.

Larry Lemon of Haskell Lemon Construction Company in Oklahoma City says the structural integrity of the asphalt pavements guarantees their high performance and makes them easy to maintain with overlays. "You never have to replace a perpetual base," says Lemon. "Planned milling and resurfacing make them like new again."

"Because asphalt roads can be rehabilitated and resurfaced quickly, we can return virtually new roads to

Ridley, former Director of the Oklahoma Asphalt Pavement Association and current Supervisor of Field Division Engineers for the Oklahoma DOT (ODOT). "Ten or twenty years ago, we did not always design roads that could withstand rutting, raveling and cracking. Now our DOTs and highway engineers can design roads that will withstand such failures, whether they are urban or rural interstates, and primary or secondary roads.



Fix and Roll

Tom Hubbard, ODOT design engineer, says that the inconvenience to motorists during overlay work on I-40 has been minimal. "One section was in an open area and easily accommodated traffic control. The longer section required night paving and some weekend work. On the shorter stretch, there was no inconvenience at all."

"Both sections are performing well," says Hubbard. "The pavements look nice; they give a smooth ride and they give the traveler a feeling of safety." They are particularly effective in wet weather. Hubbard cites the Open Graded Friction Course (OGFC) as providing a low noise, low-splash surface.

the motorists at minimal inconvenience," adds Lemon. "Sometimes our rehabilitation techniques are so efficient, the motorists don't even know we are working."

Lemon says that his company became known as the "phantom contractor" because they did all their work at night, producing the finished pavement just in time for rush-hour traffic the next day. Rush-hour motorists often wondered how the new pavements got there because they never saw the contractor at work.

"These pavements are proof that we can design asphalt roads that do not rut, push or shove," says Gary

Rehabilitation Strategy

The four-mile asphalt section west of the Crosstown Bridge was constructed in 1967 and performed without maintenance for 20 years. Then ODOT resurfaced the pavement in



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1987. The surface mix was a self-leveling mixture, placed with a prime coat, a tack coat, and a reinforcing fabric. "It served as a crack and rut filler," says Craig Moody, ODOT engineer. "We put it down at night and on the weekends and were able to get traffic on it in a matter of hours. "It went down fast and smooth," he adds. "The finished product, now 13 years old has performed well and has eliminated road chatter."

The other section, about a two-mile stretch from May to Western Avenue, was built in 1967 and was maintenance-free until 1978, when it was overlaid with an OGFC. In September 1998, Haskell Lemon Construction milled off 2.25 inches of asphalt and replaced it with a heavy-duty mix containing a PG 70-28 polymer-modified asphalt. Then to reduce road-spray and splash, an 0.75-inch OGFC was placed.

Full-Depth Asphalt from the Start

Lemon says the stretch from May Avenue to Western Avenue was originally constructed in 1967, as was the four-mile asphalt section from the Canadian County line to Meridian Avenue. Both sections were originally Full-Depth® asphalt with an 8-inch bituminous base course and a 4.5-inch intermediate and surface course. The bituminous base was Oklahoma DOT's standard base mixture.

"The base and intermediate courses have performed as a true Perpetual Pavement," says Lemon. "It has lasted 33 years without any work and it will continue to last. The base course is stable and durable because whenever you place a Full-Depth asphalt pavement on a firm base, it will last." Although Haskell Lemon Construction didn't do the original construction, they have done all the resurfacing work on the I-40 projects. These asphalt sections are recognized as Perpetual Pavements because the base and intermediate structure have lasted without rehabilitation or maintenance.

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Asphalt Versatility

The two stretches of asphalt on I-40 through downtown Oklahoma City also offer a dramatic testimony to the versatility of asphalt. The asphalt sections, which have been resurfaced, are smooth, good-looking and quiet. "The asphalt is smooth and quiet. The resurfacing jobs on both the asphalt projects are performing well" says Reynolds Toney, ODOT materials engineer. In an area that sustains more than 100,000 ADT, user delay is a definite consideration. The cost of milling and resurfacing a Perpetual Pavement constructed of asphalt is substantially less than for other alternatives. The two asphalt sections in downtown Oklahoma City stand as landmark examples that asphalt highways can be durable, attractive and smooth.▲

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