Residents of Englewood, Ohio, find a lot to like about their growing, middle-class suburban city of more than 13,000 residents. With a below-average crime rate, an excellent school system and a high percentage of homeowners, the city also offers a 1,900-acre metro park along the scenic Stillwater River, with lakes and waterfalls, camping, canoeing and kayaking, and abundant birding. Furthermore, residents have easy access to I-70 and the amenities of the Dayton metropolitan area.

Englewood sprang up at the intersection of the National Road, which cut through the area in 1836, and a north-south turnpike constructed to bring in farm produce from the fertile plains to the northwest. Early travelers on both had to dodge tree stumps. The National Road (now US 40) was not macadamized for more than 40 years.

The city grew slowly at first. In 1950 the population was only 678. Incorporated as a city in 1971, Englewood blossomed. Between 1970 and 1980 it grew by almost 44 percent, and by 2010 its population topped 13,000. In a city whose very existence is owed to road traffic, Englewood’s leaders pay ample attention to the condition of their streets. “The biggest investment any city has, bar none, is in their streets,” says city manager Eric Smith, “and preventive maintenance is key to getting a good return on that investment. Our asphalt pavements afford us that opportunity”.

Back in the 1970s, the city had two streets made of concrete pavement. Both eventually failed. After many attempts to patch them, the city finally undertook extensive prep work and repaved them with a sophisticated asphalt mix with fibers and rubber. In the '80s and '90s the city widened some streets and added lanes, using an asphalt pavement construction. Its decision to go with asphalt, now maintained with a polymer asphalt surface course, has paid back many times over in real cost savings, manageability, and public good will.

“Today Englewood is 100 percent asphalt,” says Vic Roberts, the city engineer for more than 20 years and now vice president of R.B Jergens in Vandalia. “Nobody argued about it. I think I know why. Asphalt is less costly and we can maintain asphalt streets. Nobody is set up to maintain concrete streets.”

All roadways deteriorate over time. The advantage of asphalt over concrete pavement is that the aging process
can be managed with regular surface maintenance alone. A 1983 study by Willis Gibboney of side-by-side asphalt and concrete pavements on I-71, built about the same time, with the same traffic load, same specifications and same subgrade, demonstrated clearly that asphalt pavement outperformed concrete pavement over time.

Fred Frecker, former executive director of Flexible Pavements of Ohio, says he once asked a colleague at the Ohio Department of Transportation how often the department performed a lifecycle cost analysis on asphalt pavement, something always done prior to rebuilding an existing pavement. The answer? Never, because, as Frecker says, “Once asphalt pavement is in, it’s in. It goes on forever.”

Having chosen asphalt pavement, Englewood has needed only to fine-tune its maintenance program, which has evolved over the years. For more than two decades Roberts oversaw street maintenance using slurry seal, which had many good qualities, including low cost and quick set-up, but it just didn’t last, and it tended to emphasize roadway irregularities.

The most advanced surface coatings now are polymer mixes. Roberts was familiar with polymer asphalt and had used it mixed with fibers to correct rutting at intersections. It was only in the late ‘90s, however, that a polymer surface mix became widely available. As head of Flexible Pavements of Ohio, Frecker introduced Smoothseal at an industry conference in Cincinnati in 2001. A surface course with a velvety finish, Smoothseal is designed for use in urban areas. It can only be applied over a flexible base, so it was perfect for Englewood’s street resurfacing program.

Smith says, “We started the Smoothseal program about 2002 and completed covering the whole city last year.” He regards it as a huge success, lasting easily twice as long as slurry seal. So while it may initially cost more, it saves money in the long run. Englewood’s experience with Smoothseal already has matched the 12-year average longevity. “We haven’t reconstructed a street since we started Smoothseal,” maintenance superintendent Al Butler confirms. Some Smoothseal has lasted much longer, including a stretch in Shaker Heights, Ohio, that was laid in 1973.

Then there is good will, which is worth a lot. “You’d think most people would do cartwheels that their street
is being resurfaced,” says Smith. “But not so.” He likes to tell the story of a local man who owned three old Cadillacs. Why three, he was asked? Because, he answered, at least one was always undergoing repair, and “When you’re ready to roll, you want to be ready to roll.” That’s now a byword around Englewood’s municipal building. When it comes to street maintenance, the less they hear from members of the public, the better. Long-lasting streets that require minimum regular maintenance get the public’s silent vote at city hall.

There are other surface coating mixes, but the Type B Smoothseal formula gives a superior ride quality and high skid numbers. An inch of thin-lift Smoothseal not only evens out road imperfections, as slurry seal did not, it also looks almost too smooth to be safe. Like “black

Landmark Studies Prove Asphalt’s Superiority

In 1983 Willis B. Gibboney, P.E., a former ODOT Interstate Pavements Engineer, published a study commissioned by Flexible Pavements of Ohio on a comparison of the service provided and cost over time of asphalt and concrete pavements on a portion of Interstate 71, constructed between 1957-1960 and subject to the same roadway conditions and traffic volume. What he found was asphalt pavements were less costly, needed no major rehabilitation, and provided long-lasting service, while concrete pavements showed early signs of distress and began requiring extensive repairs and major rehabilitation by 1969. Asphalt maintained its road performance over time so well that Gibboney wrote, “In the foreseeable future, it is likely that only surface maintenance and not structural repair or strengthening...will be required.”

In 1994 Gibboney revisited the comparison when some stretches of highway from the original study were more than 30 years old, and expanded it to include sections of I-75, I-275, and I-475. Once again, he concluded asphalt was both cheaper to install and cheaper to maintain over the life of the pavement.

Gibboney’s findings were indisputable. In the years following, new construction of Ohio’s roadways has been dominated by this high-performance material. And as the interstates on the Ohio Turnpike take up needed rehabilitation of the concrete portions of highway, Flexible Pavements of Ohio was able to argue authoritatively in a 2011 report to the Ohio Turnpike Commission that replacing these stretches with asphalt was the smarter solution because “no original flexible pavement on Ohio’s Interstate system has ever received so much as a major rehabilitation, much less had to be replaced.”

Willis Gibboney, PE

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velvet,” says Roberts. But in fact, it provides great traction. “Fifty percent of the fine particles have sharp angles,” says Roberts. “It’s gritty. It allows you to stop faster.” Yet it also gives drivers better gas mileage because it maintains that smooth surface longer.

Englewood just finished applying a Smoothseal maintenance overlay to the last of the city’s streets, which have been pothole-free for years and are almost complaint-free.

No city street program is without challenges. Eric Smith understands that “when times are tough, the first thing that gets cut is street maintenance, because it’s easy to do.” But slow and steady still wins the race, when contrasted with unpleasant spikes in expenditure and major inconveniences of rebuilding failed roadways. “That’s hard to budget for,” Frecker says. In both fat times and lean, asphalt pavement allows for a stable budget item and a planned maintenance program, which citizens and city councils can easily understand and track. No surprises. That’s worth a lot.

“Looking back on it,” says Smith, “the genius was in the fact that we chose to build our roads with asphalt. Now we are reaping the dividends of those decisions; low cost preventive maintenance, smooth and reliable pavements for our citizens, public good will, and manageability”. What more could a city “manager” want?

Smoothseal: The Key to Pavement Maintenance

Back in the 1970s, Englewood’s standards for residential streets and arterial roadways called for 10 inches of aggregate base covered by 3 inches of asphalt for residential streets and a foot of aggregate base covered by 5 inches of asphalt for arterial streets. By today’s standards, this is less than ideal. It was only by a meticulous attention to stabilizing the subgrade and laying over it a 9-ounce polyester geotextile that Englewood engineers reduced bottom strain and slowed the surface deterioration.

Englewood’s maintenance program therefore has adopted Type B Smoothseal polymer asphalt, ODOT item 424, which is 100 percent crushed coarse aggregate with a 6.4 percent polymer binder. A 3/4- to 1-inch application minimizes imperfections, protects the under layers of asphalt and aggregate, and is expected to last at least a dozen years before reapplication.

Of course, today’s standards for good street construction call for full-depth asphalt. Built correctly, and with a stable subgrade, Roberts says, with six to nine inches of asphalt base, a one-and-a-half-inch intermediate layer and a high-quality finishing course, and with periodic maintenance, a street never fails.