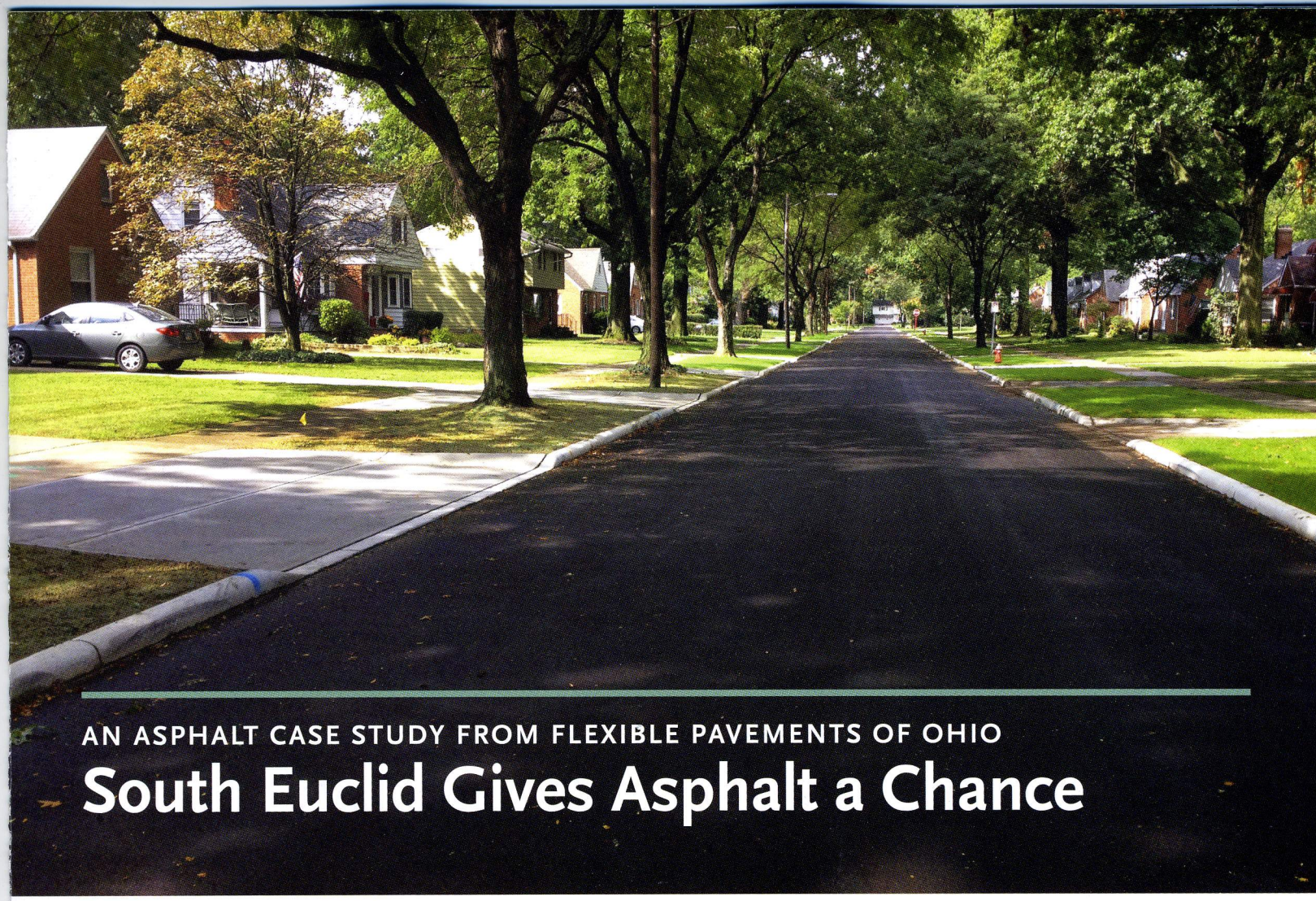

AN ASPHALT CASE STUDY FROM FLEXIBLE PAVEMENTS OF OHIO

South Euclid Gives Asphalt a Chance

In Northeast Ohio concrete pavements have been the norm. According to Andy Blackley, consulting engineer for the Cleveland suburb of South Euclid, the lake ports have been a source of cement for the northeast Ohio region, limestone aggregates are readily available, and the area has been a center for sand and gravel, so the ingredients of concrete are easily at hand and the local paving companies are knowledgeable about using it.

It is actually connected to the history of South Euclid, which was the site of a native sandstone called bluestone mined at the McFarland Quarry along Euclid Creek. With the development of concrete as a paving substance, bluestone declined and the wide-open quarry town of the same name eventually was absorbed into South Euclid.

Old habits die hard. South Euclid and neighboring communities long continued to favor a product they were familiar with for their streets and highways. But that may be changing.

As an inner ring suburb east of Cleveland, South Euclid experienced an early growth spurt in the 1920s. It was incorporated as a city in 1921. The boom stopped with the Great Depression. But with the end of World War II, the city again benefited from flight to the suburbs and grew continuously until the 1970s. By then it was largely built up and new growth leapfrogged the city to farther flung suburbs.

Today, South Euclid is a diverse community of some 23,000 residents supported by commercial development and a small amount of "clean industrial manufacturing," according to Blackley. New residential development in 2014 is confined to Cutter's Creek next to Euclid Creek Metro Park. But South Euclid continually reinvents itself. As with the redevelopment of older shopping centers like Cedar Center, the city now looks to sell itself to a next generation of young first-home buyers as what Mayor Georgine Welo, quoting a newspaper columnist, calls "an urban Mayberry."

Porous asphalt became a major part of the landscaping solution for the new Walmart in South Euclid to help filter parking lot run-off (installation shown below). Local officials participated in the groundbreaking (inset left), taking great pride in being a sustainable community.

"Our goal is to provide an environment that is both safe and attractive," says Blackley. As part of that goal, he says, "Good pavements give a good first impression that the city is well-maintained and residents are proud of their community."

South Euclid maintains 55 miles of residential streets and shares maintenance of 14 miles of county highway. About two-thirds of the roadways rate "good" to "excellent." The residential streets are mostly old concrete overlaid with asphalt, and the county roads are either concrete or concrete overlaid with asphalt. That's the legacy of South Euclid and other nearby communities.

Most of the streets in the city's subdivisions were built by developers. And when they were built, "People liked concrete, so that's what they used," says Blackley. The Cuyahoga County standards for pavements 20 years ago were "all concrete." While some asphalt streets were laid in the 1980s, concrete continued to be the preferred paver. Streets laid 50 to 90 years ago were seven to nine inches of unjointed concrete.

Blackley acknowledges that at age 15 or so, concrete requires "significant maintenance." In the years 2001 to 2002 a major reconstruction project on residential streets used full-depth asphalt, meaning six inches of

stone base under five inches of asphalt base, overlaid by three inches of Type 448 intermediate and surface courses. He likens this equal to a seven-inch concrete pavement. These pavements, now reaching their projected average life expectancy of 14 years, are in good shape, and Blackley expects them to do well for years past their sell-by date. Most of the residential street rehabs in the period 2004 to 2014 have replaced concrete pavements using this formula. Only one new concrete street, a partnership with the neighboring suburb of Lyndhurst, has been constructed in the past five years.

Mayor Welo uses the term "cement," but her view of concrete versus asphalt is unambiguous. "We have fiduciary responsibilities to the taxpayers, and up here cement doesn't work. It looks nice, but asphalt is much better for us. We get more for our money. It's easier to maintain and it has longevity. There are different ways to make the road last longer."

Mayor Welo, who is in her eleventh year in office after serving eight years on City Council followed by a stint on the planning commission, knows South Euclid's challenges and opportunities inside out. She saw as long ago as the Reagan administration that with shrinking federal budgets small cities like hers were going to have to practice what she calls "fend-for-yourself localism." She cheerfully translates this into a practical problem women have solved in their homes every day during lean years. "When dollars are shrinking, I think it takes a woman who knows how to sew buttons, clip coupons and feed a family on a soup bone to respond successfully."

In an older city like South Euclid with older infrastructure, rehabilitation is often on a catch-up basis because of tight funding. The roadway maintenance levy has been renewed every five years, but during a recession there is no political appetite for raising the millage, so every year the city finds itself doing more with less and "trying to stretch the dollars further and further," Blackley says.

Even in the land where concrete has been king, the financial situation alone makes the use of asphalt eminently sensible. Blackley notes that if an asphalt mixture is defective it shows its defects immediately and can be corrected. Not so with concrete, which may look good for

Seriously Sustainable

South Euclid prides itself on being a "sustainable" and "green" community. In 2009 the city created the 10-acre Langerdale Urban Marsh to filter storm run-off, replacing an old concrete retention basin, that offered both environmental utility and community entertainment, with a wildlife observation deck and tea house.

In addition, the city and a developer together required the Walmart supercenter being built on the site of the former Oakwood Club golf course to get certification from the Green Energy Building Council's LEED (Leadership in Energy and Environmental Design) program. The store opened in 2013 with a number of energy efficiencies, including landscaping designed to filter parking lot run-off (pictured at left).

South Euclid Mayor Georgine Welo says, "We sat down and talked about how can we become a sustainable community in every respect. Not just saving greenscapes, creating pocket parks, planting gardens, retrofitting. How can we really sustain one hundred percent across the board, includng our dollars."

What has this to do with asphalt paving? Asphalt is the ultimate sustainable paving material. It is, first, the world's most recycled material. And for sustainability at the local level, it offers ease of maintenance and the security of knowing that maintenance will be predictable and will not manifest itself as catastrophic roadway failure. According to the mayor, "You make decision to fix a road, you want to make sure you have the highest number of years that road will be in the best shape. I looked at it in a sustainable manner. "

For Welo and her advisers, asphalt is the best option. It's not just price, she maintains, although that is a factor, especially since South Euclid can join other suburbs to buy maintenance materials at wholesale prices. But she likes the idea that "you can take it up and put the same asphalt right down again."

Sustainability is good marketing for an older suburb like South Euclid. But Welo says it also works, looking forward to a bigger surplus in its reserves this year. "We are the poster child for how sustainability can work."

South Euclid's Green Neighborhoods Initiative is an innovative neighborhood revitalization strategy focused on the purchase, rehab and resale of vacant and abandoned homes and the creation of community gardens and community green space, including this one on Warrendale Road.

years before structural defects become evident, leading to "variable durability."

The excellent performance of asphalt in the street reconstructions, which are undertaken in conjunction with below-ground water and sewer replacements, have given the city confidence in using it. Once laid, asphalt can be maintained indefinitely with preventive maintenance such as crack sealing. Welo adds that the city also partners with three other suburbs to buy crack seal for the roads at a better price. "You can't do that with cement," she says.

An economical pavement rehabilitation the city performs on composite pavement—which is a concrete base overlaid by asphalt—is mill-and-fill, a surface reconstruction in which the city grinds off two inches of asphalt and replaces it with a fresh Type 448 surface.

Keeping the streets in good repair is part of a package of city strategies for attracting the next generation of residents, Welo says. Inner ring suburbanites like being close to downtown Cleveland, and many use their streets to reach rapid transit stations by bicycle. They need smooth pavements to make biking a realistic form of transportation.

The city also would like to see housing infill and rehab—driving up value by turning a $100,000 house into a $200,000 house. "Nothing changes a street like repaving or rejuvenating it," Welo asserts. Along with spiffed-up new signage (always part of the package), she says, "When your street is done you feel like you have a brand new neighborhood." Next thing you know, the neighbors are out planting flowers and showing community pride.

With a limited budget, South Euclid has turned to asphalt to maintain a healthy street repair program while stretching its dollars. The results have given the city increasing confidence in moving its program from the traditional paving material of its past toward a pavement system more in line with its needs and resources.

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