

Dublin Streets Celebrate Green



The decision by Dublin leaders to adopt asphalt pavement as the standard for all streets speaks to its green commitment.

When you think Dublin, Ohio, you think green. Irish green, for the annual St Patrick's day celebration. Green for the lush Muirfield Golf Course, home of the annual Memorial Tournament. Green for the prosperity driven by such corporate giants as Nationwide, Cardinal Health and Wendy's and for the 70,000 Dublin jobs. Green for the affluent and manicured residential communities that have sprung up over the past 40 years – average home price nearly \$300,000. Green for the enviable planning and attention that have gone into maintaining Dublin as a premier suburb of Columbus. Not least, green for the money-saving and environmentally prudent decision to adopt asphalt pavement as the standard for all streets and arterials.

From green farm fields generations ago, Dublin quickly morphed into a magnet suburban community. The I-270 outerbelt was completed in 1971, but without a highway interchange, Dublin would not have achieved

its potential. It was Ashland Chemical Company, which had located to the area in the late '60s, that was largely responsible for Dublin's transformative I-270/US 33 interchange. Then came the construction starting in 1972 of the Jack Nicklaus-designed Muirfield Village Golf Club and its surrounding residential development. From a 1970 population of 681, the community grew to city size in the late 1980s, and today, still growing, it boasts a population of some 43,000 residents with an average household income of \$112,000; 80 percent of them have at least a bachelor's degree.

Aspiring to draw blue chip companies and high-end office, retail and residential development means a city has to aspire to top-notch infrastructure. In addition to its permanent population, Dublin sees a daily influx of almost 65,000 workers who use its 560 lane miles of streets and roadways.

“Traffic and traffic management is king,” says City Engineer Paul Hammersmith. “Because we’re serving a corporate clientele and commuter clientele, we have to maintain good streets. To attract the kind of businesses we do, you want a good ride on the way to work and a good appearance.”

Except for a brief flirtation with composite pavements in the early ’90s, Dublin has relied on asphalt pavement as its standard. Subdivisions are required to lay a minimum of 6 inches of asphalt (1-1/2 inch thick surface layer, 448, type 1, then 1 1/2 inches of intermediate layer 448 and 3 inches of 301 asphalt base) and 6 inches of aggregate. Today there is not a single mile of exposed concrete pavement left in Dublin. Hammersmith says, “Full-depth asphalt, especially on residential streets, has served us well. We get at least 20 years out of our residential streets before significant maintenance is necessary.”

Maintenance is carefully calibrated using a PCI (Pave-ment Condition Index) database that allows the city to forecast resurfacing needs. The number 100 indicates new construction quality. When the PCI gets to the low 70s or upper 60s, the city flags streets for resurfacing. “Mill-n-Fill”, also known as an inlay, is the strategy used to resurface Dublin’s streets. There’s no need to rebuild them, just a new layer to prepare the street to face an-other twenty years of duty. The city mills off the surface and fills it with a new asphalt layer. Reclamation is used for old county roads that don’t yet match up to Dublin’s standard pavement thickness. The asphalt is milled off, and the entire roadbed is recycled by pulverizing and mixing with either an asphalt emulsion or cement stabi-lizing agent. Then the asphalt layers are added to match



Dublin, known for its affluent and highly manicured residential communities (top), is home to several corporate giants – including Wendy’s (bottom left) – as well as the Memorial Tournament at Muirfield Village Golf Club (middle), part of the PGA tour, and its nationally known annual St. Patrick’s Day parade (bottom right).

Did You Know?

Center stripes, edge lines, left turn arrows, merge indicators – these are just a few of the painted roadway markings we rely on every day as motorists to stay out of each other’s way and get where we want to go. Keeping them fresh and visible is an unsung but important part of roadway maintenance.

Whether the street or highway crews use thermoplastic or paint, the maintenance budget must factor in the cost of material and labor. Dublin has found that marking materials adhere much better to asphalt pavement than to concrete. “It sounds trivial, but it’s a lot of wear and tear,” City Engineer Paul Hammersmith says.

Dublin’s standards. These strategies are possible because asphalt degradation is predictable and the city can set its maintenance budget accordingly. Deterioration never becomes, as Paul puts it, “catastrophic.”

One key to long life for the asphalt pavements is Dublin’s use of Reclamite as a surface treatment. According to Ken Richardson, Engineering Manager - Design, “It holds things together tighter. It puts back the light oils or flexibility component.” It looks better and gives a smoother ride than slurry seal does and so is more citizen-friendly in this upscale community. And it is all about keeping the road surface impermeable to the deteriorating effects of water.

Another key is the city’s long-time commitment to asphalt. The few concrete pavements from the early 1990s that have been resurfaced with asphalt tend to be plagued with reflective cracks, the result of the concrete joints working themselves to the surface. Asphalt has been much easier to work with, easier to keep in good condition and easier to take up and put down again when underground repairs need to be made to water or sanitary sewer lines.

The choice makes a surprising difference in the cost of keeping markings visible. Says Ken Richardson, Engineering Manager - Design, “We probably refresh thermoplastic every three years. But if the pavement was concrete, it could be every six months. ”

Dublin’s spends approximately \$4 million a year on roadway maintenance, of which about 75 percent is dedicated to roadways and the balance for shared-use paths and curb and gutter. The cost of on-road signing is a small part of the city’s roadway budget. But details count, too. Watch-dogging this line item speaks to the city’s stewardship of its taxpayer dollars.



Dublin has more roundabouts than any other city in Ohio, none of which has required resurfacing over the past decade.

Dublin is known for two roadway features: roundabouts and bike paths (or, more accurately, shared-use paths). Having opened its first roundabout 10 years ago, Dublin now has more (number 17 is currently under construction) than any other city in Ohio. With nine inches of asphalt, they have held up well, improving traffic flow for all those commuters and residents without washboarding or shoving. Despite heavy use, none has yet needed to be resurfaced.

The city's 100-plus miles of shared-use paths have presented an interesting challenge. Richardson says, "Our residents really like them, and we have to maintain them at a very high level." That's a given in Dublin. But at

eight feet wide, the paths, which originally were laid at 2-1/2 inches of asphalt over 6 inches of aggregate, have attracted a more diverse user than just the cyclists and walkers originally anticipated. "They've become a sort of secondary access road," Richardson says, for utility and landscaping trucks. Bowing to reality, the city now constructs the paths using 4 1/2 inches of asphalt.

Like much of Ohio, Dublin suffered through the long, cold winter of 2013-2014. It frayed nerves and caused more than the usual number of potholes and frost heave. But as winter melts into spring, the judgment from the roadway experts is "no surprises" and "nothing catastrophic." In fact, asphalt actually responds better to salt treatment than concrete does, and Dublin, always committed to keeping the traffic moving, lays down liberal applications of salt.

A mile of arterial roadway extending Emerald Parkway is presently under construction. It will open 115 acres to commercial development and improve traffic flow for nearby residents. It also will include Dublin's seventeenth roundabout. The city continues to include its streets in its overall development plan, appealing to the kind of residents and businesses that have made Dublin a successful upscale community. As City Engineer Paul Hammersmith points out, "It looks like a well-maintained community that looks and feels like it cares about its infrastructure." Because it does.



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