

Vital but crumbling Beltway is a rough road to rebuild

Like many in U.S., highway is too needed for it to be shut down

BY ASHLEY HALSEY III

The Capital Beltway, a politically iconic and locally vital highway, is dying beneath your turning wheels.

Under the surface of all but some recently restored segments, fissures are spreading, cracks are widening and the once-solid roadbed that carries about a quarter-million cars a day is turning to mush.

In a perfect world, it would be torn up — the asphalt and concrete, and the bed of crushed stone below — right down to the bare earth. From that fresh start, a new and stable highway would grow. But this is the Beltway, and closing down whole sections of it would tie one of the most congested regions in the nation into a Gordian knot.

"With the older base layers under the asphalt, the surface is not able to absorb the pounding the way it used to," said Doug Simmons, deputy highway administrator in Maryland, home to almost two-thirds of the 64-mile Beltway and to the more serious of the highway's problems. "It is at that 50-year age point, which is too close to [the end of its life]. It's a good example of the challenges we're going to be facing not only in Maryland, but other places in the country."

Ultimately, the Beltway will not be allowed to die. It is too central to life in this region and to the national highway system. But it stands as a symbol, one roadway among the tens of thousands at the end of a long and fruitful life span into which 21st century America was born.

Now, 210 million U.S. drivers, and the commerce on which they rely, are riding on baby-boom-generation roadways, which like the boomers themselves are no longer so steady and sound.

As reality sinks in, states have moved to raise taxes to fix their roads before it's too late.

Maryland and Virginia just passed tax increases to address transportation needs, high among

them deteriorating highways such as the Beltway. But it will take time more than money to tackle the Beltway's worst sections, because simply closing several lanes for months would have nightmarish consequences.

The best of roads might last 40 or 50 years, perhaps longer if set in a forgiving climate. But once age gets the best of a road, smacking a fresh coat of asphalt on it is like pinning leaves on a dead tree.

The underbed of a roadway develops potholes very much like the ones seen on the surface. That process of erosion advances with the age of the road, and new asphalt or concrete becomes a waste of time and money.

"There's too much money spent on just patching, on the quick fix, rather than the long term, and eventually it's going to catch up on us," said Edward G. Rendell, former Philadelphia mayor and Pennsylvania governor who now heads an infrastructure advocacy group.

It's catching up now.

Nearly a third of the nation's major roads need significant repair or replacement, with a far higher percentage in the busiest urban areas. In Washington and its suburbs, it soars to 62 percent.

Forty-two percent of urban roadways suffer from congestion, costing an estimated \$101 billion in wasted time and gasoline each year, according to a study released this month by the American Society of Civil Engineers.

Like many of the warnings about the need to invest trillions of dollars to salvage America's aging infrastructure system, the bottom-line number is so huge that it is difficult for most people to digest.

The ASCE says federal, state and local governments need to spend \$79 billion more each year just on roads.

That's \$250 more a year for every American, a smaller though still somewhat abstract number. But there are more meaningful individual costs associated with driving on roadways that are falling apart.

In addition to the cost of traffic delays, the average Washington area driver pays \$578 a year for wear and tear caused by rough roads, according to calculations by the nonprofit transportation

research group TRIP, which is backed by highway-improvement advocates.

Delays and bad roads also cost truckers, who deliver \$25 billion in goods nationwide every day, and that added expense shows up in the price tags at supermarkets and department stores.

"Traffic congestion is costing the freight transportation network nearly \$8 billion per year," according to a report by the American Association of State Highway and Transportation Officials. "Higher transportation costs mean higher consumer prices."

If bad roads cause sticker creep at the checkout aisle, the cost of fixing them is about to cause sticker shock at the gas pump.

Aware that they can't rely on austerity-minded Congress to triple spending for roadways, states have begun to step in with tax increases.

"State legislatures seem to be coming out of a period of denial," said Frank Moretti, director of policy and research at TRIP. "For years they thought, 'Maybe Washington will send us lots of money,' or 'We'll just push it off another year or two.' This problem has gone beyond the point where it can just be a political football that gets put off for a few more years."

In all, close to two dozen states have looked for new ways to fund road projects this year.

With a push from its governor, Robert F. McDonnell (R), Virginia overhauled how it pays for transportation programs. A \$1.4 billion plan replaces a 17.5-cents-per-gallon tax on gasoline with a 3.5 percent wholesale tax on motor fuels that will keep pace with economic growth and inflation.

It's a complex stew of new taxes that tacks about 11.5 cents onto the current cost of a gallon of gas, according to industry estimates.

Drivers in Maryland will be paying pennies more per gallon by summer under a bill that passed the Maryland Senate on Friday and will now go to Gov. Martin O'Malley (D), who has promised to sign the measure. Within three years, the new sales tax would rise until it reaches 13 to 20 cents per gallon, according to legislative analysts. It is expected to raise \$4.4 billion for

roads and transit over six years.

In Wisconsin, Gov. Scott Walker (R) wants to sell off dozens of power and heating plants that supply universities and prisons to win support from the bond market for a two-year \$6.4 billion transportation plan. Connecticut may charge additional tolls at its borders.

Wyoming's legislature raised the state tax on gasoline and diesel fuel by 10 cents a gallon. California may add 3.5 cents per gallon to its fuel tax. And in Michigan, while proposing a \$1.2 billion road plan, Gov. Rick Snyder (R) warned his legislature that the need will mushroom to \$25 billion within a decade unless it takes action.

Those state officials see roads that need replacement and highways and transit systems that need to be expanded, and they see no respite if the issue is ignored. Vehicle travel jumped by 39 percent from 1990 to 2008 and is forecast to increase an additional 35 percent by 2030. Heavy-truck traffic jumped by nearly 50 percent during that period.

"The explosion of freight truck traffic is punishing aging highways," the state highway and transportation group said in a 2009 report.

"When we're talking about infrastructure, we never compute the cost of inaction," Rendell said. "The best example? The Army Corps of Engineers had a request in to rebuild the levees in New Orleans before Katrina. It would have been a little under a billion dollars. They said there was no money. After Ka-

trina, the federal government spent \$17 billion on repair. That's what the public's got to start understanding: The cost of inaction is greater than the cost of doing something."

They will build a tougher Beltway this time around.

The need is not so great in the highway's lower crescent, the 22.1 miles south of the Potomac. Three mega projects along its length — the "mixing bowl" interchange with I-95, the Woodrow Wilson Bridge and the HOT lanes — have given Virginia a chance to rehabilitate all but three or four miles of Beltway pavement.

The roadway is longer and the challenge greater on the Maryland side. When officials there are able to rebuild, the new crushed stone underbed will be about the same depth as when the road was built in the 1960s. But the asphalt will be thicker, and about 75 percent of the new road will have nine inches of concrete sandwiched between that underbed and the asphalt.

"The Beltway is not a normal roadway as far as the loading we see from traffic volume and truck volume on it," said Simmons, the highway administrator.

That volume is what makes major rehabilitation so challenging and expensive. A few years ago, there was an estimate that it would cost about \$3 billion just to preserve Maryland's 41.7 miles of Beltway — and perhaps twice that to address congestion and update interchanges with the roadways that have burgeoned in the decades since the Beltway was built.

The most effective, least expensive way to tackle the job would be to tear out several lanes at a time. If that were the plan in Maryland or Virginia, someone could calculate a bottom-line cost for the project. But it simply can't be done.

"With the Capital Beltway being the Capital Beltway, you're not going to come in to shut down the Capital Beltway to fully reconstruct it, so that's the challenge we deal with," Simmons said.

The way Simmons will have to deal with it is one lane at a time.

"It gets very challenging to be able to go with a one-lane perspective, and it's very expensive," he said. "The more stages you have, the more expensive. When you can only work in the middle of the night, the cost goes up, but you get out of the way of rush hour."

Right now, major segments of the Maryland part of the Beltway are in a downward spiral, notably those in the eastern part that curves through Prince George's County. The underbed is rotten, so a fresh asphalt surface doesn't last. As the surface gets rough, traffic slows and backups begin. When the surface needs more frequent repaving, traffic backs up. And when the time comes that it all is torn up for replacement, traffic will back up.

"There is going to come a point in time when we're going to need to consider that strategy of doing in-depth reconstruction versus resurfacing," Simmons said. "But we want to be able to keep people moving as best we can."

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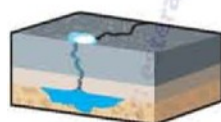
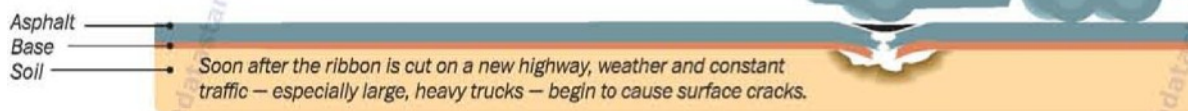
The Capital Beltway is visibly cracking, but the real problems for the roadway lie beneath the surface in the layers that can't be seen. The highway is nearly 50 years old and is badly in need of rebuilding.

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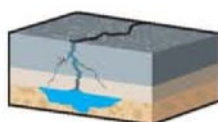
Doug Simmons, deputy highway administrator in Maryland

How a highway falls apart

When a 50-year-old highway such as the Capital Beltway begins to show its age, the problems are more than pavement-deep. A February report found that traveling on bad roads costs the average D.C. area driver about \$2,200 a year in wasted fuel and vehicle wear and tear.



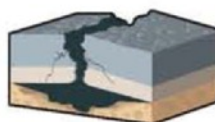
1. If left untreated, the cracks get deeper and completely break through the asphalt, letting water seep into the rock and soil beneath it.



2. Eventually this underlying layer softens, making it less able to support the pavement. Additional cracks occur more easily.



3. In winter, the water below the asphalt freezes and expands, buckling the road.



4. When it thaws, it leaves a gap that, when broken through by a tire, becomes a pothole.



5. Patches and repaving temporarily smooth the surface, but the underlying problem remains.

Sources: Missouri Department of Transportation, Federal Highway Administration, “Rough Roads Ahead,” by American Association of State Highway and Transportation Officials, Michigan Department of Transportation; TRIP

DRAWING IS SCHEMATIC

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