



# HOW IT AFFECTS YOU

Find out if your street is on the list and how it got there.

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# CAPITAL PROJECTS



CARING FOR YOUR INFRASTRUCTURE TO KEEP KIRKLAND HEALTHY, SAFE AND VIBRANT



*Will Denton, Kirkland's streets engineer, inspects Finn Hill's Northeast 110th Place, near Juanita Drive, to ensure it is in good enough condition for street sealing. Kirkland's contractor in August will slurry seal more than 30 sections of neighborhood roads in Finn Hill and Juanita.*

## THE STREET SAVER

The City of Kirkland is protecting more than 30 sections of residential streets this year in Finn Hill and Juanita with a layer of slurry seal

**F**inn Hill's Northeast 110th Place doesn't look like it's in dire need of maintenance. The neighborhood road that offers sweeping views of Juanita Bay, Lake Washington and the Seattle skyline beyond has no potholes, no sections

of alligator cracks.

But, says Will Denton, Kirkland's streets engineer, this street is nearing a tipping point.

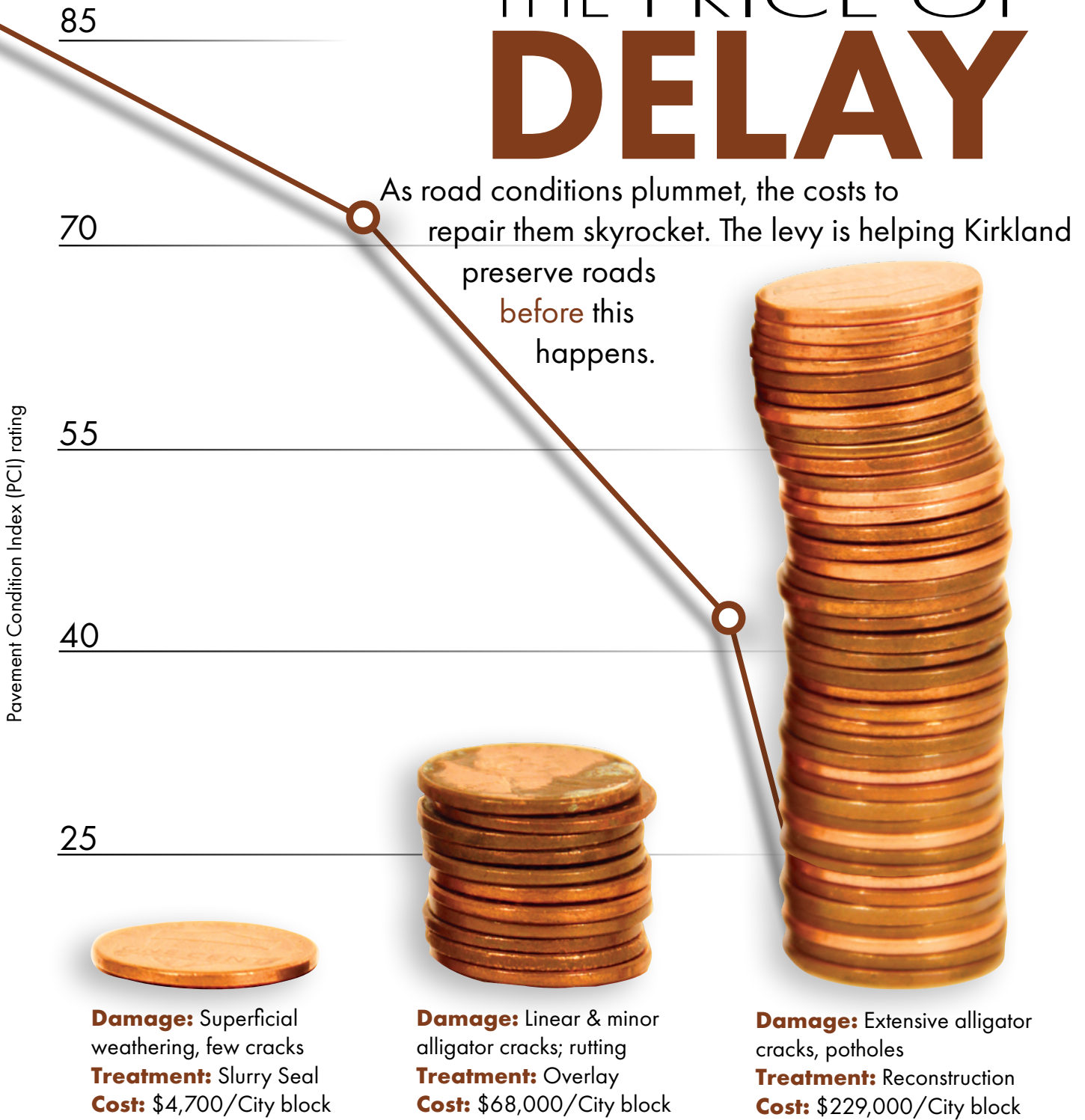
At the top of the hill is a series of small cracks. The color of the street is light gray. "That means it has started

### TO LEARN MORE

■ Contact Will Denton, streets engineer, 587-3872; [wdenton@kirklandwa.gov](mailto:wdenton@kirklandwa.gov)

■ Or Christian Knight, outreach: 587-3831; [cknight@kirklandwa.gov](mailto:cknight@kirklandwa.gov)

# THE PRICE OF DELAY



oxidizing,” Denton says.

As it continues to oxidize, Denton explains, the asphalt—the pavement’s glue—will become more brittle with time. Pits will form in it, then more cracks. From there, the road’s deterioration will accelerate. And that, Denton says, is what makes Northeast 110th

Place an ideal candidate for slurry seal.

This summer, the street preservation program that Denton manages will slurry seal this street and sections of more than 30 others—some in better shape, some in worse—in Finn Hill and Juanita. The substance the street preservation program will

# What Kirkland residents said about slurry seal

In 2021, the City slurry sealed streets in Bridle Trails, Rose Hill, Moss Bay and Houghton. Here's what residents said about their streets.

“It's great. It has been really nice. It smoothed things out for us and allowed us to walk without tripping. It's really worked out well.

—Susan, Central Houghton  
*Received slurry seal in 2021*

“They had given a lot of warning and information. That was good. There were some loose particles at first. But they swept the road after a couple days. It's fine now. Roads have to be resurfaced, at some point.

—Sue, South Rose Hill  
*Received slurry seal in 2021*

“It was a very smooth experience. After the construction, there was no debris or rocks. City of Kirkland came to clean shortly after that. There was a tiny bit of gravel. It was no big deal.

—Filippo, Bridle Trails  
*Received slurry seal in 2021*

“I remember getting the notice about it and thinking it was going to be difficult. But in retrospect, we gave plenty of notice to everybody, there were no major issues. It's smoother now than it was shortly after the City applied the treatment.

—Ellen, Moss Bay  
*Received slurry seal in 2021*

“They were pretty fast. It was a little bit gritty. It did smooth out over time. It took three or four months for it to smooth out.

—Mary, Bridle Trails  
*Received slurry seal in 2021*

“For awhile, it was kind of loose—like black gravel. I don't think it's loose now.

—Bonnie, South Rose Hill  
*Received slurry seal in 2021*

use to preserve these roads is called ‘slurry seal,’ a basic mixture of water, emulsified liquid asphalt—a non-toxic, oil-like substance—and tiny pieces of gravel, which Denton calls “aggregates” or “fines.” When it dries, the slurry seal provides a quarter-inch layer of pavement that acts like sunscreen for these minimally trafficked roads—sealing out weather and moisture—and, as a result, extending the functional lives of the roads by five to 10 years. Slurry seal can also replenish years of aggregate-loss in the pavement beneath it.

*“Slurry seal isn't structural. It is only a preservation method.”*

—Will Denton, P.E.  
Kirkland's streets engineer

And it does all this at an estimated cost of \$4,700 per city block.

## The 2012 levy

Residents doubled Kirkland's capacity to preserve their neighborhood roads in 2012 when they approved the Streets Levy. Since then, Kirkland has used slurry seal to extend the functional lives of more than 100 lane-miles of neighborhood roads.

Without the levy, roads like Northeast 110th Place might never receive slurry seal. And without slurry seal, traffic and weather would continue to hammer its asphalt until chunks of pavement began breaking loose and webs of alligator cracks morphed into archipelagos of potholes that would undermine the road's basic structure.

At that point, the only comprehensive, long-term solution available to those residential roads would be reconstruction. And reconstruction is prohibitively expensive, costing on average \$229,000 per





# WHAT TO EXPECT WHEN WE'RE PROTECTING

The slurry seal guide that reassuringly answers the questions of residents, from the preparation stage through application and follow-up.



## 1.) PREPARE THE SITE

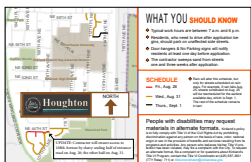
One to three months before application

City crews repair small areas of damaged pavement and ask residents to prune their vegetation—especially low-growing vegetation—to create 14 feet of vertical clearance above the right-of-way so work crews can apply slurry seal up to the curb. If residents do not or cannot trim vegetation that obstructs the public right-of-way, work crews will. Crews also sweep pavement. Roads remain open.



## 2.) PREPARE RESIDENTS

One to two weeks before application



Residents receive street-by-street slurry seal schedules on a postcard. Crews finalize street preparation. Roads remain open.

## 3.) NOTIFY RESIDENTS

At least one day before application

Work crews remind residents of slurry seal date with a door hanger at least one day before applying slurry seal. Residents remove all personal items—including cars—from the road and prevent water from flowing from their properties into the street.



## 4.) SEAL THE ROADS

Day of application

Work crews close the street and apply slurry seal. Road closures begin as early as 8 a.m. and end as late as 6 p.m. Some closures begin later in the morning. After application, slurry seal is brown and sticky. To prevent damage, residents do not drive, bike, walk, or allow their pets on the street until the slurry seal has cured and the City has re-opened the street.



## 5.) ADAPTING TO THE NEW SURFACE

Up to one year after application

The new surface is rougher and sheds some of the larger aggregate, creating gravel deposits on top of the new slurry seal. The contractor's crews sweep the streets twice—approximately one week after application and then again three weeks after application. As time progresses, traffic smooths the surface by dislodging the larger aggregate and pushing smaller aggregate into the underlying pavement. Sweepings and rain also help.



block in 2023. These high costs are what have made reconstruction a once-in-a-decade solution in Kirkland.

**The constraints**

Like any solution, however, slurry seal comes with a few catches: “Slurry seal isn’t structural,” Denton says. “It is only a preservation method.”

**\$229 K**

The estimated costs in 2023 per City block for reconstructing a road from the subgrade to the surface.

This means it’s not suitable for Kirkland’s more-trafficked roads, such as Juanita Drive, which accommodates nearly 15,000

vehicles every day. For those arterials, Kirkland uses a process called “overlay.”

The overlay process replaces three inches of the street surface with an entirely new paved surface, at an estimated cost of \$67,000 per block—less than one-third of the costs for total reconstruction, but 14 times more expensive than slurry seal.

Slurry seal’s role as a preservation method also means it’s not suitable for roads that have too many cracks. Those roads are generally beyond slurry seal’s capacity to protect them.

“Within a few weeks, the cracks that are in the road will reflect through the slurry seal as well,” Denton says. “And moisture will continue to infiltrate it.”

Unless, of course, Kirkland’s street maintenance crews patch the cracks before sealing the road. Patching requires workers to tear out the damaged pavement and rebuild that section of the road.

“Too many patches is expensive,”



*A toddler pushes his bike up Northeast 61st Street in the Bridle Trails neighborhood, shortly after Kirkland treated it in 2012 with slurry seal.*

Denton explains. “Eventually, it becomes more cost-effective and more effective in general to just overlay it.”

Denton’s challenge is to treat the road before it reaches that point of no return. Of course, Kirkland has more than 450 lane-miles of neighborhood and collector roads.

**The selection process**

To identify which roads are nearing that tipping point, Denton relies on three data sources—two of them are human-generated. The third is computer-generated.

Every four years, a team of pavement specialists walks along randomly selected sections of every road in Kirkland, counting the number and types of distresses in the surface—rutting, raveling, swelling, slippage cracking, transverse cracking, and, yes, alligator cracking.

# 70

The Pavement Condition Index score generally required for Slurry Seal to effectively preserve residential and collector streets.

“Some distresses are more problematic than others,” Denton says.

Each of these distresses reduces the street’s condition, which is reflected in a score on the Pavement Condition Index, a nationally used system for measuring road conditions.

A 100 on the Pavement Condition Index means the street is in perfect condition.

A zero means the road has no functioning surface and requires total reconstruction. For slurry seal to be effective, the street should generally score near or above 70, Denton says.

The Pavement Condition Index score of Northeast 110th Place, for example, is 78.

“Any higher than that,” Denton says, “and we would have waited on another year of deterioration before applying the slurry seal. In the meantime, though, other nearby roads would have deteriorated out of range. So we are doing them all now.”

Denton enters these scores into the City’s pavement monitoring software, which uses variables, such as time and projected traffic-load to forecast how the Pavement Condition Index scores of every road in Kirkland will decline with time.

The software, then, uses these forecasts to recommend a treatment plan for each road.

“So if I know if we are going to prevent this street from falling out of slurry seal’s reach and into an indefinite cycle of patching potholes, I know I need to treat it sooner, rather than later,” Denton says.

These treatment plans are based largely on the streets’ Pavement Condition Index scores, which are in turn based on surveys of randomly selected sections of each street.

“Some streets will deteriorate faster than the curves predict,” Denton continues. “And some will deteriorate slower. That’s why we have to go out there and walk these roads.” ◀

## Sealed roads smooth out with time, traffic & sweepings

**One week later ...**



**Street:** 91 st Court Northeast  
**Sealed:** Aug. 30, 2016  
**Photo:** Sept. 8, 2016

**Seven months later ...**



**Street:** 91 st Court Northeast  
**Sealed:** Aug. 30, 2016  
**Photo:** April 3, 2017

**One year later ...**



**Street:** Northeast 131 st Place  
**Sealed:** Aug. 3, 2015  
**Photo:** Sept. 8, 2016





**City of Kirkland**  
Street Preservation, CIP  
123 Fifth Avenue  
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# WE'RE SAVING THE STREETS

The City of Kirkland is extending the lives of your neighborhood roads this summer. This document will help you understand how it works, how the City chose your street and how you can help.



*The intersection of a neighborhood street, left, and an arterial, right, shows the differences between a street that recently received slurry seal and one that, not as recently, received an overlay. The surface of Northeast 61st Place, left, which received slurry seal a few weeks before this photo was taken, is grittier with finer aggregates that traffic will eventually press into the pavement beneath it. The surface of 132nd Avenue Northeast, right, by contrast, is smoother upon application, and filled with larger aggregate that, with time, neglect and oxidation, will dislodge to form the beginnings of cracks, which lead to alligator cracks and then potholes. Without slurry seal, an overlaid street can last 20 years. With three to four rounds of slurry seal, it can last more than 50 years.*