



CITY OF KIRKLAND
Department of Public Works
123 Fifth Avenue, Kirkland, WA 98033 425.587.3800
www.kirklandwa.gov

MEMORANDUM

To: Kurt Triplett, City Manager

From: Dave Snider, P.E., Capital Projects Manager
Marilynne Beard, Interim Public Works Director

Date: July 3, 2014

Subject: ANNUAL STREET PRESERVATION PROGRAM (2014 PHASE III SLURRY SEAL PROJECT) AWARD CONTRACT

RECOMMENDATION:

That City Council awards the construction contract for the Annual Street Preservation Program, 2014 Phase III Slurry Seal Project, to Blackline Inc., Vancouver, WA in the amount of \$496,080.85.

BACKGROUND DISCUSSION:

The City uses a Pavement Management System to manage and prioritize preservation treatments throughout the City's street network. The Pavement Management System considers all City streets in terms of existing pavement conditions index (PCI), prior maintenance histories, the City's annual budget for street preservation, and other factors to determine the most cost-effective treatment. Once selected for treatment, candidate streets are then reviewed for potential conflicts with other construction projects (i.e., other CIP projects, private development, WSDOT, and PSE, etc.) and are typically clustered into manageable areas before making it onto the current year's program list (Attachment A).

As an effective preventative maintenance tool in the City's overall Street Preservation Program, a slurry seal is a thin layer of liquid asphalt that has been mixed with a fine aggregate (i.e., sand). Typically, slurry seals are placed on low-volume residential streets where light to moderate surface wear is occurring. Slurry seal is a versatile and cost effective way to extend the life of the City's residential streets where there is no significant structural damage to the pavement section. It protects the asphalt surface from the effects of aging while improving the existing PCI.

For the 2014 Slurry Seal Project, the highest ranking streets were bid with three schedules of work for a total of 29.1 lane miles. It was structured this way because the engineer's estimate projected that bids would exceed the budget and staff wanted to maximize the amount of work that could be awarded without exceeding that budget.

With an original budget of \$500,000, the 2014 Slurry Seal Project was bid with an engineer's estimate of \$541,782 for the three schedules; on July 2, two bids were received with the following results:

Contractor	Total of All Schedules
Blackline, Inc.	\$496,080.85
<i>Engineer's Estimate</i>	<i>\$541,782.00</i>
VSS International, Inc.	\$792,982.00

A comparison of the unit prices received shows that the average cost of slurry seal has increased significantly from \$1.57/SY in 2013 to 2.62\$/SY in 2014 (Attachment B); however, based on the low bid price received staff is recommending an award of all schedules of work (Attachment C).

The 2014 Slurry Seal Project is Phase III of the Annual Street Preservation Program. The Phase I and Phase II components of the Annual Street Preservation Program are the 2014 Curb Ramp & Concrete Repairs Project and the 2014 Street Overlay Project. Contracts for those phases were awarded by City Council at their meetings on April 15 and July 1, 2014 respectively. Phase I is currently wrapping up construction and Phase II will begin construction in mid-July.

The total budget for the Annual Street Preservation Program for 2014 is a combination of three revenue sources including the base CIP, Proposition 1 Levy funds, and a City Council approved carry-over from the 2013 program:

Revenue Source	Amount
2013-2018 base CIP	\$1,750,000
Prop 1 Levy funds	\$2,574,000
2012 Carry-over	\$ 230,559
TOTAL	\$4,554,559

The current anticipated expenses for the 2014 Street Preservation Program are as follows:

Phase	Status	Amount
Phase I Curbs and Ramps	Under Construction	\$ 383,567
Phase II Overlay	Awarded 7/1/2014	\$2,780,965
Phase III Slurry Seal	This memo	\$ 496,081
In-House Crews Paving	Just Completed	\$ 35,000
Engineering, Admin, Inspection	On-Going	\$ 680,000
Contingency	Balance Remaining	\$ 178,946
	TOTAL	\$4,554,559

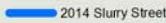
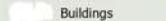
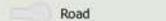
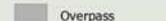
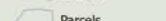
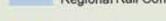
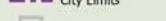
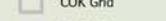
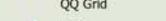
Staff continues its efforts on Public Outreach activities related to all phases of the 2014 Street Preservation Program. For this Phase III Project, Public Outreach has been enhanced as a result of the Slurry Seal Focus Group activities conducted in November, 2013. Public Works staff will be providing an all new informational brochure to property owners living along the planned Slurry Seal routes (Attachment D). The brochure describes the City's Street Preservation Program together with important facts on the Slurry Seal treatment. The information in this brochure and schedule updates will also be incorporated into the Public Works section of the City's web site. In addition, door-hanger notices will be distributed to all adjacent homes and business at least 24 hours prior to Slurry Seal applications.

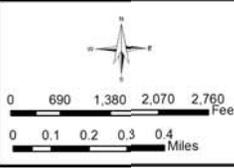
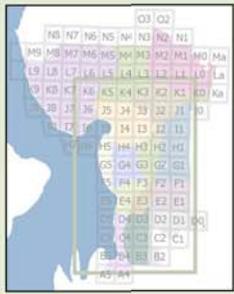
Construction of the Slurry Seal Project is extremely weather and temperature dependent, and is typically performed during the warmer summer months. With a City Council award of the construction contract at the July 15 meeting, the work will start near the beginning of August and be substantially complete by mid-September. In advance of the contractor's work, City street crews will be sealing cracks and repairing damaged sections of pavement to prepare the streets for the slurry seal application.

- Attachment A – Vicinity Map
- Attachment B – Annual cost comparison
- Attachment C – Project Budget Report
- Attachment D – Slurry Seal Brochure

2014 Slurry Seal Project CST1406

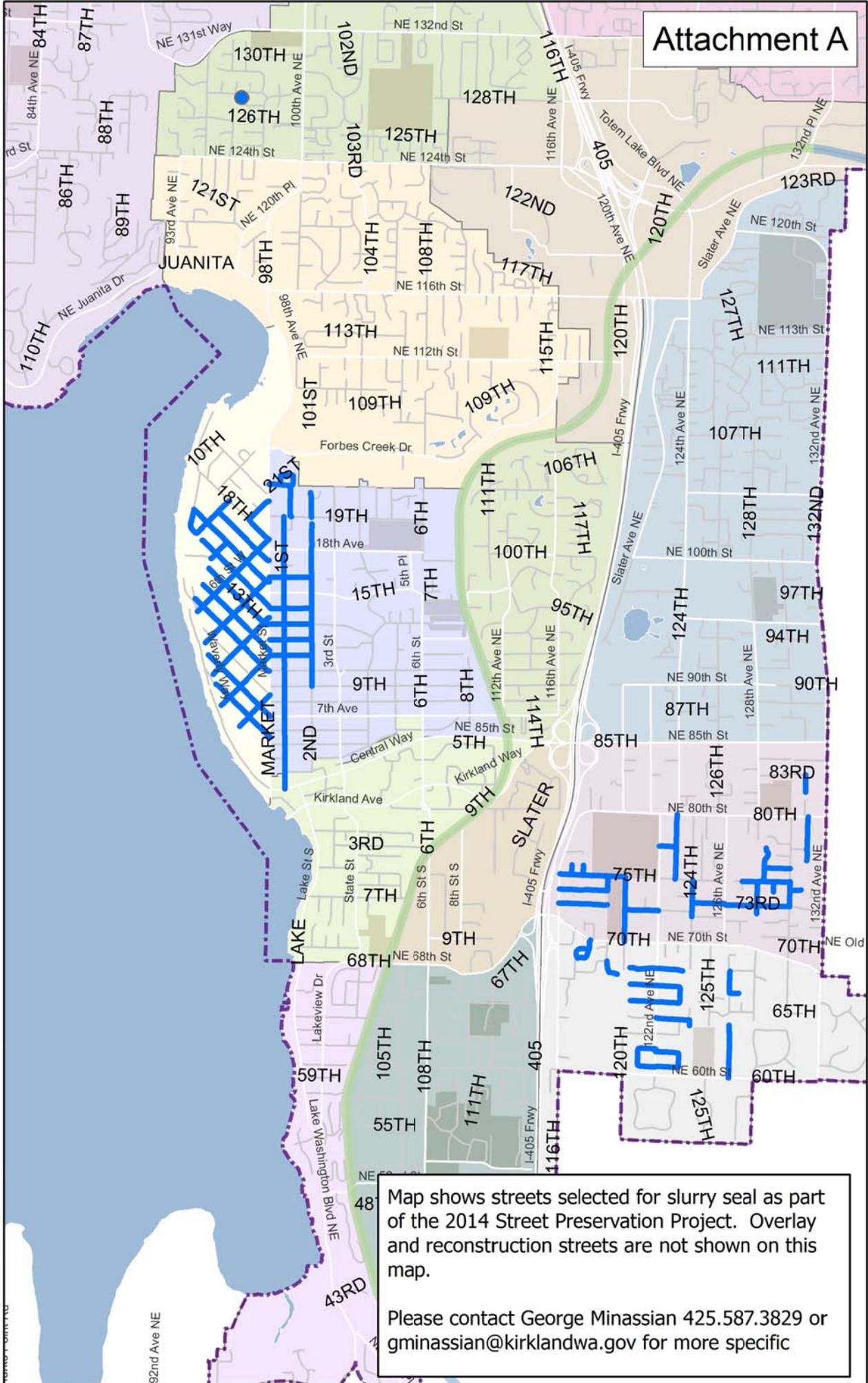
Attachment A

-  2014 Slurry Street
-  Buildings
-  Road
-  Overpass
-  Parks
-  Schools
-  Parcels
-  Major Streets
-  Streets
-  Cross Kirkland Corridor
-  Regional Rail Corridor
-  City Limits
-  COK Grid
-  QQ Grid
-  Lakes



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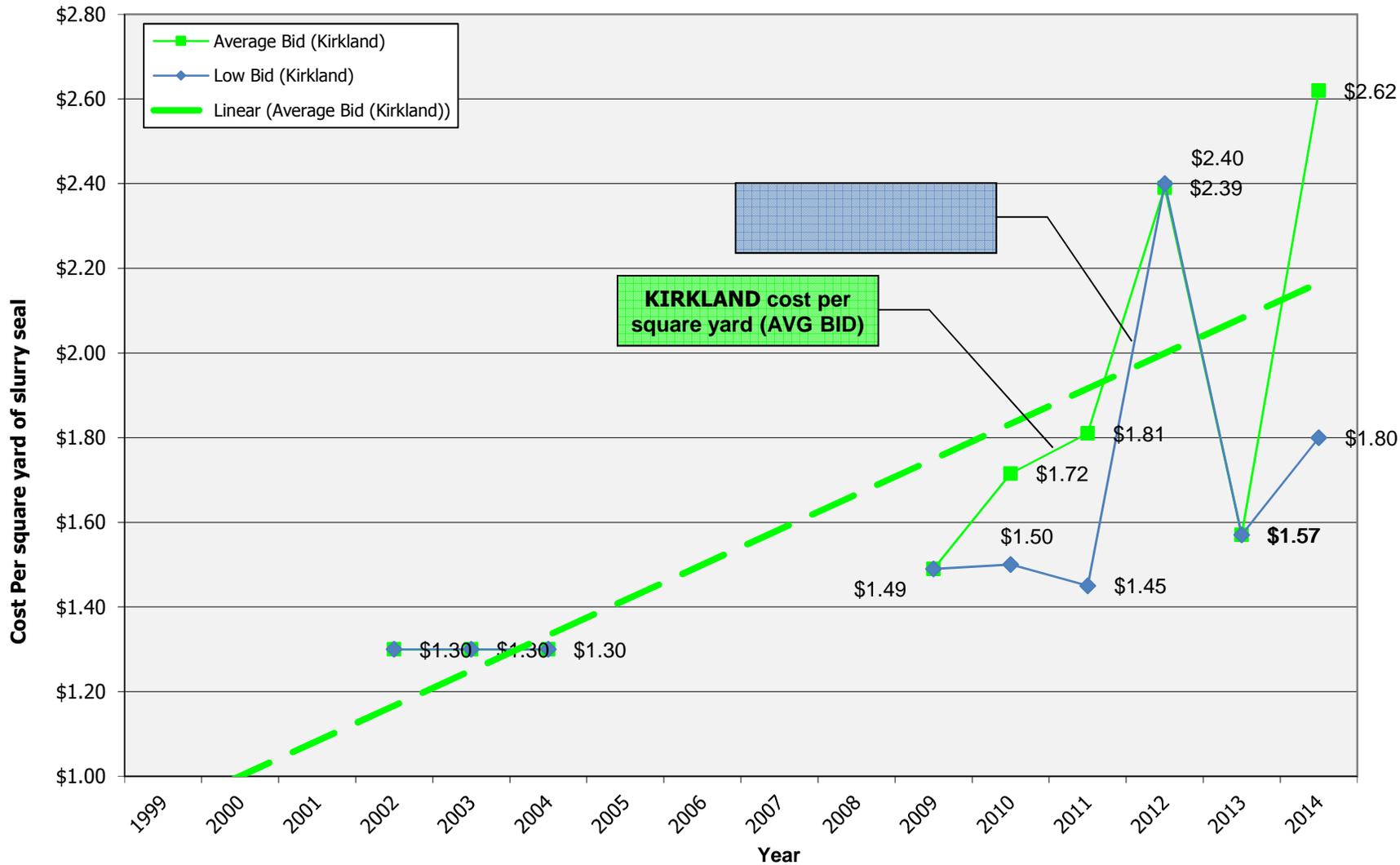
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Map shows streets selected for slurry seal as part of the 2014 Street Preservation Project. Overlay and reconstruction streets are not shown on this map.

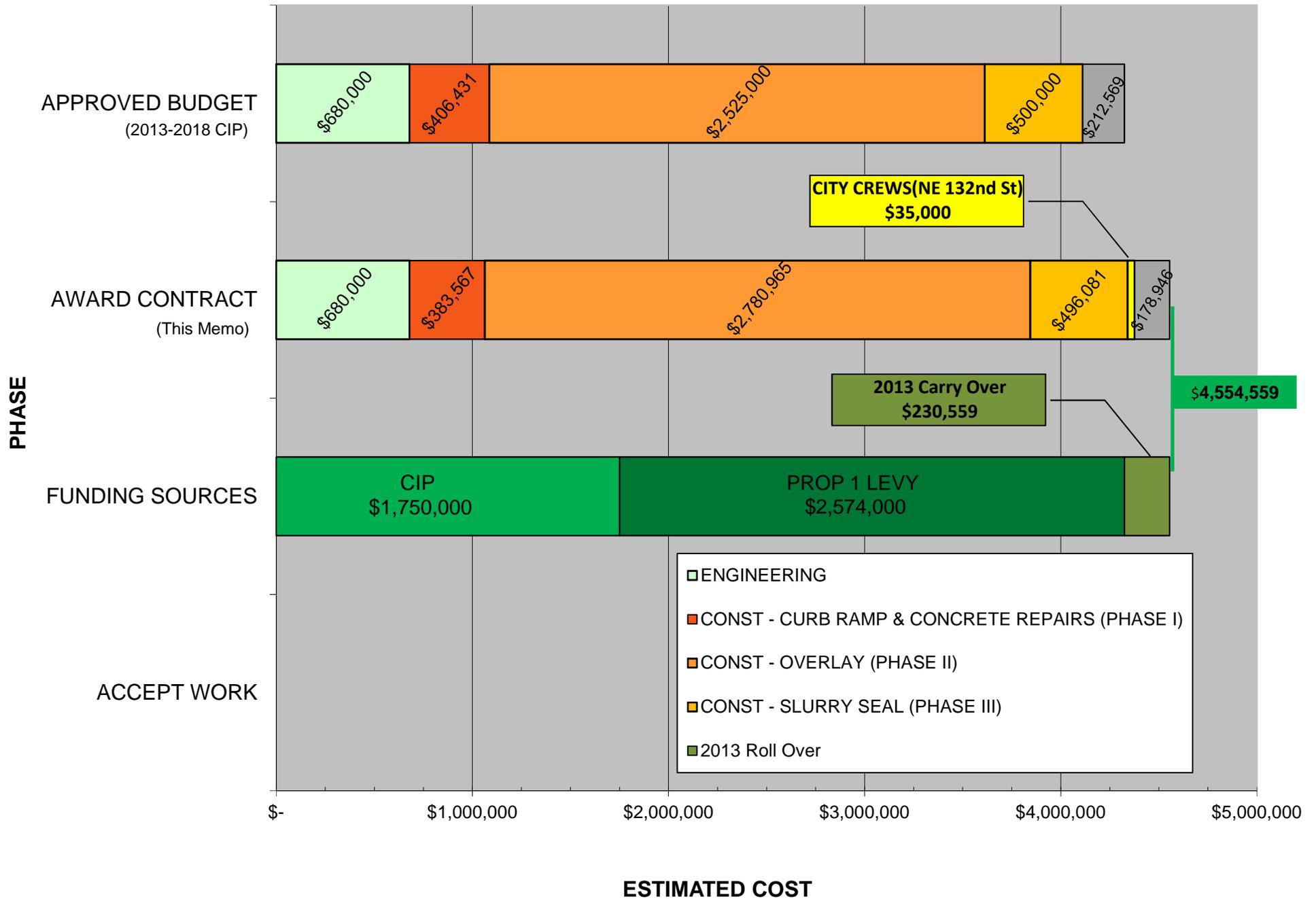
Please contact George Minassian 425.587.3829 or gminassian@kirklandwa.gov for more specific

Kirkland Slurry Seal Project Cost Comparison



**Project Budget Report
2014 Slurry Seal Project
(ST-1406)**

Attachment C



HOW IT AFFECTS YOU

Find out if your street is on the list and what you need to do to prepare for slurry seal. **Page 4 & 5**

Attachment D

TO LEARN MORE, VISIT
[kirklandwa.gov/
streetpreservation](http://kirklandwa.gov/streetpreservation)

CAPITAL PROJECTS



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



Kirkland Streets Engineer George Minassian draws the lifecycle curve of the typical neighborhood street while inspecting Eighth Avenue West. Minassian says the typical street will last 20 years before traffic, time and weather wear alligator cracks and potholes in the street's surface. Kirkland uses an asphalt armor, however, to extend by eight years, the lives of Kirkland's neighborhood roads.

the street **SAVER**

Kirkland is protecting 29 lane miles of residential roads in 2014 with a layer of asphalt armor, called slurry seal

Sure, the cracks are shallow. But they creep down the middle of First Street like a spider's web—their voids strangling tiny islands of pavement.

"These are alligator cracks," says

George Minassian, the City of Kirkland's streets engineer. "They're caused by inadequate subsurface drainage."

Minassian deduced this by the cracks' location and with a rare understanding of pavement, which he developed while earning a Ph.D. from the University of Alaska in pavement materials.

"The cracks are in the middle of the

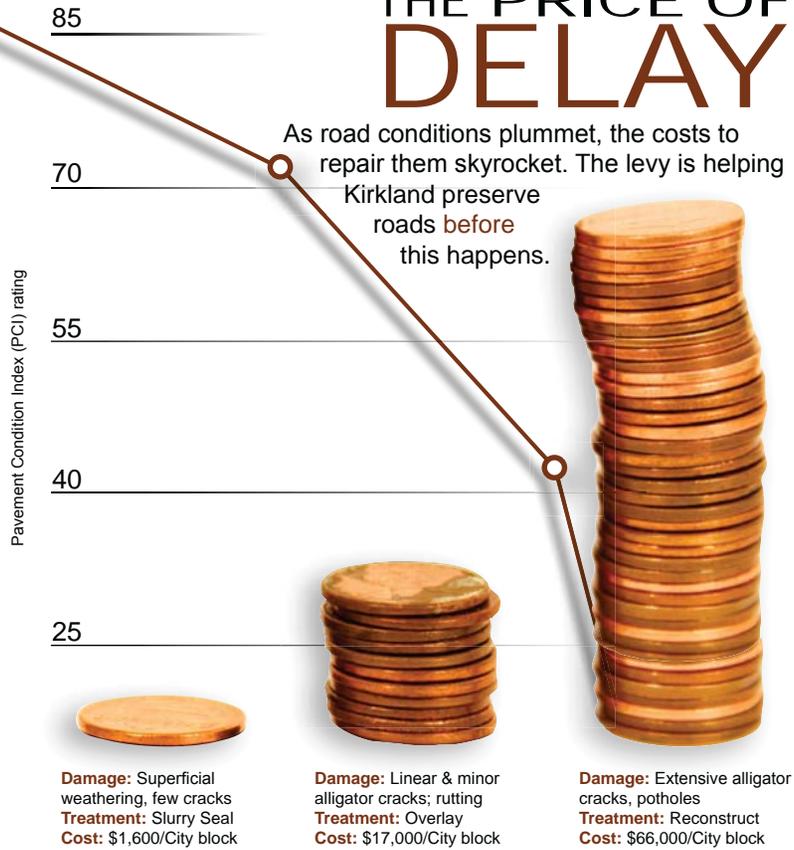
TO LEARN MORE

■ Contact George Minassian, streets engineer: 587-3829; gminassian@kirklandwa.gov

■ Or Christian Knight, outreach: 587-3831; cknight@kirklandwa.gov

THE PRICE OF DELAY

As road conditions plummet, the costs to repair them skyrocket. The levy is helping Kirkland preserve roads **before** this happens.



road," he says. "So you know they're not caused by traffic loading."

The cracks offer one more clue:

"They slope toward the center," he says. "That means the subgrade, the soil beneath, is settling a little, probably due to poor subsurface drainage."

Minassian follows the alligator cracks south, toward Central Way, where three more webs of alligator cracks creep toward the steep hill's precipice.

With enough time, traffic and neglect, these webs of alligator cracks will erode into archipelagos of

potholes that undermine the road's basic structure. Of course Kirkland's street maintenance crews would patch them—within 24 hours of their discovery.

That's about all they could do. By that point, the only long-term solution available to First Street would be reconstruction—at a cost of \$66,000 per block. These high costs are what have made reconstruction a once-in-a-decade solution in Kirkland—a solution to which the City resorted in 2013 for 341 linear feet of 97th Avenue Northeast, from Juanita Drive to 119th Way.

What Kirkland residents said about Slurry Seal

City staff asked focus group participants in November 2013 for their thoughts on Slurry Seal. Here's what they said:

“Best ever. Awesome. Love it. They came, they did it. It's terrific. If someone is going to fix my street, this is awesome. I love this!”
—Mark, *Bridle Trails*
Received Slurry Seal in 2012

“They brush it with a brush truck a half-dozen times. It took several months to clean up that aggregate. Now it's smoothed out. It's been nine months. It's still rough.”
—Grant, *Kingsgate*
Received Slurry Seal in 2012

“I thought it would be like oil. A dusty, dirty, country road. That's what I was envisioning. And then of course it hardened and appeared to be like asphalt.”
—Frank, *North Rose Hill*
Received Slurry Seal in 2012

“I remember reading that a couple weeks after they were done they would come back and clean stuff up. There was some stuff on the road and loose areas. But I thought it was fine.”
—Lynda, *Finn Hill*
Received Slurry Seal in 2013

“My kids bike up and down the road. It's not as comfortable now.”
—Mary Ann, *Bridle Trails*
Received Slurry Seal in 2012

“I thought it would be a pain ... because of parking—having to park a block away. It was just inconvenient. After I saw it, though, it was worth it.”
—Diane, *Bridle Trails*
Received Slurry Seal in 2012

The solution

Fortunately, Kirkland's residents increased the power of a third option for First Street and the 450 lane miles of residential and collector streets like it, when they approved the 2012 Streets Levy. That \$3 million-annual levy is already doubling the lane miles of neighborhood and collector roads Kirkland can preserve.

This summer, Kirkland will treat 29 lane miles on 70 sections of neighborhood and collector roads in the Market, Norkirk, Bridle Trails and South Rose Hill neighborhoods. First Street is one of those roads. And the substance the City of Kirkland will use to preserve them is Slurry Seal, a mixture of

“Slurry seal ... is only a preservation method.”

—George Minassian, Ph.D.
Kirkland's streets engineer

emulsified liquid asphalt—an oil-like substance—mixed with tiny pieces of gravel, which Minassian calls “aggregates.” When it dries, Slurry Seal acts like sunscreen for these lightly trafficked roads—sealing out weather and moisture—thereby extending the life of the road by five to 10 years. And it does this at a rough cost of \$1,600 per city block.

The constraints

Like any solution, however, Slurry Seal comes with a catch. Actually, a few of them:

“Slurry seal isn't structural,” Minassian says. “It is only a preservation method.”

This means it's not suitable for Kirkland's more-trafficked roads, such as Northeast 85th Street, which accommodates more than 40,000 vehicles every day. For those arterials, Kirkland uses a process called “overlay,” which replaces two- to five inches of the street surface with an entirely new surface, at an estimated cost of \$17,000 per block—nearly \$50,000 less expensive than reconstruction.

Slurry seal's role as a preservation method also



Kirkland's contractor will finish by September the slurry seal process on streets highlighted in orange.

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.



PHASE 1

City crews repair small areas of damaged pavement. Residents prune their vegetation—especially low-growing vegetation—to create 14 feet of vertical clearance near the right-of-way so work crews can apply the slurry seal up to the curb. Roads remain open.



PHASE 2

As the application date nears, work crews sweep pavement surfaces and remove any vegetation that infringes into the right-of-way. Crews make final repairs to pavement surface. Roads remain open to traffic with possible, temporary delays.



PHASE 3

Work crews notify residents at least one day prior to slurry seal's application. Residents remove all motorized vehicles, and personal items from the road. Residents don't water their lawns or wash their cars. Work crews apply slurry seal to the street. The road is closed for one day.



PHASE 4

After application, the slurry seal is brown and sticky. To prevent damage to the street's treated surface, residents keep motor vehicles, bikes, pets and themselves off the street until the slurry seal has cured and the City of Kirkland has re-opened the street.



PHASE 5

The new road surface has more friction and sheds some of the finer aggregate, creating a sandy surface. Work crews usually sweep the streets twice—approximately one week after application and then again three weeks after application.

ALTERNATIVE FORMATS

In compliance with Title VI, all information on this process can be made available in alternative formats, including language interpretation and American Sign Language upon request, by calling (425) 587-3831 or TTY/TTD (425) 587-3111.

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 appear in the slurry seal as well," Minassian says. "And all that moisture will continue to infiltrate it."

Unless, of course, Kirkland's street maintenance crews patch the cracks, which requires workers to tear out the damaged pavement and the gravel bed beneath it and build it back up to the road.

\$66 K

The estimated costs for reconstructing a road from the subgrade to the surface.

"Too many patches is expensive," Minassian explains. "Eventually, it becomes more cost-effective and more effective in general to just overlay it."

With a few more years of traffic and weather, First Street would likely degrade beyond slurry seal's capacity to preserve it. At that point, it would become one of Kirkland's residential and collector roads that are in too poor condition for slurry seal and not traveled enough to warrant the more expensive options of overlay or reconstruction.

Minassian'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. And, thanks to the 2012 streets levy, Minassian has enough funding to treat about 30 lane miles of these roads every year. That's more than double the lane mileage Kirkland was able to treat before residents approved the streets levy.

The selection process
To determine which roads are most urgent, Minassian relies on three data sources—two of them are human-generated. The third is computer-generated.

Every four years, a team of pavement specialists



A toddler pushes his balance bike up Northeast 61st Street, shortly after the City of Kirkland treated it in 2012 with slurry seal.

walks along randomly selected sections of every road in Kirkland, counting the number and types of distresses in the surface—rutting, raveling, swelling, slip-page cracking, transverse cracking, and, yes, alligator cracking.

"Some distresses are more problematic than others," Minassian 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

<p>SLURRY SEAL</p> <p>Good for: Neighborhoods Cost per city block \$1,600 Requires: ~70 PCI</p>	<p>OVERLAY</p> <p>Good for: Arterials Cost per city block: \$17,000 Requires: <60 PCI</p>

Kirkland Streets Engineer George Minassian draws the lifecycle curve of the typical neighborhood street while inspecting Eighth Avenue West. Minassian says the typical street will last 20 years before traffic, time and weather wear alligator cracks and potholes in the street's surface. Kirkland uses an asphalt armor, however, to extend by eight years, the lives of Kirkland's neighborhood roads.

effective, the street should generally score above 70, Minassian says. The Pavement Condition Index score of First Street, for example, is 81—seven points higher than the average score for all of Kirkland's 450 lane miles of residential and collector roads.

Minassian, then, enters these scores into the City's pavement 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. On First Street, for example, the software recommends slurry seal in 2014, crack sealing in 2018 and another coat of slurry seal in the year 2022.

Minassian's task is to find a concentration of 30 or so lane miles of neighborhood and collector roads in urgent need of the treatment. This year, he found those concentrations in the Market and Norkirk

neighborhoods, as well as the Bridle Trails and South Rose Hill neighborhoods.

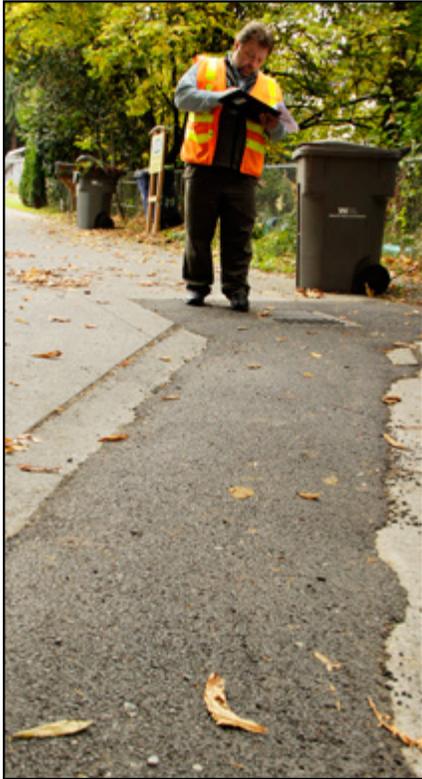
The software's recommendations, however, are based on surveys of randomly selected sections of each street. Minassian suspects the section Kirkland's consultant randomly selected on First Street was not the section with the creeping webs of alligator cracks.

"For First Street, a PCI [Pavement Condition Index score] of 81 seems high," says Minassian. "If they analyzed the section that we were looking at, with the alligator cracking, the score would probably be a lot lower, like 60. That's why I have to visit each road."

Last fall, Minassian visited each of the 70-plus

70

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



George Minassian inspects a section of 21st Place with a utility patch to determine whether it is suitable for slurry seal.

sections of roads recommended by the software and cleared by local and regional utilities for slurry seal treatment in 2014. The purpose of each visit: To cross-check the software’s recommendations.

October 29 was the day Minassian walked along First Street. Near its intersection with 18th Avenue, he encountered a section of road the software suggested might have degraded beyond slurry seal’s capacity to preserve it.

“It says 59,” Minassian said then. “But I don’t know why. Maybe it’s because of this patch.”

Minassian points to a smooth, rectangular utility patch sprawling across 30 percent of the road’s width. He then peers over at 18th Avenue.

“You look at that street and it has a score of 76,” he says. “This one has 59. What is the difference?”

Minassian adds that section of First Street to his list.

At First Street and 20th Avenue, he notices a 10-foot-long bulging crack crawling from the street’s edge toward its center like a mole path.

“This one is probably root intrusion,” he says matter-of-factly. “There probably used to be a tree here. It’s not a big deal. The streets crew will remove it.”

And so he goes: street by street, section by section, until he has cross-checked every one. When he’s done later in the fall, he’ll have removed six street sections from the list provided by the computer software. ◀



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WE’RE SAVING THE STREETS

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

