Council Meeting: 05/04/2010
Agenda: Unfinished Business
Item #: 10. b.


**CITY OF KIRKLAND**
**Department of Public Works**
**123 Fifth Avenue, Kirkland, WA 98033 425.587.3800**
**www.ci.kirkland.wa.us**


**MEMORANDUM**

**To:** Marilynne Beard, Interim City Manager

**From:** Ray Steiger, P.E., Interim Public Works Director
David Snider, P.E., Interim Capital Projects Manager

**Date:** April 22, 2010

**Subject:** ANNUAL SIDEWALK MAINTENANCE PROGRAM

RECOMMENDATION:

It is recommended that City Council review the following summary of the City's Annual Sidewalk Maintenance Program.

BACKGROUND DISCUSSION:

The Public Works Department maintains of over 200 miles of sidewalk within the City (Attachment A) using two available funding sources – the Street Operating Fund and the Capital Improvement Program (CIP). The Street Operating Fund has been the longstanding means by which most repairs are performed; however, in 2006, Council established the *Annual Sidewalk Maintenance Program* in the CIP to fund larger-scale sidewalk replacement projects.

A number of factors cause sidewalk damage. The primary cause is from tree roots pushing up on concrete sidewalk panels which cause "offsets" between adjacent panels. Other causes are heavy vehicles, improper installations, and the heaving or consolidation of soils beneath sidewalks due to groundwater or leaking yard drain lines which lead to differential settlement; however, tree roots are the highest contributor to sidewalk damage throughout the City.

Root Caused Damage

Yard Drain Damage

Depending on the nature and severity of the damage, different repair methods are employed. Because the City's policy is to protect trees, major emphasis is placed on maintaining sidewalks in ways that, to the largest extent possible, do no harm to the trees. This often includes root pruning under the direction of a certified arborist to preserve the tree root structure, protect the tree itself, and prolong the life expectancy of the replaced walking surface; tree removal is a last resort.

Grinding

Maintenance strategies that are routinely employed include: mechanical grinding of offsets that are between ½ and 1-inch, the use of asphalt (Easy Street® or other similar patching products) to "wedge" offsets greater than 1-inch, or removing concrete panels and replacing them with either asphalt or more concrete, as appropriate, to reestablish the walking surface.

Asphalt Wedge

Before (Tree Root Damage)

After

In 2006, the City added another tool for sidewalk maintenance with the use of rubber sidewalk panels. This work was performed in the Lakeview Neighborhood, and four years later the results continue to be favorable.

Rubber Sidewalk
Lakeview Neighborhood

Prior to 2006, larger scale sidewalk maintenance was included as a part of the Annual Street Preservation Program Project. Approximately $200,000 of Street Preservation money was being spent annually on repairing damaged sidewalks immediately adjacent to the pavement repair. This reduced the amount of street pavement preservation that the City was able to accomplish. As a result, based on staff's recommendation, Council determined that such repairs were more appropriately funded as a separate annual maintenance project in the CIP and established the Annual Sidewalk Repair Program.

*Street Operating Fund*

In 2004, a walking survey was performed on all sidewalks within the City. This was the third such inventory performed; two prior surveys were completed in 1991 and 1995. The 2004 survey however, was the first one that had the advantage of the City's GIS capabilities. That survey inventoried, documented, and mapped all cracks and offsets by using symbols, marks, and notations on aerial

photos (Attachment B). Using the results of the survey, the City's Street Division crews have systematically repaired all of the identified offsets and patched all major cracks spending approximately 1,200 hours between 2004 and 2009. In total, street crews repaired approximately 700 lineal feet of offsets at a cost of approximately $100,000 in labor, equipment, and materials. Since the beginning of this year, the crews have logged more than 90 hours with the grinding machine responding to the reports of new offsets.

As part of the Street Division's annual work plan, City crews also walk the Central Business District twice a year – once in the spring and again in the fall prior to the holiday season to make sure the downtown area is as free of potential trip hazards as possible.

*Capital Improvement Program*

Between 2006 and 2008, the Annual Sidewalk Maintenance Program allowed for the removal and replacement of approximately 1,300 square yards of sidewalk and driveway apron that were in disrepair (Figure 1). For 2009 and 2010, a portion of the Annual Program is being used to replace damaged sections of sidewalk along the high pedestrian activity area of Park Lane using more than 300 square yards of the new product called Terrewalk®. This is the second generation of rubber sidewalk and is made of recycled rubber and plastic. It is promoted as being more durable, attractive, and economical than the first generation rubber sidewalks.

In addition to addressing immediate defects, repairs to Park Lane fit into the long term vision for the street which is to reconstruct the entire corridor between Lake Street and the new Transit Center at 3rd Street. This vision was established by a two-year process that started in 2008 and concluded with Council's adoption of the "festival street" concept in February, 2010. The repairs being made at this time address the immediate need to minimize trip hazards in an area of heavy foot traffic as staff continues the process to reach the best long-term funding solution for dealing with the existing mature trees that now line Park Lane. As funding becomes available for the long-term solution, the Terrewalk® panels can be removed and re-used elsewhere in the City.

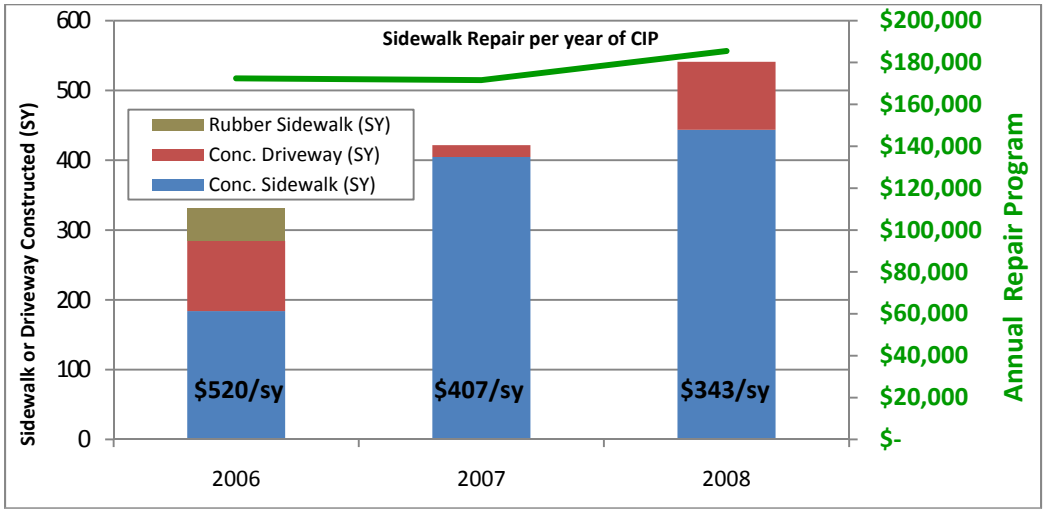


**Figure 1**

Park Lane maintenance activities command a significant portion of existing maintenance funding over the next two years, however the repairs are consistent with the prioritization process used throughout the City; this location is currently highest on the City's list of areas to address.

*Prioritization*

Because of the extensive sidewalk network that the City is responsible for, limited funding, and the continued degradation of this infrastructure, a systematic approach to prioritizing repairs is imperative. During the development of the City's Active Transportation Plan (ATP) in 2009, an analysis and characterization was made of likely pedestrian traffic generators. Schools, transit routes, parks and commercial areas were deemed to be those facilities most likely to experience high pedestrian use. As indicated in Table 10 from the ATP, various destinations have various relative weighting (priority). The Table distinguishes how walking facilities are prioritized in relation to their proximity to destinations; facilities near schools for example, receive a higher relative priority if 1/8 mile or closer (1.25) than those between 1/4 mile and 1/8 mile (1.00).

**Table 10 Relative weighting between and within destination types**

| *Destination* | *Relative weighting within destination by type* | | | | *Total % weighting for destination* |
|---|---|---|---|---|---|
| *Schools* | One school | | Shared campus | | 30% |
| | ⅛ mile or closer | between ¼ and ⅛mile | ⅛ mile or closer | between ¼ and ⅛mile | |
| | 1.25 | 1.00 | 1.30 | 1.10 | |
| *Transit* | Peak hour | | All-day | | 20% |
| | ⅛ mile or closer | Between ¼ and ⅛mile | ⅛ mile or closer | Between ¼ and ⅛mile | |
| | 0.95 | 0.75 | 1.25 | 1.00 | |
| *Parks and Commercial areas (counted separately)* | ⅛ mile or closer | Between ¼ and ⅛mile | Not used, only one type | | Parks 30% |
| | 1.25 | 1.00 | | | Commercial areas 20% |

(Source: 2009 Active Transportation Plan)

As all locations throughout the City are mapped, based on their ATP rating, it becomes evident where the greatest number of pedestrians will be and will anticipate good walking facilities (Attachment C).

Utilizing the destination rating process in combination with known defects allows staff to prioritize maintenance activities. A combination of the defect survey(s) and pedestrian destinations from the

ATP provides an excellent visual representation of where and why programs may focus maintenance efforts in certain areas of town over others (Attachment E).

*Summary*

The City utilizes an active and ongoing sidewalk maintenance program on two fronts – through the annual Street Operating Fund and the CIP. The number of sidewalks throughout the City combined with the significant number of trees in our urban forest (Kirkland has qualified as a Tree City USA for eight years running) requires the City's Public Works Department to continually prioritize maintenance efforts.

The greatest emphasis on routine maintenance continues to be in the Central Business District due to its concentration of pedestrian foot traffic. Maintenance will also continue to be done concurrent with street preservation projects in order to minimize neighborhood disruption. However, considerable efforts are expended throughout the City responding to individual citizen calls and/or field observations as resources are available. This responsiveness and flexibility are often acknowledged through letters and feedback from residents which are especially nice to receive confirming that Staff and the City's programs are able to make a positive difference in someone's daily routine.

Likely there will continue to be areas to repair throughout the City, sidewalks continue to age and the tree canopy continues to be increased, but this approach to prioritization along with modifications to tree planting standards reduces the City's overall exposure to claims while at the same time strives to provide defect free facilities for the greatest number of pedestrians.

Attachments: (6)

# City of Kirkland - Sidewalk Network

Vicinity Map

0 6,900 13,800 20,700
Feet

**Legend**

- Sidewalk Complete Both Sides
- Sidewalk Complete One Side
- Sidewalk Not Complete
- Parks
- Schools
- Tax Parcels

Note: Data last updated in February 2009.

0 930 1,860 2,790
Feet

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# City of Kirkland - 2004 Sidewalk Defect Inventory

Vicinity Map

0 6,900 13,800 20,700
Feet

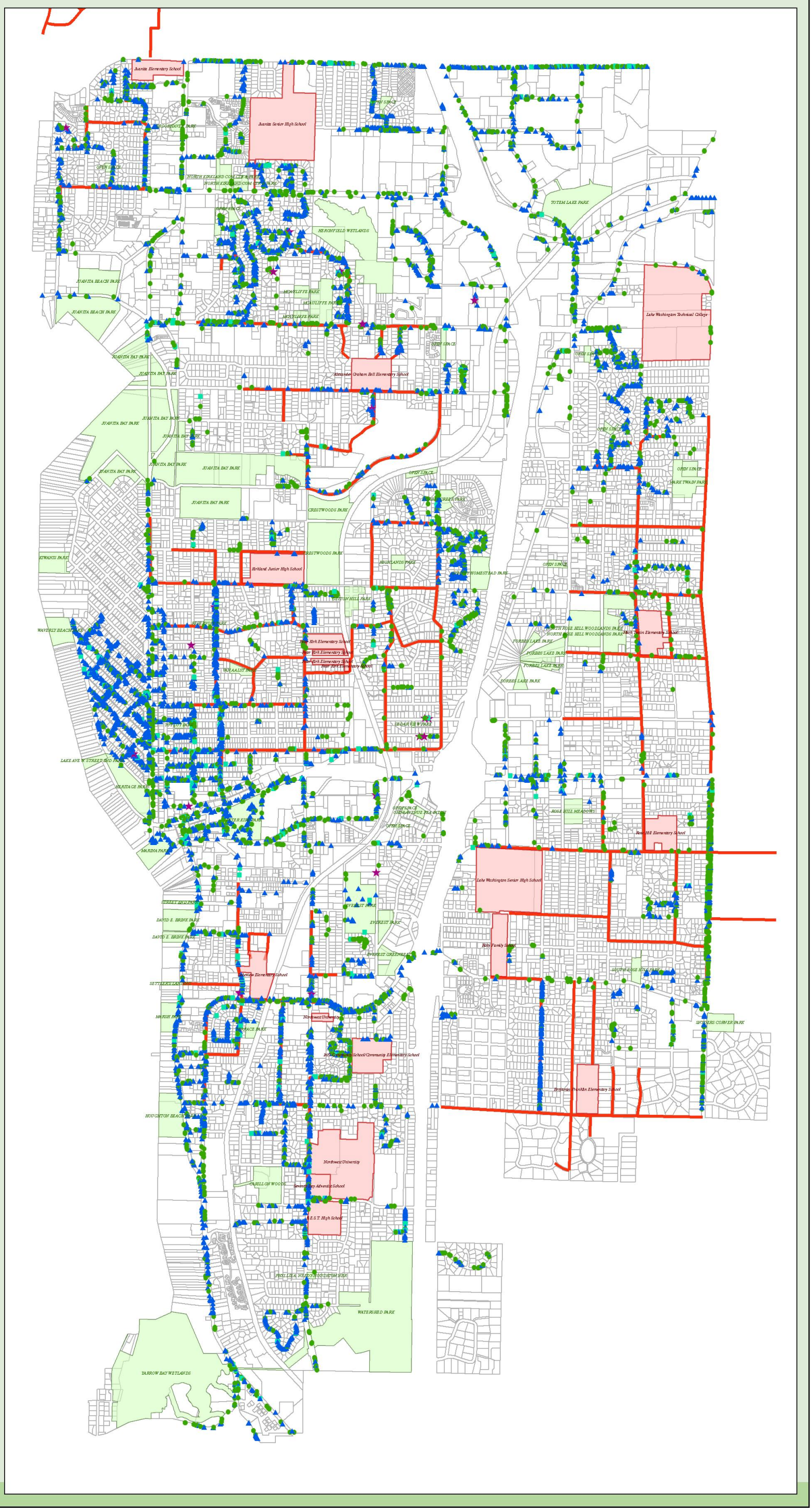
**Legend**

**2004 Sidewalk Survey**

- Crack
- Mixed Defect
- Offset
- Obstacle
- Parks
- Schools
- School Walk Routes
- Tax Parcels

Note: Sidewalk Defects noted are based on a survey performed in 2004.

0 7,400 14,800 22,200
Feet

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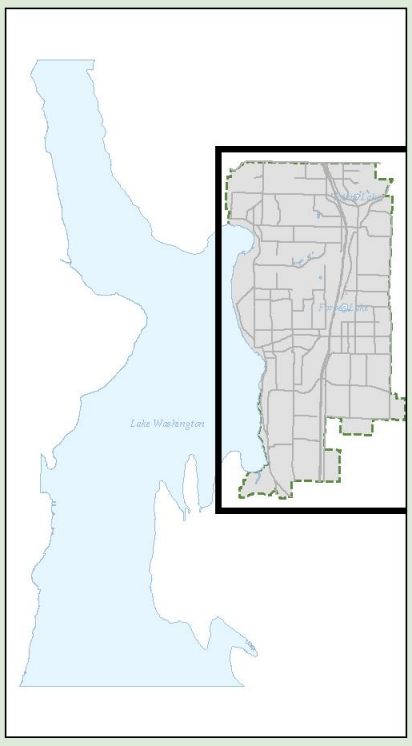
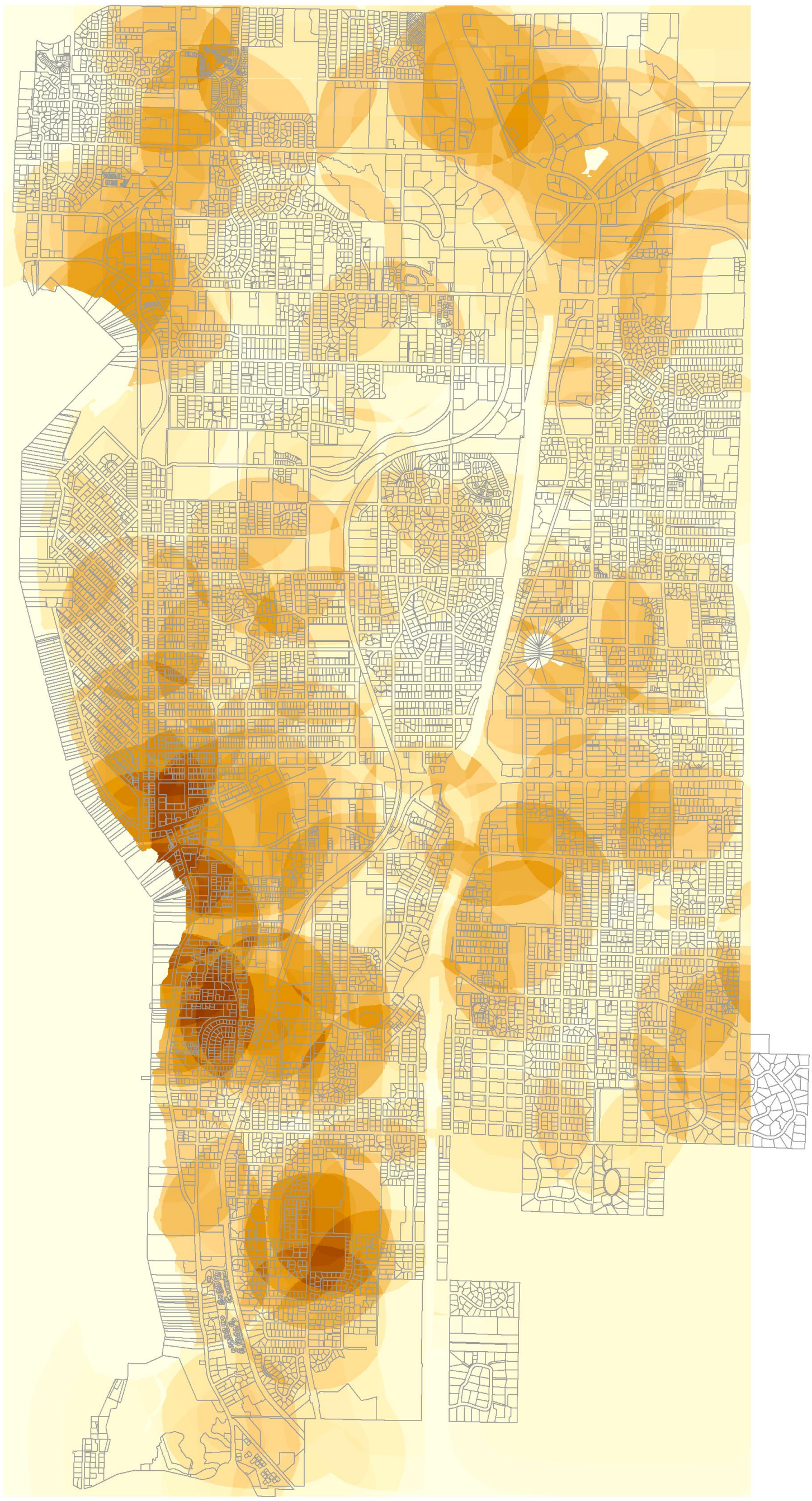
# City of Kirkland - Pedestrian Access Scores




Vicinity Map

0 6,900 13,800 20,700
Feet



**Legend**

**Pedestrian Access Scores**

*(from 2009 Active Transportation Plan )*

Areas least likely to have pedestrians

Areas most likely to have pedestians

Tax Parcels

0 7,500 15,000 22,500
Feet

CITY OF KIRKLAND WASHINGTON

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# City of Kirkland - Claim History

## Vicinity Map

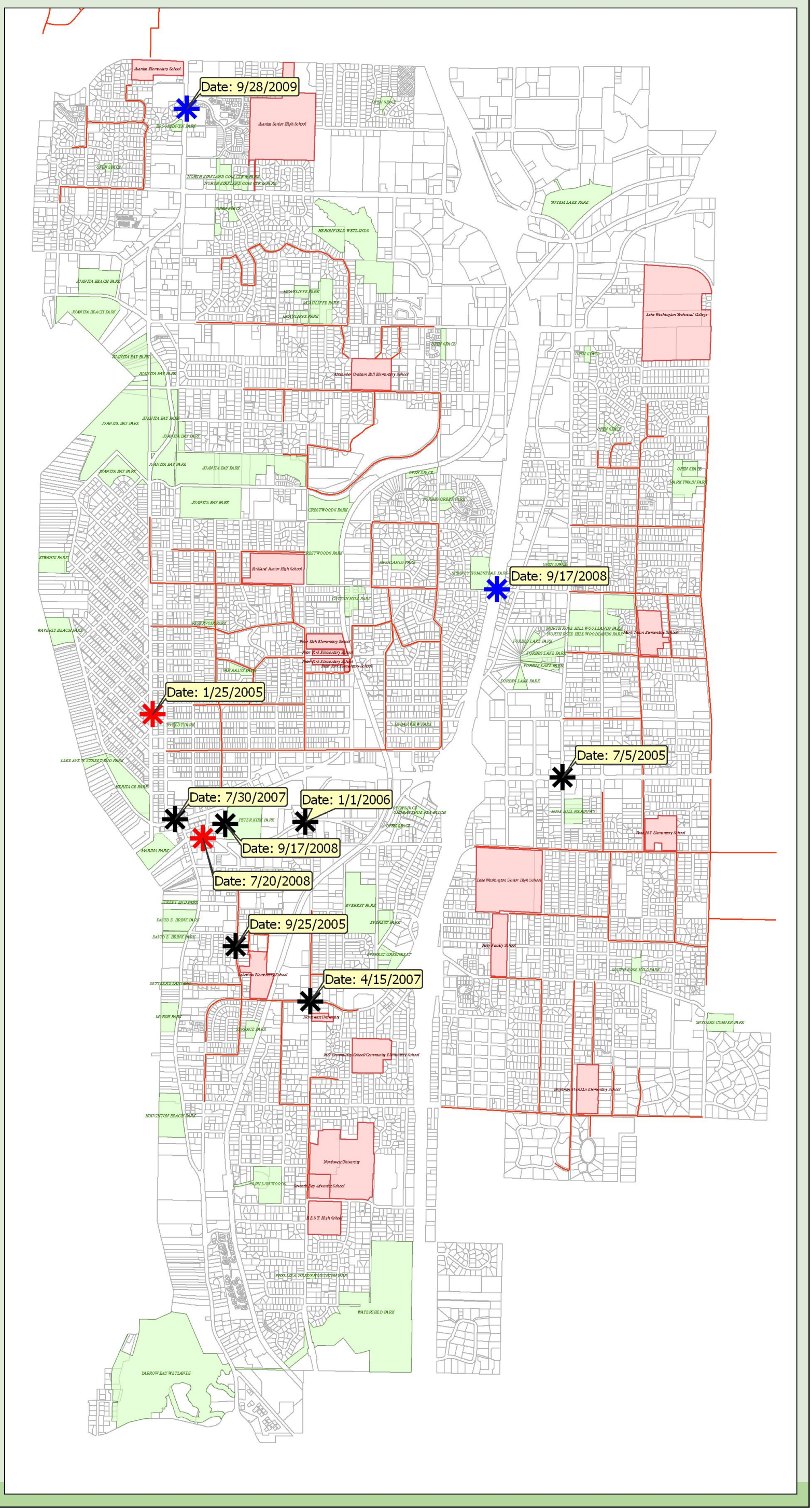
0 6,900 13,800 20,700
Feet

**Legend**

**Trip & Fall Claims Since 2005**

- Not Settled
- Denied
- Paid
- Parks
- Schools
- School Walk Routes
- Tax Parcels

0 930 1,860 2,790
Feet

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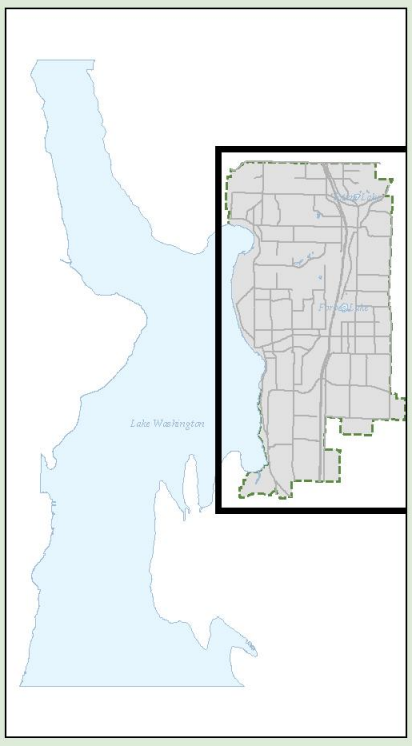
# City of Kirkland - Sidewalk Maintenance Combined Map




## Vicinity Map

0 6,900 13,800 20,700
Feet

**Legend**

**TripFallClaims**

Trip & Fall Claims Since 2005

- Not Settled
- Denied
- Paid

**2004 Sidewalk Survey**

- Crack
- Mixed Defect
- Offset
- Obstacle

**Pedestrian Access Scores**

*(from 2009 Active Transportation Plan )*

- Areas least likely to have pedestrians
- Areas most likely to have pedestians
- Parks
- Schools
- Tax Parcels

Note: Sidewalk Defects noted are based on a survey performed in 2004.

0 930 1,860 2,790
Feet

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April 7, 2009

Kirkland Public Works,

Your work, I'm sure, often goes unnoticed.

Feb. 13, 2009 I was walking along Points Drive on my way to Kirkland. The next thing I knew I had stumbled on the sidewalk and screwed my nose into the pavement. Bumped my knee & bruised my dignity.

When I finally got my nerve up to walk to Kirkland imagine my surprise to see the offending sidewalk had been ground down, no longer tempting people to trip + fall.

Thank you from the tip of my nose to my careless toes. Good job!

Sincerely, Judie

## Mark Berntsen

**From:** Jim Dare
**Sent:** Tuesday, July 08, 2008 3:06 PM
**To:** Mark Berntsen
**Cc:** John Hopfauf
**Subject:** RE: 132nd Sidewalks

Mark, Sarah called back. She called the change "amazing." She said she's been using it, says her wheelchair feels very stable and she feels really safe on it. She's totally impressed and pleased by what you guys were able to do out there. I honestly didn't think we would be able to completely meet her needs, but she was thrilled. Outstanding job, sir! I really appreciate you and Wendy investing the time in this.

- Jim