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MEMORANDUM

To: Planning Commission

From: David Godfrey P.E., Transportation Engineering Manager

Date: December 29, 2008

Subject: Revision of the Non-Motorized Transportation Plan

A report on the update of the Non-Motorized Transportation Plan is scheduled for your January 8 meeting. The Transportation Commission is guiding this work and a draft plan has been developed. Your packet contains the draft and also a summary that is intended for use with public outreach. This summary highlights the points that people seem to be most interested in. Staff is planning to make a brief presentation at your meeting and then answer any questions and note any comments you might have. A member of the Transportation Commission is also planning to attend.

The Transportation Commission is interested in any comments you might have, but in particular on the Plan Goals (beginning on page 5 of the draft) and on Section 5 which discusses the prioritization of construction of sidewalk projects. The Plan proposes replacing the system currently being used with a revised system as described in the plan.

During January the draft plan will be reviewed with the Park Board, the Houghton Community Council and the City Council. Other public comment opportunities are also being planned for January. A final draft is planned for February with adoption by the City Council in March.



CITY OF KIRKLAND

MORE PEOPLE, MORE PLACES, MORE OFTEN

A PLAN FOR ACTIVE TRANSPORTATION

Draft II December 29, 2008



Cyclists • Pedestrians • Equestrians

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PREFACE

ACKNOWLEDGEMENTS

Add Acknowledgement statement here

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EXECUTIVE SUMMARY

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BACKGROUND/HISTORY

The City of Kirkland is committed to improving the ease and safety with which people can bicycle and walk. At the policy level, this commitment is reflected in our first-in-Washington-State complete streets ordinance and in the policies of our Comprehensive Plan. In a more practical sense, it is reflected in Kirkland's innovative Pedestrian Flag program and at in-pavement light installations at crosswalks. The Senior Stepper Program encourages scores of older Kirklanders to walk for recreation and transportation. Crosswalk stings are an example of the Police Department's commitment to enforcing laws that protect pedestrians. Kirkland's lakefront is known regionally as a perfect place to stroll or cycle.

As more people realize the health benefits of incorporating regular exercise into their everyday lives, walking and bicycling are increasing. Sensitivity to the negative effects of reliance on petroleum based transportation is also increasing the number of those choosing to walk and bike. Transit usage is increasing sharply in Kirkland and every transit trip begins and ends with a walking trip. With bicycle racks on every bus more people are discovering the freedom provided by combining a bicycle trip with a transit trip.



Figure 1. At one time there were no sidewalks on Market Street.

walkers do not feel comfortable crossing streets.

As Kirkland's land use plans become reality, there is less room for cars. Constructing wider streets to better accommodate cars is expensive and make neighborhoods less livable. This means that walking and biking will become more important forms of transportation and the facilities needed to accommodate them will also grow in importance.

This plan is titled Active Transportation Plan rather than Non-motorized Transportation Plan in order to affirm bicycling, walking and equestrian travel rather than to describe what it is not.

Kirkland is recognized as a regional and national leader in active transportation, but there is still much to be done to improve both cycling and walking. Primarily, there are key missing links in both the sidewalk and on-street bike networks. In addition, there are important programmatic needs such as improved bicycle parking and wayfinding. Too many sidewalks are obstructed with tree branches and too many

Guidance from the Comprehensive Plan

“Policy T-2.5: Maintain a detailed Nonmotorized Transportation Plan (NMTP).”

The NMTP is a functional plan that provides a detailed examination of the existing pedestrian, bicycle, and equestrian systems, criteria for prioritizing improvement, and suggested improvements. The NMTP designates specific City rights-of-way and corridors for improved pedestrian, bicycle and equestrian circulation, and sets design standards for non-motorized facilities”

Active Transportation Plan Draft

When Peter Kirk founded Kirkland, automobiles were the expensive, difficult to maintain toys of the rich. Because of poor roads, bicycle use was limited. Railroads, horses, feet and ferries provided mobility in Kirkland at that time. With the introduction of the Model T, auto ownership began to climb. After World War II, transportation in Kirkland, like the rest of the nation became dominated by cars.

Kirkland’s first non-motorized Plan was developed in 1996, and it was a ground breaking document because it answered the need for a comprehensive approach to active transportation for the first time and its development was supported by an unprecedented amount of community interaction. The plan was updated in 2001 largely keeping the 1996 structure but updating goals, project lists and maps. Today, the ability to safely and easily walk and bike in Kirkland is an important issue for its citizens. In fact, when citizens are asked what their most important concerns are, pedestrian safety is often at or near the top of the list.

In 2000 the City Council authorized an exploratory committee to test support for a bond measure to build sidewalks. Although it was ultimately decided not to pursue securing voter approval for a bond, the process resulted in identification of key school walk route projects which have subsequently been completed.

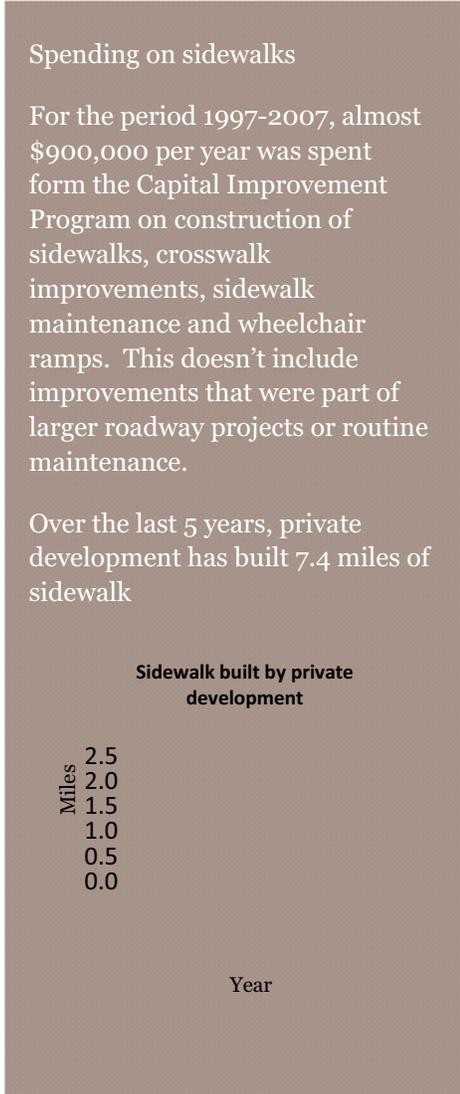
At City Council direction, in 2003 The Transportation Commission undertook a review of all marked, uncontrolled¹ crosswalks in Kirkland. This analysis resulted in a series of recommendations, most of which have been completed.

Each year City funded construction projects in the Capital Improvement Program build sidewalk. This includes not only specific sidewalk projects but also curb ramps (compliant with current standards for those with disabilities) built as a part of street overlays, crosswalk improvements and sidewalk constructed as a part of larger roadway projects.

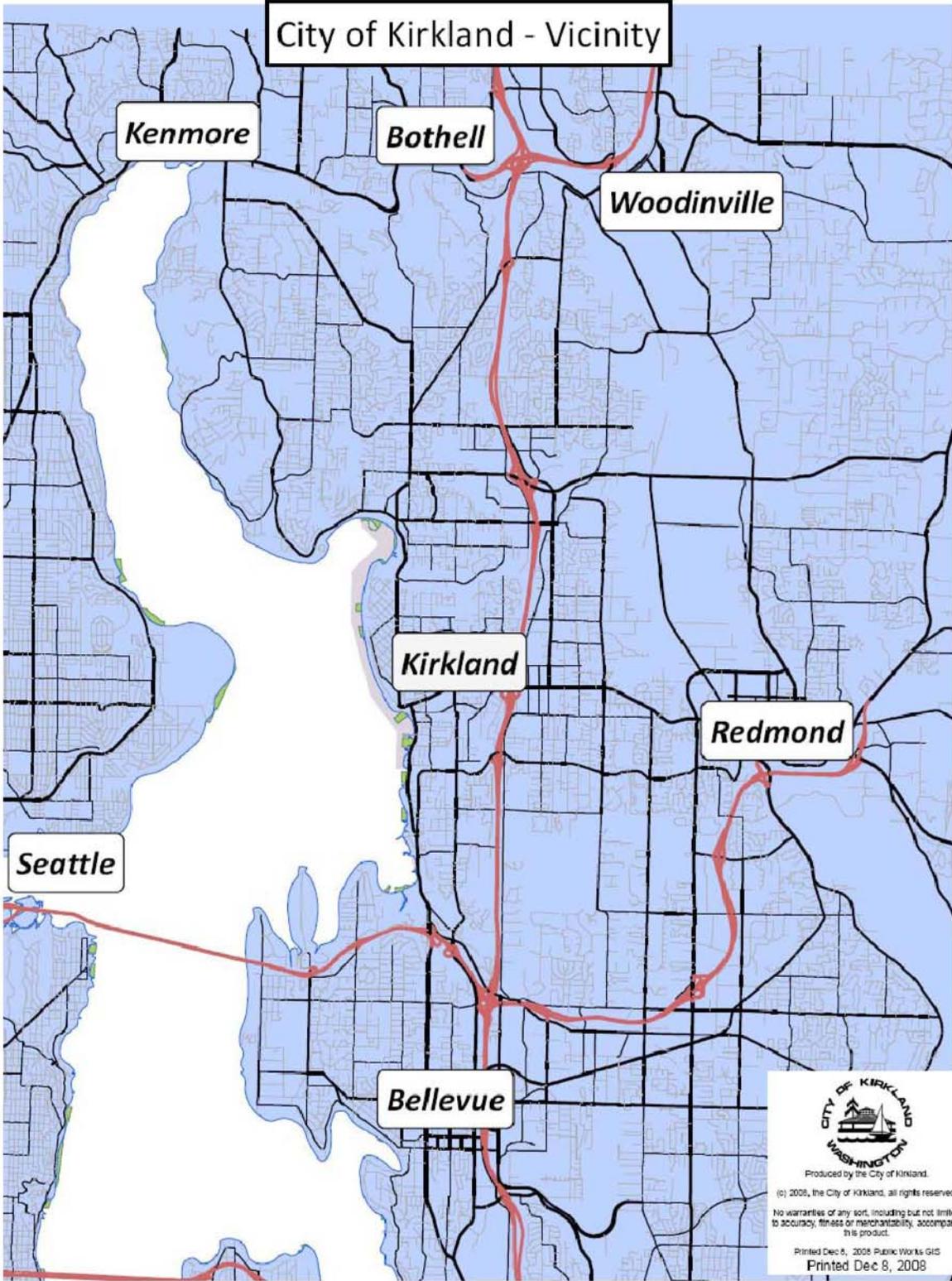
Private developments are required to build frontage improvements that include sidewalk, although this has not always been the case; this subject is covered in more detail on Page 55.

Bicycle lanes are also created by construction of public and privately funded projects. Most of Kirkland’s bicycle facilities have been created by restriping existing roadways to more equitably allocate space between cars and bicycles. Bicycle parking is provided by new developments that require more than six car parking stalls.

¹ Uncontrolled crosswalks are those where vehicles are not required to stop unless pedestrians are present.



Map 1 Kirkland and surrounding cities



The City of Kirkland has worked with various groups to promote the interests of walkers and cyclists. The Washington Traffic Safety Commission (WTSC) has supported Kirkland’s pedestrian safety efforts. The Commission helped to fund for the initial in-pavement light installations and

grants from the WTSC have supported the pedestrian flag program and police emphasis on crosswalk enforcement. Parent-Teacher groups have donated many hours working with City staff to improve conditions for children who walk to school. The Cascade Bicycle Club was an inspiring force behind adoption of Kirkland's complete street ordinance .

PURPOSE

"A non-motorized transportation plan" is required by the City's Comprehensive Plan and the Plan describes its basic purposes. They are: examining existing facilities, establishing criteria for prioritizing improvements and setting design standards.

This plan covers the current boundaries of the City of Kirkland (Map 1). It focuses mainly on transportation by foot or by bicycle and there is also a section covering equestrian issues.

Past plans have been used primarily as a source for determining routes that should be given priority for construction of facilities for walkers and cyclists. This document continues to fulfill that purpose.

The plan is also a handbook for those interested in active transportation. It answers common questions about safety and maintenance and collects facts about cycling and walking in one document.

A third purpose of the plan is to create a framework and sense of urgency for improving conditions for active transportation. The Plan goals each include specific objectives and strategies for their completion.

Plan Vision:

More people cycling and walking; more places, more often

VISION

The vision for active transportation in Kirkland is

More people walking and biking; more places, more often.

This vision suggests that active transportation becomes less out of the ordinary or as it is sometimes referred to, "alternative" and something many people do every day. In order to expand the number of people using active transportation, barriers to usage such as perceived danger and inconvenience will have to be removed. To expand the way people use active transportation, more places will have to be connected through good facilities of all kinds; sidewalks, directional signing and bicycle parking for example.

GUIDING PRINCIPLES

Three principles support the goals, objectives and strategies that follow. They reflect increasing safety and convenience in a way that is tailored to the specific needs of Kirkland.

Kirkland's active transportation environment is:

- safe
- convenient
- shaped by the requests and needs of the community.

Progress toward implementing these principles can be accomplished simultaneously. Therefore, many of the goals and objectives listed below support more than one of the plan's three guiding principles.

GOALS, OBJECTIVES AND STRATEGIES

The goals, objectives and strategies that follow represent a to-do list of sorts. Progress on these goals is to be reported annually to the Transportation Commission and the City Council.

SUMMARY OF GOALS

- Goal G1. Develop the Cross Kirkland Trail**
- Goal G2. Reduce crash rates**
- Goal G3. Add sidewalks**
- Goal G4. Increase the number of children who walk to school**
- Goal G5. Improve safety for people crossing streets**
- Goal G6. Remove physical barriers to walking**
- Goal G7. Improve on-street bicycle facilities**
- Goal G8. Make bicycling more convenient**

SPECIFIC GOALS

Goal G1 Develop the Cross Kirkland Trail.

For more than 15 years, the railroad right-of-way that passes through Kirkland has been seen as the preeminent opportunity for developing an exceptionally useful off-road, shared use facility for active transportation. See Page 88.

Objective G1.1 By 2015, open a section of Cross-Kirkland Trail on the eastside rail corridor.

Strategy G1.1.1 Thoroughly understand the process which King County and Port of Seattle will use to develop the trail and proactively work to make Kirkland an area where the trail is first developed. *Timing: current through completion of plan for development of trail*

Goal G2 Reduce crash rates

Almost everyone agrees that decreasing crash rates is the most important measure of success this Plan can have. Fortunately many of the factors that contribute to convenience (a crosswalk treatment that makes it easy to cross the street for example), also contribute to safety. This makes

improvements that reduce crash rates likely to also increase the number of people using active transportation. See Section 7.

Objective G2.1 Reduce rates for crashes involving pedestrians and rates for crashes involving cyclists by 10% between 2010 and 2015.

Strategy G2.1.1 The strategy for this objective is to quantify the effects of all the other safety related goals, objectives and strategies. It is assumed that a reasonable estimate of volume for pedestrians and bicycles will not be established before 2011 (see objective G2.2).

Objective G2.2 Develop a reliable and accurate measure of pedestrian and cyclist volumes by 2011.

Strategy G2.2.1 Beginning in 2009, establish an annual count program at key locations to measure bicycle and pedestrian volumes and calculate crash rates. Adjust and modify the program in subsequent years to provide meaningful data.

Strategy G2.2.2 Partner with WSDOT to continue the count program started in 2008. If the WSDOT program is not available, work with Cascade Bicycle Club to get volunteers to make counts at the 2008 locations. *Timing: By August 2009 for September/October counts.*

Strategy G2.2.3 Expand count locations to include crossings of I-405 and east-west screen lines² at southern, central and northern locations. *Timing: Include all crossings of I-405 in fall 2009 counts, include one additional east-west screen line in subsequent years.*

Goal G3 Add sidewalks.

One of the most common questions received by the Public Works Department is “how can I get sidewalk on my street?” Carefully prioritizing how sidewalk projects are added is therefore one of the most important things this plan can do. Most of Section 5 is devoted to prioritizing construction of sidewalks in a way that meets the vision and supporting principles of the plan.

Objective G3.1 By 2016, complete sidewalk on both sides of all principal and minor arterials.

Strategy G3.1.1 Select projects for CIP funding using criteria in this plan. Give higher priority to projects that serve people completing errands, using the bus and recreating filling gaps and building on the busiest streets first. *Timing: begin with the next CIP in 2010.*

Goal G4 Increase the number of children who walk to school.

The goal of getting children to walk to school is often lost in a discussion of how construction of school walk routes should be prioritized. Completing facilities is an important part of getting more children to walk to school, but other techniques should also be considered. A discussion of existing school walk route completion is in Section 2. Under the proposed project ranking system, School walk routes are weighed more heavily than before. This is described in Section 5. This goal also includes an objective of increasing the number of children who walk to school and identifying and treating the specific barriers to walking to school.

² Screen lines are imaginary lines that “cut” across streets for counting purposes. An east-west screen line across the middle of Kirkland would include counts on all the major north/south streets at the same latitude. For example counts would be made at the 10000 block of 132nd, 124th, 116th Avenues along with the 1800 block of 6th Street, 3rd Street and Market Street.

Section 1: Introduction

Objective G4.1 Complete sidewalk on one side of all school walk route segments of all arterials and collector streets by 2019.

Strategy G4.1.1 Select projects for CIP funding using criteria in this plan. Balancing the needs of those who walk to school with those who walk for other purposes, add sidewalk to school walk routes; give higher priority to filling gaps and building on the busiest streets first. *Timing: Biannually with CIP program.*

Objective G4.2 Develop a project at one or more elementary schools to increase the number of children walking to that school by 10% by 2014.

Strategy G4.2.1 Select candidate school, measure walking rate *Timing: Complete by 2010*

Strategy G4.2.2 Secure grant funding *Timing: Depends upon timing of grant opportunities*

Strategy G4.2.3 Develop a social marketing program to understand and address barriers to walking *Timing: Depends upon timing of grant opportunities*

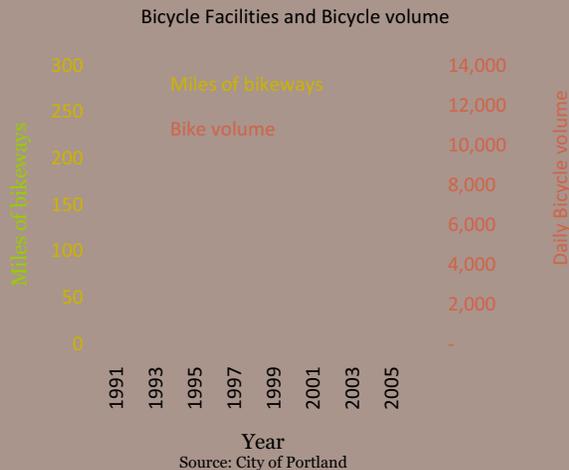
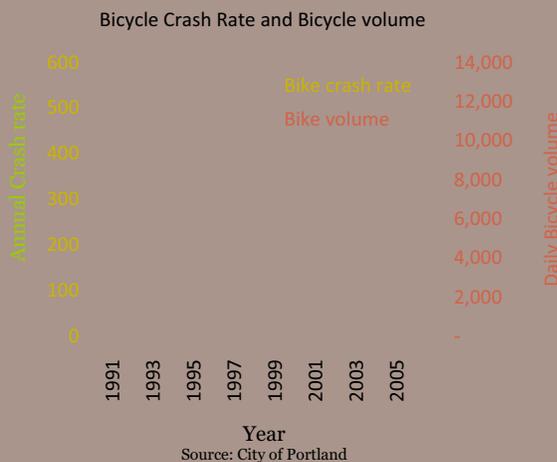
Strategy G4.2.4 Implement program *Timing: Depends upon timing of grant opportunities*

Goal G5 Improve safety for people crossing streets.

The discussion of crashes in Section 2 indicates that most crashes happen when people are crossing the street. Analyzing street crossings with a variety of tools

Portland, OR experience

In Portland, the number of crashes per cyclist has decreased while the number of cyclists has increased. The increase in cyclists is paralleled by an increase in bicycle facilities. Portland officials explain this as a “positive feedback loop”: as more facilities are built, more cyclists ride, as more cyclists ride, drivers become more aware of cyclists and safety increases. As safety increases, more cyclists feel safe and the number of riders increases again. With more riders there is increased justification for more facilities. This theory makes sense because the two main reasons people choose not to bicycle are safety and convenience.



The two charts above quantify what’s been happening in Portland. Bicycle volume is measured across four main bicycle bridges over the Willamette River. Crash rate represents an indexing of annual reported crashes to daily bicycle trips across the four main bicycle bridges.

has the best chance of reducing crashes.

Objective G5.1 Develop a plan for implementing safety improvements at crosswalks.

Strategy G5.1.1 Building on the 2003 review, conduct a review of crosswalks using the new *Guidelines for Pedestrian Crossing Treatments* document (see Page 96).
Timing: Complete by June 2010.

Strategy G5.1.2 Develop recommendations for consideration by the Transportation Commission and the City Council. *Timing: Complete by December 2010.*

Objective G5.2 Implement programs specifically targeted at reducing pedestrian crashes at signalized intersections

Strategy G5.2.1 Investigate the Pedestrian Intersection Safety Index as a means for evaluating the safety of crossings at signalized intersections. *Timing: Complete by June 2010.*

Strategy G5.2.2 Develop recommendations for consideration by the Transportation Commission and the City Council. *Timing: Complete by December 2010.*

Strategy G5.2.3 Pursue funding opportunities for Social Marketing campaigns to increase the number of walkers that look for turning vehicles at signalized intersections. *Timing: Apply for grant opportunities as they become available.*

Objective G5.3 Improve lighting at all uncontrolled crosswalks on higher volume streets where lighting is currently below average.

Strategy G5.3.1 Propose a set of projects to improve lighting at locations that are below average based on 2007 Consultant study. (see page 17) *Timing: Complete by 2009.*

Strategy G5.3.2 Consider funding of lighting in next and future CIP programs. *Timing: 2010 and biannually.*

Strategy G5.3.3 Pursue outside funding to improve lighting *Timing: Apply for grant opportunities as they become available.*

Objective G5.4 Monitor performance of “take it to make it” pedestrian flags.

Strategy G5.4.1 Continue the measurement of Pedestrian Flag usage in downtown each March/April.

Strategy G5.4.2 Compare measurements to target goal of 40% usage by March/April 2010

Strategy G5.4.3 Pursue outside funding opportunities to offset costs of current program. *Timing: Apply for grant opportunities as they become available.*

Objective G5.5 Perform a pilot Road Safety Audit

Strategy G5.5.1 Conduct a Road Safety Audit at the intersection of NE 116th Street and 98th Avenue NE *Timing: Complete by December 2009*

Strategy G5.5.2 Compile the results of the audit, formulate recommendations for actions *Timing: Complete in time for development of 2010 CIP*

Strategy G5.5.3 Complete actions/propose CIP projects as appropriate *Timing: Complete in time for 2010 CIP*

Strategy G5.5.4 Identify other locations that could benefit from Road Safety Audits. *Timing: Complete by June 2010.*

Goal G6 Remove physical barriers to walking.

Obstructions to sidewalks are a common nuisance for walkers in Kirkland. Little work has been done to understand what the real causes are and how they can efficiently be reduced. The current methods used to address obstructions are described in Section 4. Kirkland is making progress toward reducing barriers to people who cannot easily negotiate commonly occurring street elements such as curbs. This work needs to be documented. See Page 95.

Objective G6.1 Reduce the number of sidewalk obstructions due to brush, debris and waste/recycling containers.

Strategy G6.1.1 Develop a measure of the number of obstructions. *Timing: Complete by December 2009.*

Strategy G6.1.2 Examine the process through which obstructions are identified and cleared. *Timing: Complete by June 2010.*

Strategy G6.1.3 Prepare a set of improvements to that process including a specific goal for reduction in obstructions for consideration by the Transportation Commission. *Timing: Complete by December 2010.*

Objective G6.2 Develop an ADA compliance plan

Strategy G6.2.1 Prepare a plan for consideration by the Transportation Commission and adoption by the City Council. *Timing: Complete by December 2010.*

Goal G7 Improve on-street bicycle facilities

Many accommodations for bicycle travel can be made by restriping streets so that space is reallocated to bicycles and away from cars. In other locations, construction is required to create enough area for adequate bicycle facilities. Improvements of both kinds are the subject of Section 6.

Objective G7.1 Complete all marking related improvements to the bicycle network by 2011.

Strategy G7.1.1 Prepare a design for the various projects. *Timing: Incrementally, beginning in 2009.*

Strategy G7.1.2 Add projects to CIP pavement marking contract. *Timing: Incrementally, beginning in 2009.*

Strategy G7.1.3 Through the pavement maintenance, restripe inside lanes on multi-lane arterials to 10' wide. *Timing: Complete in time for the January 2011 revision of the pre-approved plans.*

Objective G7.2 Complete all construction related improvements to the bicycle network by 2018.

Strategy G7.2.1 Program improvements from the construction related list by way of the CIP *Timing: biannually.*

Goal G8 Make bicycling more convenient

Some of the clearest support in the on-line survey was for the elements described below. These are discussed in Section 7. Improving bicycle parking, maintaining clear bicycle facilities, helping cyclists activate traffic signals and adding directional signs (wayfinding) were popular with many cyclists.

Objective G8.1 Plan and install a bicycle wayfinding system by 2013.

Strategy G8.1.1 Prepare a plan for wayfinding signage and priorities for its implementation. *Timing: Complete by December 2009.*

Strategy G8.1.2 Complete installation of 50% of the signage *Timing: Complete by December 2011.*

Strategy G8.1.3 Complete installation of 100% of the signage *Timing: Complete by December 2013.*

Strategy G8.1.4 Pursue opportunities for regional cooperation and grant funding. *Timing: On-going.*

Objective G8.2 Improve the way bicycle parking is codified by 2010.

Strategy G8.2.1 Modify the pre-approved plans to include a standard for bicycle racks and their installation. *Timing: Complete in time for the January 2010 revision of the pre-approved plans.*

Strategy G8.2.2 Change the Zoning Code to require bicycle parking as a part of standard right-of-way improvements. *Timing: Complete by December 2010.*

Objective G8.3 Add 10 new two-position bicycle parking racks in downtown Kirkland by 2014.

Strategy G8.3.1 Identify potential locations and design for racks including a public involvement process. *Timing: Complete by December 2010.*

Strategy G8.3.2 Secure funding *Timing: Based on the results of G8.3.1., may be done in increments.*

Strategy G8.3.3 Complete installation of racks *Timing: December 2014.*

Objective G8.4 Add pavement markings at signalized intersections to indicate where cyclists should stop in order to activate the signal.

Strategy G8.4.1 Implement a pilot program of marking at eight signalized intersections as a part of the City's standard pavement marking program. *Timing: Complete by fall, 2009.*

Strategy G8.4.2 Identify final locations where markings are needed *Timing: Complete in time for the 2010 pavement marking contract.*

Strategy G8.4.3 Based on results of the pilot project, modify pre-approved plans to include markings as part of standard installations at traffic signals. *Timing: Complete in time for the January 2010 revision of the pre-approved plans.*

Strategy G8.4.4 Install 50% of markings *Timing: Complete by fall 2011.*

Strategy G8.4.5 Install 100% of markings *Timing: Complete by fall 2012.*

Objective G8.5 Reduce the amount of debris in on-street bicycle lanes.

Strategy G8.5.1 Develop a measure for the amount of debris. *Timing: Complete by December 2009.*

Strategy G8.5.2 Review the sources of debris and their causes. Explore measures that can be used to reduce the amount of debris from these causes. Review best practices from other agencies. *Timing: Complete by June 2010.*

Strategy G8.5.3 Prepare a set of recommendations including a specific goal for reduction of debris for consideration by the Transportation Commission. *Timing: Complete by December 2010.*

DEMOGRAPHICS

The material in this section comes from the City of Kirkland's 2005 Community Profile³. That report draws upon the 1990 and 2000 Census and other local data. Figure 3 summarizes demographic information.

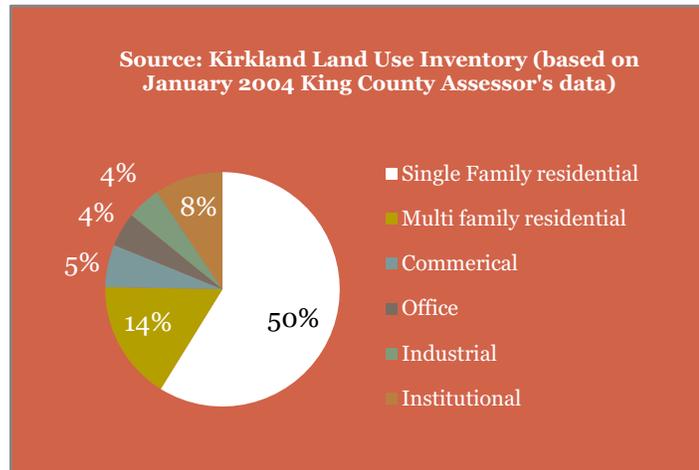
With an estimated April 1, 2005 population of 45,740, Kirkland is the eighth largest city in King County and the eighteenth largest city in the State. Since its incorporation in 1905, the City of Kirkland has grown to approximately 12 times its original geographic size. This growth occurred via numerous annexations through the decades along with the consolidation of the cities of Kirkland and Houghton in 1968. The City grew significantly during the 1940s and 1960s when it at least doubled in size. The 1980s also were a significant growth period for the City, due to the annexations of Rose Hill and South Juanita in 1988.

Since 1990, the percentage of Kirkland's children under the age of 18 has decreased from 20.7% to 18.5% while the percentage of seniors over age 65 has increased from 9.6% to 10.2%. Kirkland has seen a steady decrease in average household size from 2.31 persons per household in 1980 to 2.28 persons per household in 1990, to 2.13 persons per household in 2000. The primary reason for this decline in average household size is a decrease in the number of children per household. The percentage of single person households in Kirkland has increased over the past decade, from 30.1% of households in 1990 to 35.6% in 2000.

There are approximately 7,000 gross acres of land in Kirkland. The developable land use base, which excludes all existing public rights-of-way, totals 5,200 net acres of land in Kirkland. Of the total developable land use base in Kirkland, 72% is zoned for residential use and 28% is zoned for non-residential uses.

Sixty four percent of the developable land use base is actually developed with residential uses. Since 1991, residential land uses have increased 13%. 30% of the developable land use base is actually developed with non-residential uses. Parks and open space uses account for 8% and vacant land accounts for 5% of the Kirkland land use base. Kirkland has approximately 15,266,000 square feet of existing floor area dedicated to non-residential uses. Of that developed total, 4,906,000 (42%) are office uses, 3,464,000 (30%) are commercial uses, and 3,349,000 (29%) are industrial uses. The largest percentage of commercial and industrial uses is located in the Totem Lake neighborhood and the largest percentage of office uses is located in the Lakeview neighborhood.

Figure 2 Land use types as percentages of total acreage.



³ http://www.ci.kirkland.wa.us/shared/assets/Community_Profile_20043320.pdf

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Figure 3 Demographic profile of Kirkland

 STATISTICAL PROFILE ON KIRKLAND		City Information, 425.587.3000
DEMOGRAPHICS		
2000 Census Population Current Population in 2005 45,740 Population, 2000 Census 45,090 Estimated Population 2022 56,507 Population Growth, 1980-1990 113% Population Growth, 1990-2000 12%		The City of Kirkland has a total land area of 7,000 gross acres and 5,200 net acres. The city incorporated in 1905. Kirkland absorbed Houghton in 1968 and annexed Juanita and Rose Hill in 1988. In 2004, Kirkland's population ranks 8* in size in King County and 18* in Washington.
2000 Census Age Structure 17 and under 18.5% 18 to 64 71.3% 65 and over 10.2% Median Age 32		Sources: ARCH City of Kirkland Community Profile, 2004 City of Kirkland Finance Department City of Kirkland Planning Department Municipal Research Services Center Puget Sound Regional Council Rentonmarket.com/select/comparisons.htm Seattle-Everett Real Estate Reports Suburban Cities Association of King County Washington State Employment Security Department
2000 Census Race and Ethnic Categories Non-Hispanic White 85.3% Black or African American 1.6% Asian and Pacific Islander 8.0% Native American and other 0.5% Hispanic or Latino* 4.1% Other/Two or more ethnicities 1.7%		
EMPLOYMENT		
2004 Major Businesses and Employers Evergreen Hosp. 2188 Lake Washington School District 617 City of Kirkland 428 Kenworth Truck Co. (PACCAR) 397 Costco Wholesale 380 Univar 301 Lake Washington Technical College. 200 Fred Meyer #391 188 IBM Corporation 175 Lake Vue Gardens 170	2000 Census People Working/Living in Kirkland 6,211 or 23.0% 2003 Total Workforce 30,865 Construction and Resources 2,316/7.5% Education 1,314/1.9% Finance/Insurance/Real Estate 2,156/7.0% Government 3,267/10.6% Manufacturing 1,902/6.2% Retail 4,164/13.5% Services 13,656/44.2% Wholesale Trade/Transportation/Communications/Utilities 2,090/6.8%	Employment Target Additional jobs by 2022 8,880 Total jobs by 2022 41,184 2000 Number of Business Units .. 2,208 Services 981 Retail Trade 342 Finance, Insurance & Real Estate 237 Wholesale Trade 233 Construction 208 Manufacturing 79 Transportation, Communication, Utilities ... 46 Other (includes Agriculture, Fishing, etc) ... 46 Government and Education 35 Agricultural Production 1
HOUSING		
2000 Census Housing Unit Count 22,577 Single Family 11,314 Multifamily 11,263 Households, 2000 Census 20,736 Average Household Size, 2000 Census 2.13 Household Growth Target Range 1992-2012 5,328 - 6,346 Housing Unit Growth Target Total 26,800 2001-2022 Additional Units 5,480 Housing Capacity 27,974		INCOME 1990 Census Median Income (adjusted for inflation) \$51,636 2000 Census Median Income \$60,332 1990 Census Person at Poverty Level 2,220/5.7% 2000 Census Persons at Poverty Level 2,337/5.3% 2003 Average Single-Family Home Price: \$363,935 2003 Average Apartment Rent \$1,142
DEVELOPMENT ACTIVITY		
2004 Total New Residential Permits Issued 447 **Single-family 170 ADUs 4 Multi-family 31 Residential Units Demolished 102 2004 Total Building Permit Valuation.. \$181,702,628		2003 Land Use Inventory Acreage by Use (not including right-of-way) Single-family 3,018 Industrial 150 Multi-family 708 Utilities 91 Commercial 399 Institutions 540 Office 358 Parks 424 Vacant 281

Section 2: Current Conditions

GENERAL

From the perspective of a cyclist or walker, Kirkland is a relatively easy place in which to travel. Although interstate I-405 forms a barrier to mobility as it cuts the city from north to south, there are three bridges that are exclusively for cyclists and walkers. At the other six street crossings walkers and cyclists are adjacent to relatively high volume high speed general purpose traffic (Map 2). The Eastside Rail Corridor also bisects the City from north to south but holds the potential of being an outstanding off road trail for bicycling and walking uses. With the exception of I-405 and a handful of other multilane arterials, Kirkland's transportation system consists of two and three lane streets with speed limits of 35 MPH or less. Kirkland's hills (Map 3) provide a challenge to walkers and cyclists.



Figure 4 This bridge over I-405 at NE 100th Street helps tie neighborhoods together

Because there are only a few multilane high speed arterials, bicycling is relatively easy and pleasant on the vast majority of Kirkland's streets. However, there are still some key links that need improvement and there are other segments that only heartiest of cyclists would use.

The shore of Lake Washington, downtown Kirkland, and the former highway bridge across Juanita Bay are all examples of wonderful places to walk in Kirkland. Most local streets are welcoming to pedestrians, but there are a number of streets where traffic volumes and or speeds are moderate to high and where sidewalk is missing, narrow or uncomfortably close to traffic. Sometimes crossing streets is difficult because of rude drivers or because of the need for better lighting or other measures.

PEDESTRIANS

CROSSWALKS

Traffic Signals

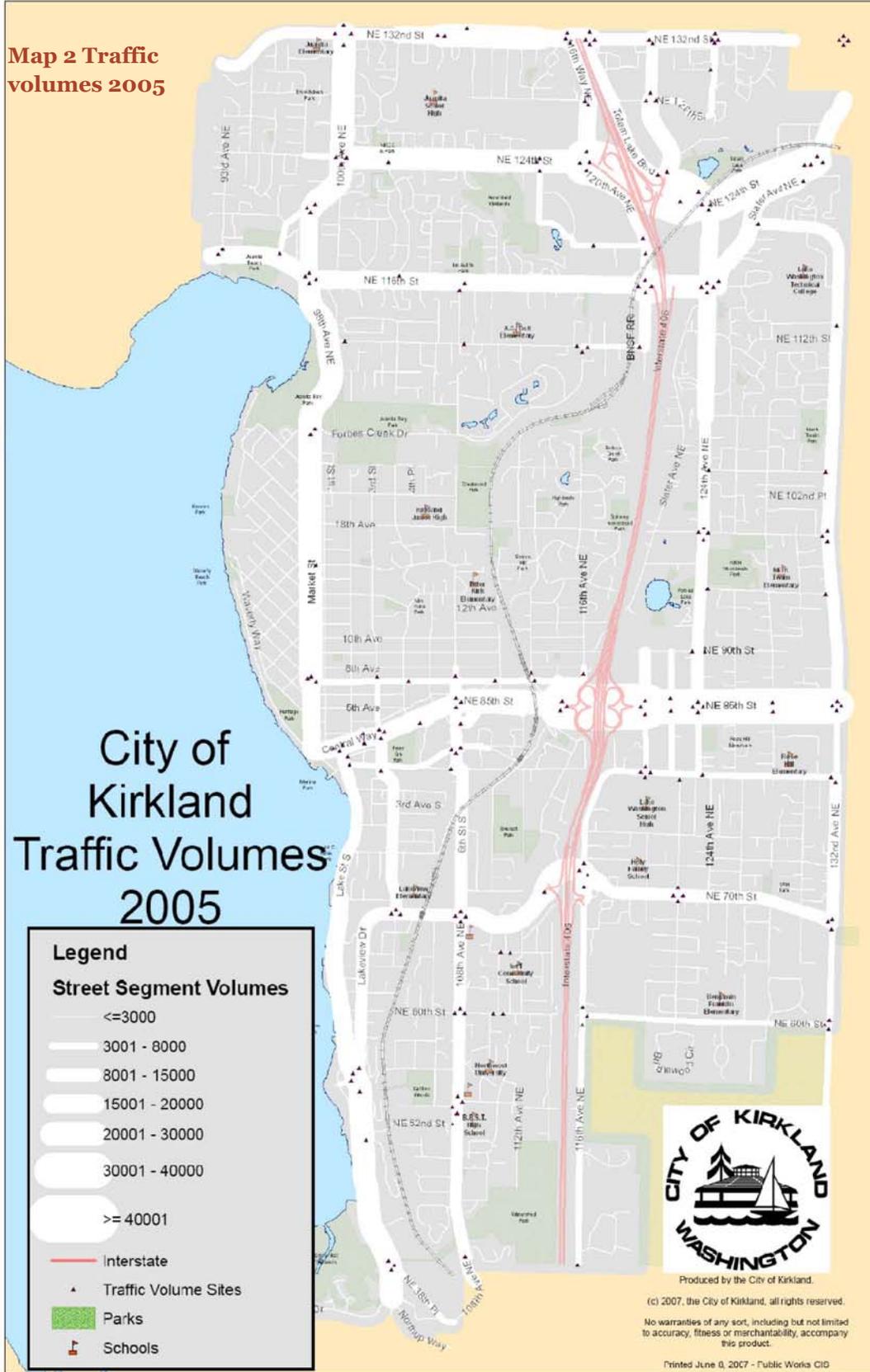
Figure 5 Countdown signal heads show the time remaining to safely cross the street

All traffic signals in the City of Kirkland have crosswalks and pedestrian signals. Countdown pedestrian signal heads are replacing standard heads and are being installed on new projects. Pushbuttons that give visual and audible feedback are replacing those that do not.

Pedestrian signals that make an audible tone during the walk phase are installed at about 10% of traffic signals. City of Kirkland

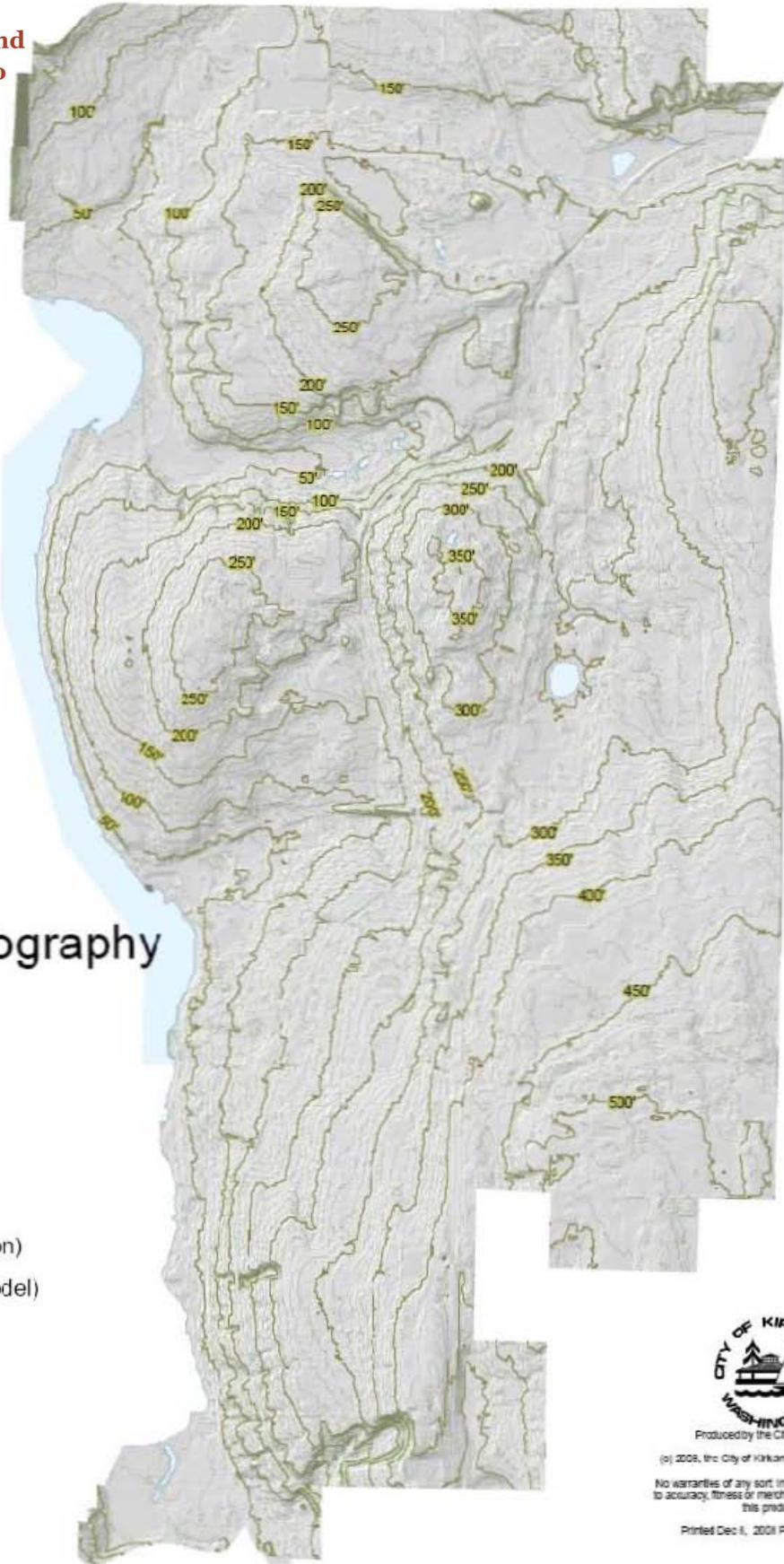
policy is to install such signals wherever they are requested. "Walk" and "Don't walk" intervals are being changed to meet new standards that call for longer flashing don't walk intervals longer timing.

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Section 2: Current Conditions

Map 3 Hills in Kirkland provide a challenge to cyclists and pedestrians.



Kirkland Topography

Legend

- 50' Contour
- 50' Contour (Depression)
- Ten Foot Contours (Model)



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In-Pavement lights

In-pavement flashing lights were first installed in the City of Kirkland at two crosswalks in 1995. Because of their popularity and effectiveness, the number of installations has grown to 30 locations. Unfortunately, maintaining in-pavement lights has proven to be difficult. When older style units fail, it is sometimes impossible to fix them without replacing the entire installation. At a cost of \$20,000 to \$30,000 per crosswalk this is an expensive proposition. Instead of replacing in-pavement lights some locations have been replaced with overhead flashers or other treatments. With proper installation, newer model in-pavement lights are reasonably durable.

Pedestrian Flags

Pedestrian flags are used in large and small cities across the country but they started in Kirkland in 1997. This program was suggested to City staff by a citizen who had seen a similar program in Japan. Like in-pavement lights, pedestrian flags have grown from a program with only a few locations to a major program with over 70 locations. In the downtown area, City staff maintains the flags. In other areas of the city, flag locations are maintained by volunteers. City staff ensure that the volunteers have the necessary flags and the volunteers then make sure that the holders are filled with flags. Recent research shows that pedestrian flags are an effective at increasing pedestrian safety at crosswalks, especially when considered in the context of other possible treatments.

In 2007 work began to examine and redesign Kirkland's pedestrian flag program. Funded by a grant from the WSDOT, The aim of the work was to increase usage of pedestrian flags. A 67% increase was seen in flag usage as a result of the changes.

Advance stop bars at crosswalks

In 2003 The City of Kirkland received a grant from the Washington Traffic Safety Commission to study the effectiveness of advance stop bars at uncontrolled crosswalks. Four locations were studied, a "test" pedestrian crossed the street and the number of vehicles failing to yield was measured both before and after advance stop bars were

Take it to Make it

These examples illustrate how the pedestrian flag program has been changed to overcome barriers to usage.

Barrier: **flags not available** existing holder is only capable of holding 8 flags Strategy: **Redesign holder** use bucket style holders which hold up to 20 flags



Barrier: **Pedestrians feel safe without flags** Strategy: **Place messaging on bucket**, develop slogan which conveys need to use flags

Take It to Make It

Barrier: Pedestrians **don't know what flags are for.**

Strategy: **Redesign flag** from orange to yellow to make use clear and to match standard warning sign.



Barrier: Flags are not a norm; people feel odd using them.

Strategy: Promote use by **partnering with merchants and other means** such as distributing coasters to bars and restaurants.



installed. The number of motorists failing to yield was reduced by about 20% with the bars and accompanying signs. Advanced stop bars are placed at uncontrolled crosswalks on multi-lane streets. By encouraging motorists to stop farther from the crosswalk, sight distance for vehicles in adjacent lanes is increased, reducing the chance of a double threat crash. Double threat crashes occur when the curb lane of traffic stops for a pedestrian, the pedestrian begins to cross the street and traffic in the median lane, unseen by the pedestrian, does not yield.

LIGHTING EVALUATION

Adequate lighting is a critical part of providing a safe crossing for pedestrians. In 2007, a review of lighting at each uncontrolled crosswalk on Kirkland's arterial streets was undertaken. A transportation consulting firm was hired to evaluate each crosswalk during hours of darkness and evaluate the adequacy of lighting on a 1-10 scale for each approach using the criteria in Table 1.

Table 1 Evaluation criteria for 2007 lighting survey

Ranking	Description
10	Good lighting uniformity and visibility of pedestrians off roadway, Good geometrics, Clear pedestrian and roadway channelization, No blocking foliage/buildings/fences/cars/walls
9	
8	Above average lighting conditions, buildings or vegetation present but does not create a blockage of pedestrians
7	
6	Average lighting conditions, Some blockage from vegetation/parking, Average roadway lighting illumination/uniformity
5	
4	Some missing channelization and signing, lacking sidewalk continuity, Lighting illuminance/uniformity could use some improvement
3	
2	Inability to see pedestrians, excessive glare or absence of light, Vegetation/parked vehicles blocking view of pedestrians and/or signage
1	

The consultant recommended that crosswalks ranked at 3 and below be given highest priority for improvement. There are 24 crosswalks that have at least one approach rated 3 or below. At the other end of the spectrum, 13 crosswalks have both ratings at 8 or above.

Staff examined the poorest rated crosswalks and made immediate improvements such as trimming trees and other obstacles that blocked light from the crosswalk. At other locations it was relatively easy to install additional lighting. There was no easy remedy at some locations and those have become candidates for funding through the Capital Improvement Program and pedestrian safety grants and form the basis for Objective G5.3

SAFETY EVALUATION OF UNCONTROLLED CROSSWALKS

In 2003, the Transportation Commission oversaw an evaluation of uncontrolled crosswalks in Kirkland. A ranking system was used to give each crosswalk a ranking based on the volume, speed of traffic and the number of lanes to be crossed. This ranking system was developed for the Federal Highway Administration and divides crosswalks into three categories:

- N** = A marked crosswalk alone is not adequate for the location
- P** = A marked crosswalk alone is possibly an adequate treatment
- C** = The crosswalk is a candidate for a marked crosswalk alone.

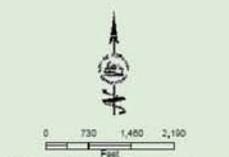
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Pedestrian Flag / In-Pavement Light Locations



Vicinity Map
0 6,300 18,900 27,000
Feet

- Map Legend**
- Pedestrian Flags - 72 Count
 - In-Pavement Flashers - 30 Count
 - Take It To Make It Flags - 14 Count
 - Crosswalks - 596 Count
 - Parks
 - Lakes
 - Kirkland City Limits



Public Works Department



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Section 2: Current Conditions

Over 120 crosswalks in Kirkland were evaluated. The Commission gave special attention to those crosswalks that had an “N” ranking along with those that had more than 3 crashes in the past 10 years and at least 1 crash in the past 5 years. More information on this work is contained in Appendix C

WALKWAYS

The maps and other information about walkways in this plan are based on the 2004 sidewalk inventory. This information is reported by street segment. Segments are pieces of street between two intersecting streets.

The charts and tables in the following pages indicate the extent to which Kirkland’s sidewalk network is complete. Information is broken down by both the two general categories –those with complete sidewalk on at least one side of a segment and those with neither side complete—and by the six detailed categories of completion. Additionally, the information is sorted by Street Functional Classification. Functional classification is important because it is a good predictor of auto

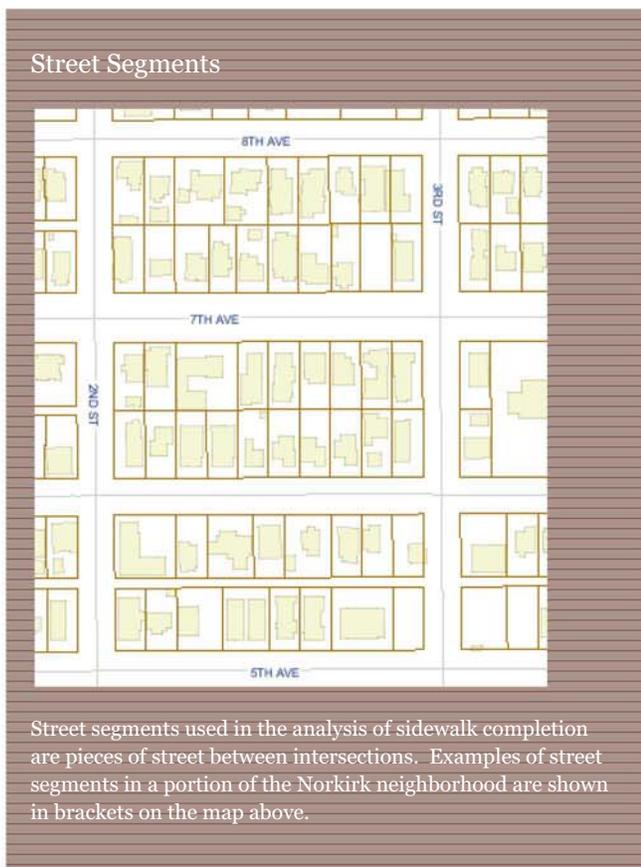


Table 2 Miles of walkway by functional classification and type of completion

No sidewalk	31.7	34.7	3.1	11.5	1.0	6.8	0.9	5.5	36.7	24.7
Some/none	12.2	13.4	2.2	8.3	0.8	5.9	0.4	2.2	15.6	10.5
some/some	6.8	7.5	2.2	8.4	0.6	4.1	0.7	4.5	10.4	7.0
Sub total No side complete	50.8	55.6	7.5	28.2	2.4	16.8	2.0	12.2	62.6	42.2
complete/none	15.1	16.5	6.9	26.0	1.5	10.8	1.9	11.5	25.4	17.1
complete/some	7.0	7.7	5.8	21.7	1.8	12.9	0.8	4.9	15.4	10.4
complete/complete	18.5	20.3	6.4	24.1	8.4	59.5	11.7	71.4	45.0	30.3
Sub total one side complete	40.6	44.4	19.1	71.8	11.7	83.2	14.4	87.8	85.8	57.8
	91.4	100	26.6	100	14.1	100	16.4	100	148.4	148.4

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volume. Although principal arterials make up a small fraction of the miles of streets, they carry most of the auto volume. Local streets make up more than half of the street miles, but they each carry relatively little auto volume. The other street classifications fall somewhere in between these two extremes. Pedestrians need sidewalks most on higher volume streets. Functional classifications are shown in Map 3.

As noted in Table 2, about 60% of streets in Kirkland have walkways on at least one side. All new development projects, including single family homes, must construct sidewalks where it is missing along the public street frontage of their property. The major exception is for dead-end streets of less than 300 feet. Sidewalks are not required on these short cul-de-sacs.

Most existing walkways are 5' wide concrete sidewalk. In areas so designated in the Comprehensive Plan or Zoning Code, sidewalks are wider and in a few places they are more narrow. There are also sections of asphalt path that are separate from the roadway and a small amount of gravel path.

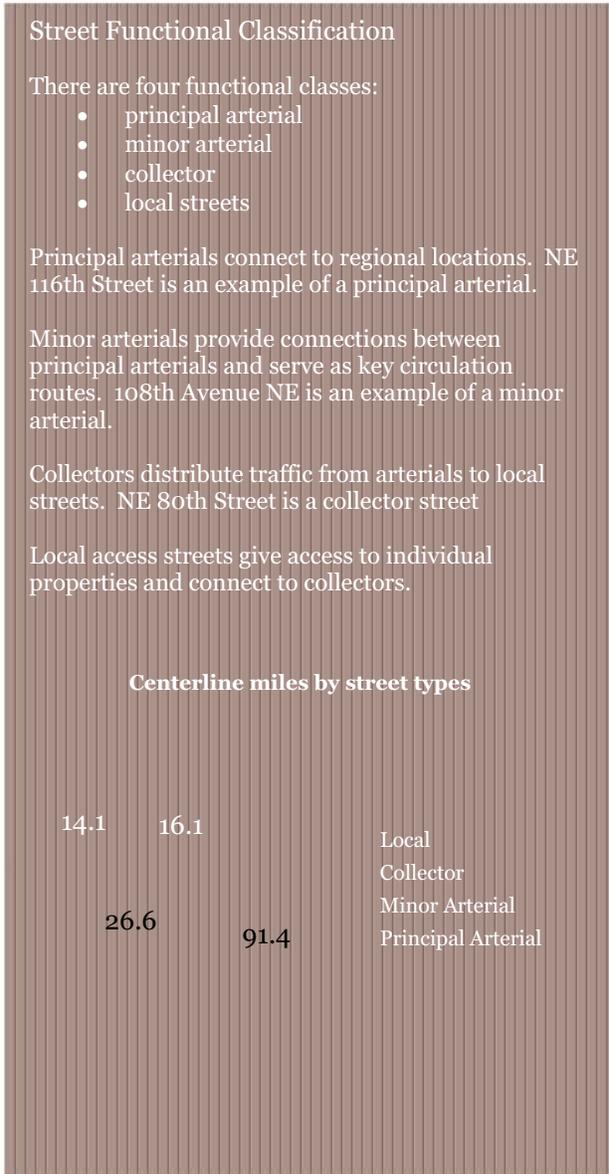
Because of their maintenance costs, gravel paths are usually interim treatments. In some other areas, pedestrians share wide paved shoulders with cyclists. The former highway bridge at Juanita Bay is the city's longest section of formal shared use facility.

There are six different categories of walkway completion. They are listed below from most complete to least complete:

1. Walkways are complete on both sides of a segment.
2. Walkways are complete on one side of a segment and the other side has some sidewalk present but it is not complete.
3. Walkways are complete on one side, but there is no sidewalk on the other side of the segment.
4. There is some walkway on both sides of a segment, but neither side is complete.
5. There is some walkway on one side of a segment, but no sidewalk on the other.
6. There is no walkway on either side of the segment.

These six categories can be collapsed into two general categories:

- Walkways are complete at least on one side.
- Walkways are not complete on either side.



Even when adjacent segments have sidewalk complete on one side, it doesn't mean that sidewalks are continuous along the two adjacent segments. For example, it could be that the sidewalks are complete on the north side of the first segment and the south side of the adjoining segment. Both segments would be reported as "sidewalk complete on one side" but a walker would have to cross the street to use both pieces of sidewalk. This is rarely the case however. On most streets, sidewalk tends to be completed along one side. Map 4 shows sidewalk presence and indicates several categories of sidewalk completion.

Table 3 provides an estimate of the sidewalk remaining to be completed by street type, and a cost estimate based on a cost of \$300/lin. ft. of sidewalk and overhead and contingency of 45%.



Map 5 Sidewalk completion by street segment

Street Segment Sidewalk Completion

- Legend**
- No Sidewalk Both Sides
 - Some Sidewalk Either Side
 - Complete Sidewalk At Least One Side
 - Complete Sidewalk Both Sides
 - Trails
 - Sidewalks



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Figure 6 Miles of sidewalk needed to complete sidewalk network, by street type

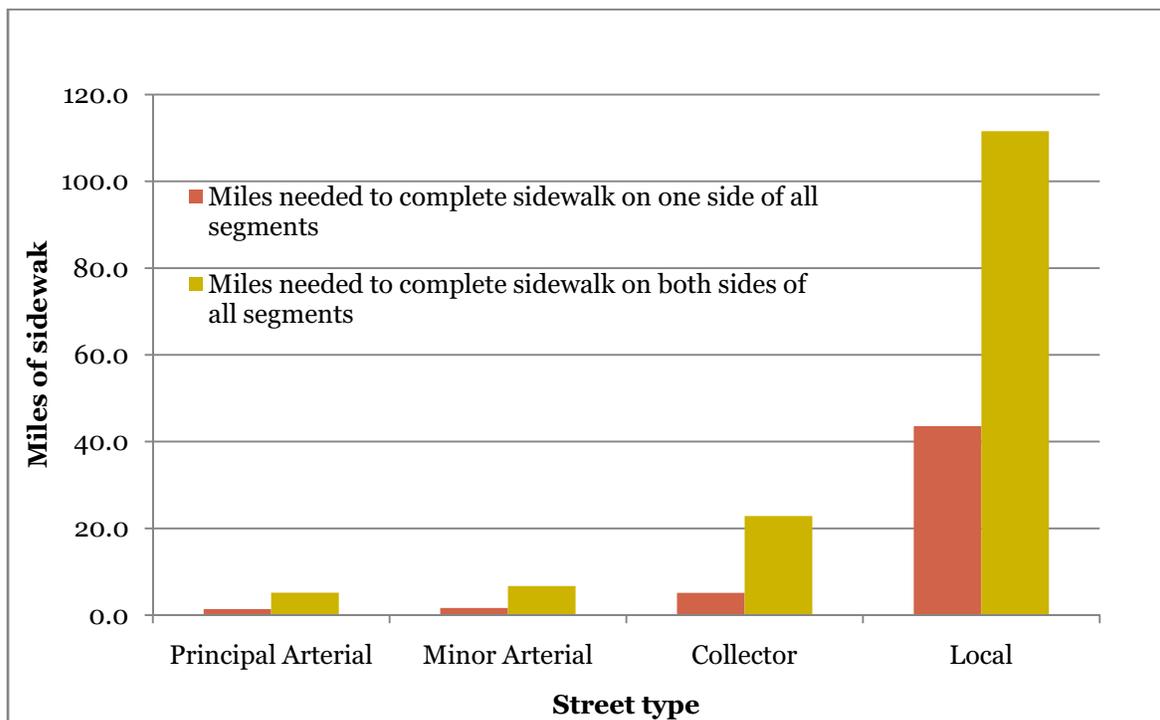


Table 3 Miles of sidewalk needed to complete sidewalk network and associated costs

<i>Street type</i>	<i>Needed to complete one side of all segments</i>		<i>Needed to complete both sides of all segments</i>	
	Length (mi)	Cost (\$M)	Length (mi)	Cost (\$M)
Principal Arterial	1.4	3.2	5.2	11.9
Minor Arterial	1.7	3.8	6.7	15.4
Collector	5.1	11.8	22.8	52.2
Local	43.6	100.1	111.5	256.2
Total	51.7	118.9	146.3	335.9
Cost estimate based on \$300/lin. ft and 45% overhead and contingency				

Figure 7 Sidewalk completion by type of roadway

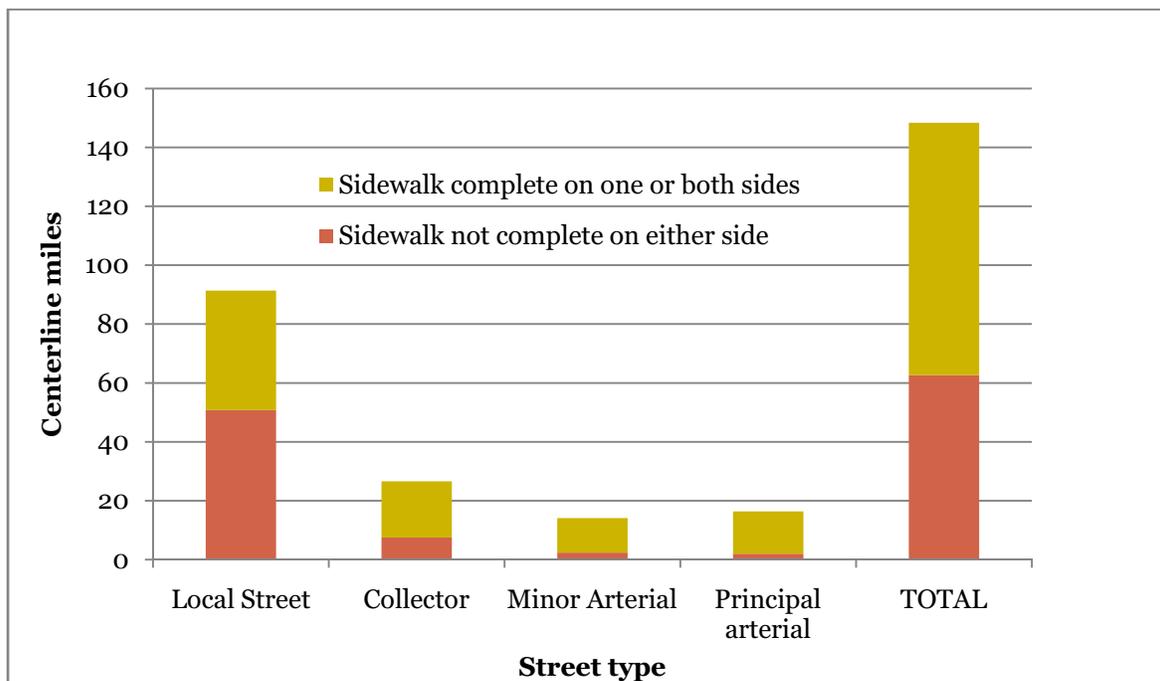


Figure 8 Detailed sidewalk completion by centerline miles of street type

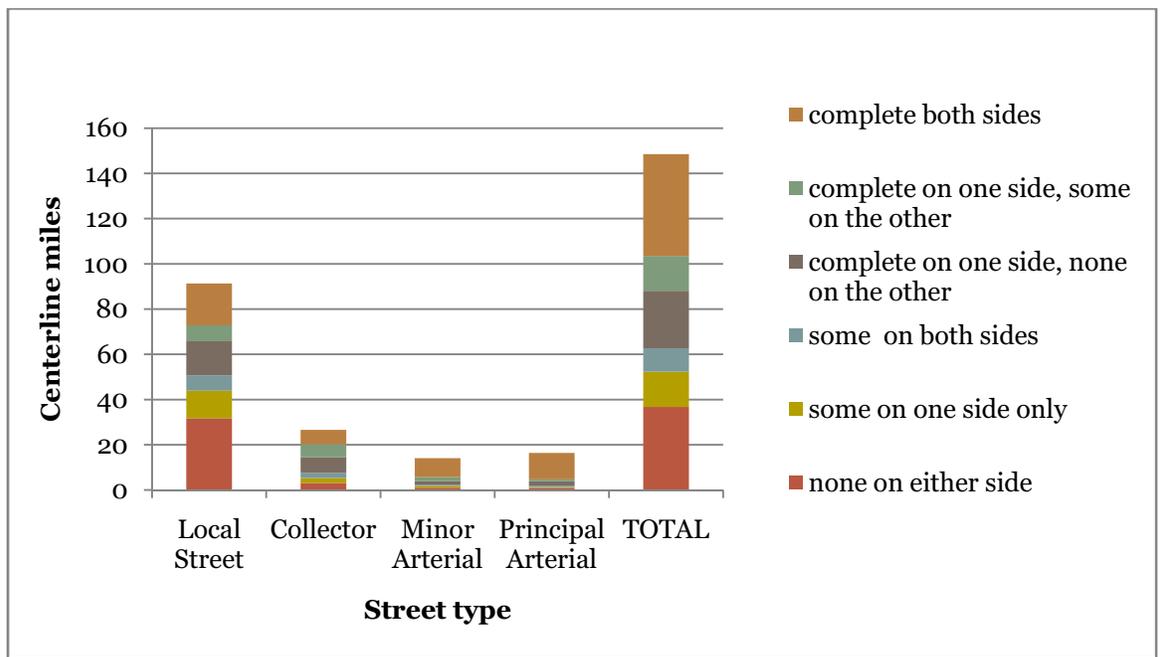
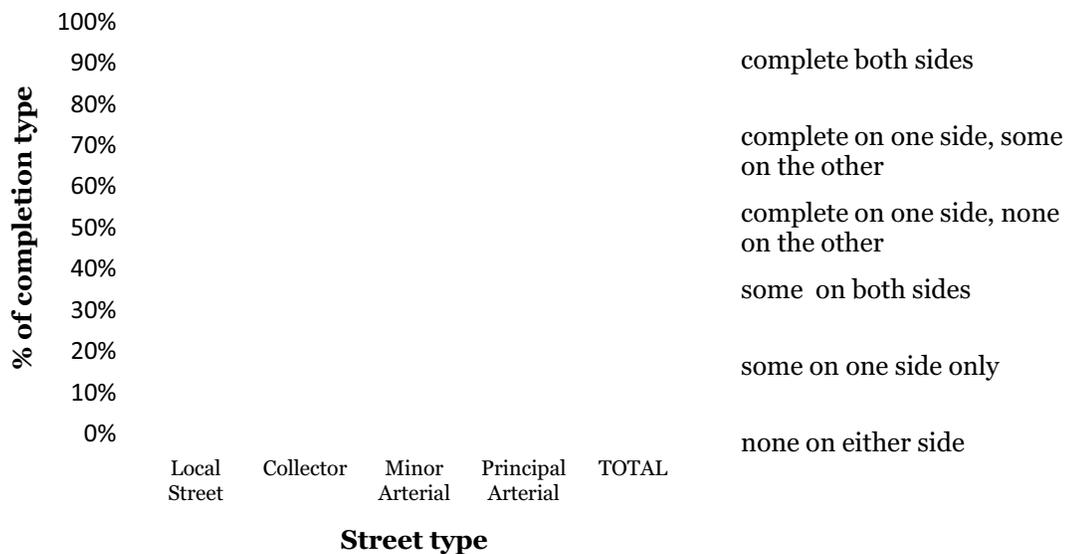


Figure 9 Sidewalk completion as a percentage of street classification



BARRIERS

I-405 presents a major barrier to walkers, but it is a lesser barrier than it once was. The cloverleaf interchange at NE 85th Street, built in the 1960’s has no accommodations for pedestrians. The rebuilt interchange at NE 116th Street, the first phase of which was built in 2006, and which is planned for completion in 2010, will incorporate generous facilities for allowing walkers to safely cross under I-405. Modern design for pedestrian facilities are also illustrated in the direct access ramp at 128th Street. The three pedestrian bridges across I-405 corridor also help to mitigate the barrier that I-405 presents to pedestrian travel. A large concrete bridge carries the Eastside Rail Corridor over Kirkland Way near Railroad Avenue. This structure was built in the early 20th century and is a barrier to easy passage for walkers and cyclists because of its narrow portal.

Figure 10 Railroad bridge at Kirkland Way. This low and narrow bridge is difficult for cyclists, walkers and tall vehicles.



CYCLING

INTERSECTIONS

Often, bicycle lanes end as they approach signalized intersections. This is usually because extra auto lanes are present at the signal and roadway space is not allocated to bicycles. There are some locations where restriping could eliminate or minimize these discontinuities across intersections. On the other hand, some experts believe that striping bicycle lanes through intersections, causing

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cyclists to pass on the right of cars, makes them susceptible to “right hook” crashes where right turning cars strike cyclists in bicycle lanes.

Cyclists feel that it is difficult to activate traffic signals. Most traffic signals in Kirkland use inductive loops buried in the pavement to detect vehicles and bicycles. When the traffic signal senses the presence of a vehicle, it responds with the appropriate signal display. The problem comes when cyclists don’t know where to stop in order to be sensed by the signal. The City of Kirkland does not currently mark loops so that cyclists know where to stop at traffic signals. This topic is addressed more fully on Page 98.

ON-STREET BIKE LANES

As shown in Map 5, on street bicycle facilities in the City of Kirkland provide reasonable coverage on the main north-south corridors with fewer complete east-west corridors. Almost all bike lanes are at least 5’ in width. The vast bulk of any city’s streets have low car volumes traveling at relatively low volume speeds and therefore bicycle lanes are not needed on most streets. This is true of Kirkland as well.

Pavement condition is important to cyclists for both safety and comfort. Pavement Condition Index (PCI) is measured on a scale between 1 and 100 called PCI. Kirkland’s current overall PCI is 65. Arterials are 55, with collectors at 69. Due to differences in measuring, it is difficult to directly compare Kirkland’s pavement condition index with that of other nearby cities, but qualitatively speaking, they are similar.

SIGNING AND WAYFINDING

Kirkland does not have a standard application of bike lane signs. Proposed changes to the standards for highway and street signing do away with requirements for signs that indicate the presence of on street bike lanes. Kirkland does not currently have bicycle specific wayfinding signs. Like most of the communities on the Lake Washington Loop route, Kirkland has not signed this regional bike route .

BARRIERS

A major regional barrier to bicycle travel is the prohibition of bicycles on the State Route 520 bridge. Construction of such facilities has always been a part of the bridge replacement program, but replacement is not scheduled until at least 2016.

Detection at traffic signals

Most of the signals in Kirkland use loops of wire buried in the pavement to detect the presence of vehicles. An electrical current is passed through the wire creating a circuit. When a vehicle passes over the wire, the properties of the circuit are changed, that change is detected by the traffic signal controller and the signal indications are changed.

The most sensitive parts of the loops are at their edges, and when loops are visible, it’s fairly easy to position a bicycle in a way that activates the signal.

Unfortunately, most cyclists aren’t aware of this and sometimes loops are under the top layer of pavement and can’t be seen.

Another type of detection involves video cameras. They detect vehicles based on changes in pixels of a video image of the lanes approaching the signal. The City of Kirkland has a handful of intersections that use video detection.

Video detection is considered easier for cyclists, but during times of darkness they can also be problematic.

Section 2: Current Conditions

The discussion of I-405 as a barrier to pedestrian travel on Page 27 is also applicable to bicycle travel. Newer facilities; NE 128th Street, NE 116th Street (when completed), and NE 100th Street all have good bicycling facilities while the older interchanges at NE 70th Street, NE 85th Street and NE 124th Street have poor or no facilities for cyclists. This is a function of the standards that were in use when the facilities were constructed. As borne out by the survey of cyclists, the most difficult streets to bike on Kirkland are Central Way between 6th Street and 132nd Avenue NE, NE 124th Street between 100th Avenue NE and 132nd Avenue NE and, to a lesser degree, 100th Avenue between NE 116th Street and NE 132nd Street. The last of these was noted on the Cascade Bicycle Club's *Left by the Side of the Road*⁴ project as a key regional missing link because of the connections it makes to other regional facilities.

PARKING

Section 105.32 of the Kirkland Zoning Code requires all new development except single family and duplex developments with 6 or more parking stalls to have bicycle parking. Bicycle parking must be in a well lit, visible, sheltered area within 50 feet of the building entrances. One bicycle parking stall shall be provided for each 12 automobile parking stalls, but this can be modified based on the nature of the project. Kirkland does not currently have standards for the design of racks.

Map 6 Bicycle racks in downtown Kirkland. Black triangles show locations of racks, circles are 300' in radius.



Map 7 shows the existing public racks in downtown Kirkland as black triangles. The grey buffers of 300' are intended to indicate the area of coverage assuming that the maximum distance a user

⁴ *Left by the Side of the Road: Puget Sound Regional Bicycle Network Study Assessment and Recommendation*, 2006, Cascade Bicycle Club.

would walk and correspond to a walk of about two minutes. Although some areas are covered by multiple racks, other areas are not covered at all. The eastern part of downtown is better covered than is the western part. This corresponds to the newer development and public facilities that have been developed there.

Section 2: Current Conditions

Map 7 Existing on street bicycle lanes



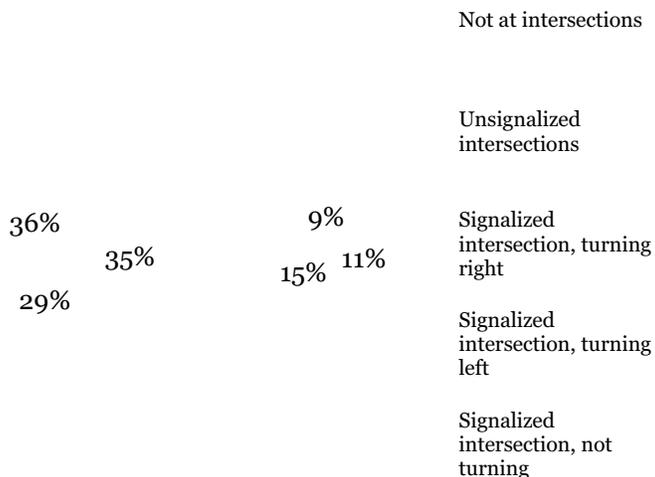
CRASHES

PEDESTRIAN CRASHES

The City of Kirkland maintains a database for crashes involving pedestrians. Figure 5 shows that the annual number of pedestrian crashes has remained relatively steady over the past 11 years. This is despite increases in the number of people walking. It is difficult to draw specific conclusions about why the number of crashes per unit of exposure has decreased. It is probably due to a number of factors including engineering, education and enforcement efforts. It is also likely that as the number of pedestrians increases drivers become more aware of them. Years like 2003 where there are a very small number of crashes or like 2002 where there are a particularly large number of crashes are not attributable to any particular factor. They are seen as normal fluctuation around the average.

Figures 10 and 11 show that almost ¾ of pedestrian crashes happen at intersections. Of those that happen at signalized intersections, turning vehicles are involved with 68% of them. At unsignalized intersections, half the crashes involve vehicles that did not yield.

Figure 11 Pedestrian crashes at signalized intersections by vehicle action 1997-2007



Pedestrian crash facts 1997-2007

37% of pedestrian crashes happen during the months of November, December and January

About one-fourth of all crashes happen when pavement is wet and about one third happen after dark.

A little more than a quarter of pedestrian crashes happen during the PM drive time; between 4:00 and 7:00.

97% of crashes involving pedestrians result in some injury and 1/3 of them are incapacitating injuries. That rate increases to 50% incapacitation for those over 55.

Males and females are equally likely to be involved in pedestrian crashes.

Non-intersection crashes account for 29% of all crashes (17% at mid-block locations and 12% at driveways).

66% of all crashes involve a pedestrian at a crosswalk.

The pedestrian was using a crosswalk in 80% of the crashes that occur at intersections and in 58% of midblock crashes.

At unsignalized intersections, 50% of the crashes involve driver's failure to yield as the main contributing factor.

In 17% of all accident there is no contributing factor.

Because there is little documentation about the amount of pedestrian activity in other cities, it is difficult to compare Kirkland's crash experience with that of other cities. Goals G2 and G5 include strategies to address crashes at intersections and to measure pedestrian volume so that accident rates can be computed.

Figure 12 Pedestrian crashes at unsignalized intersections by vehicle action 1996-2007

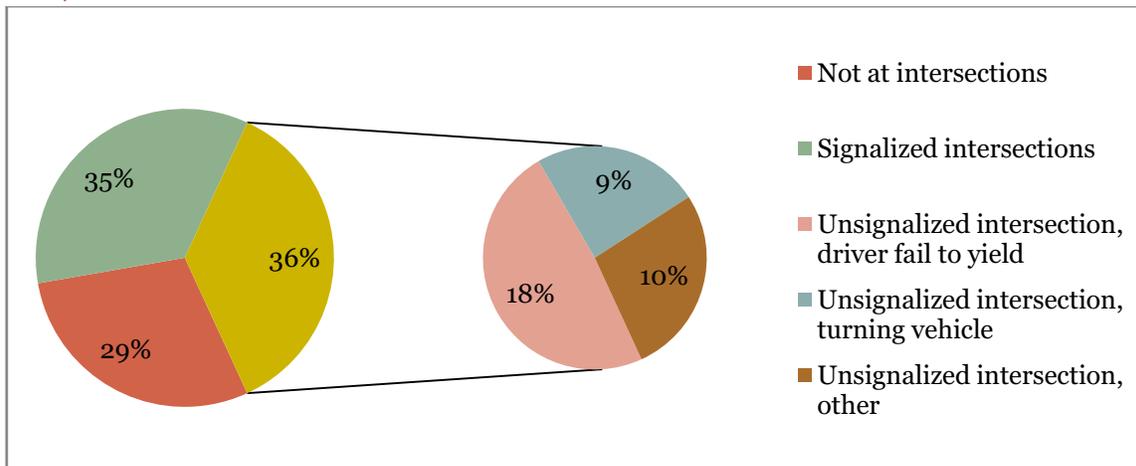
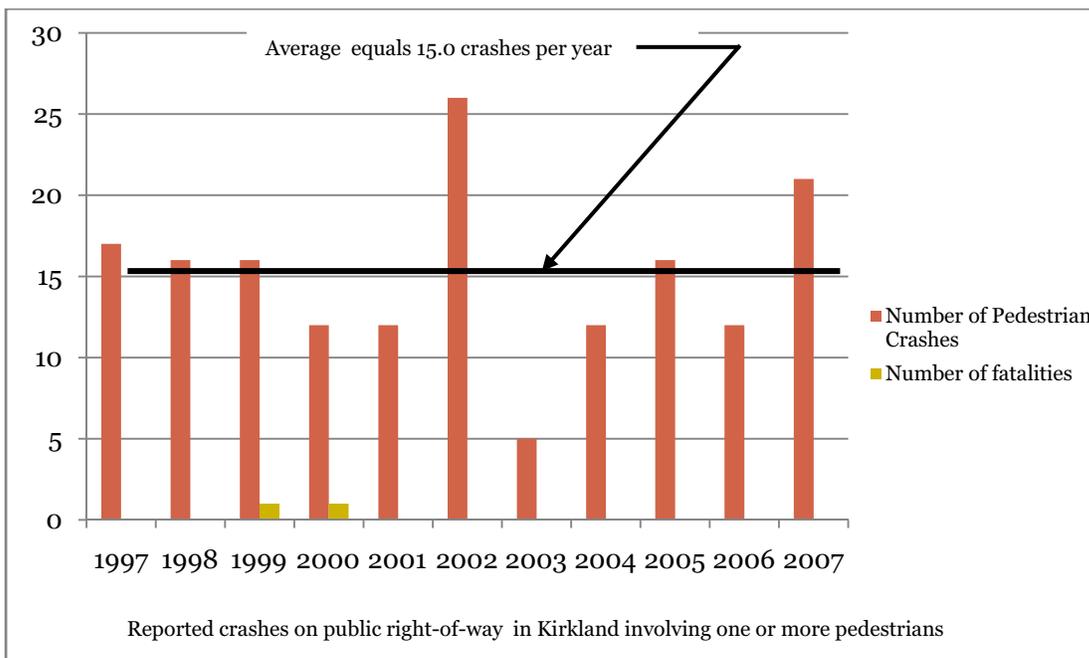
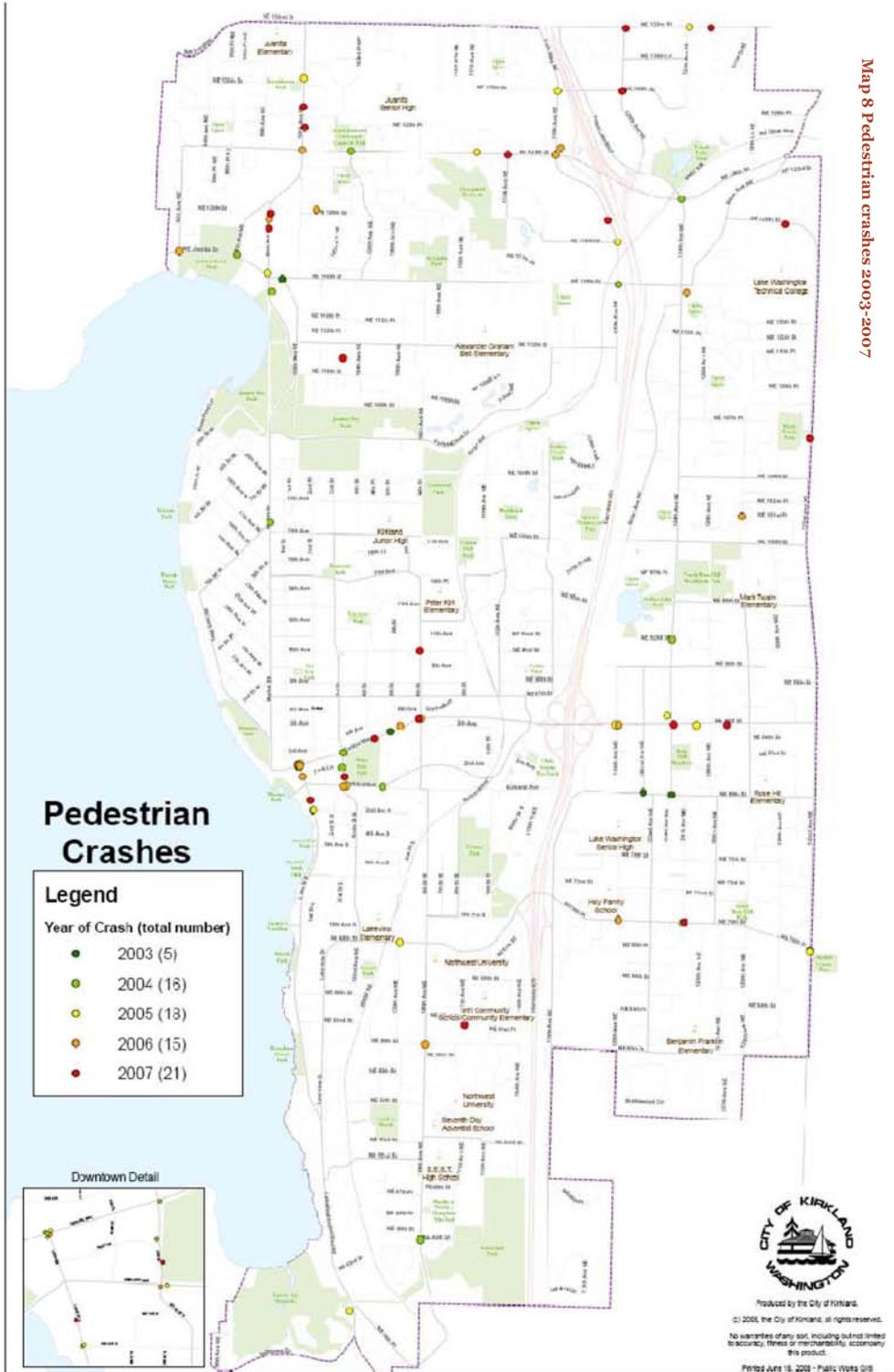
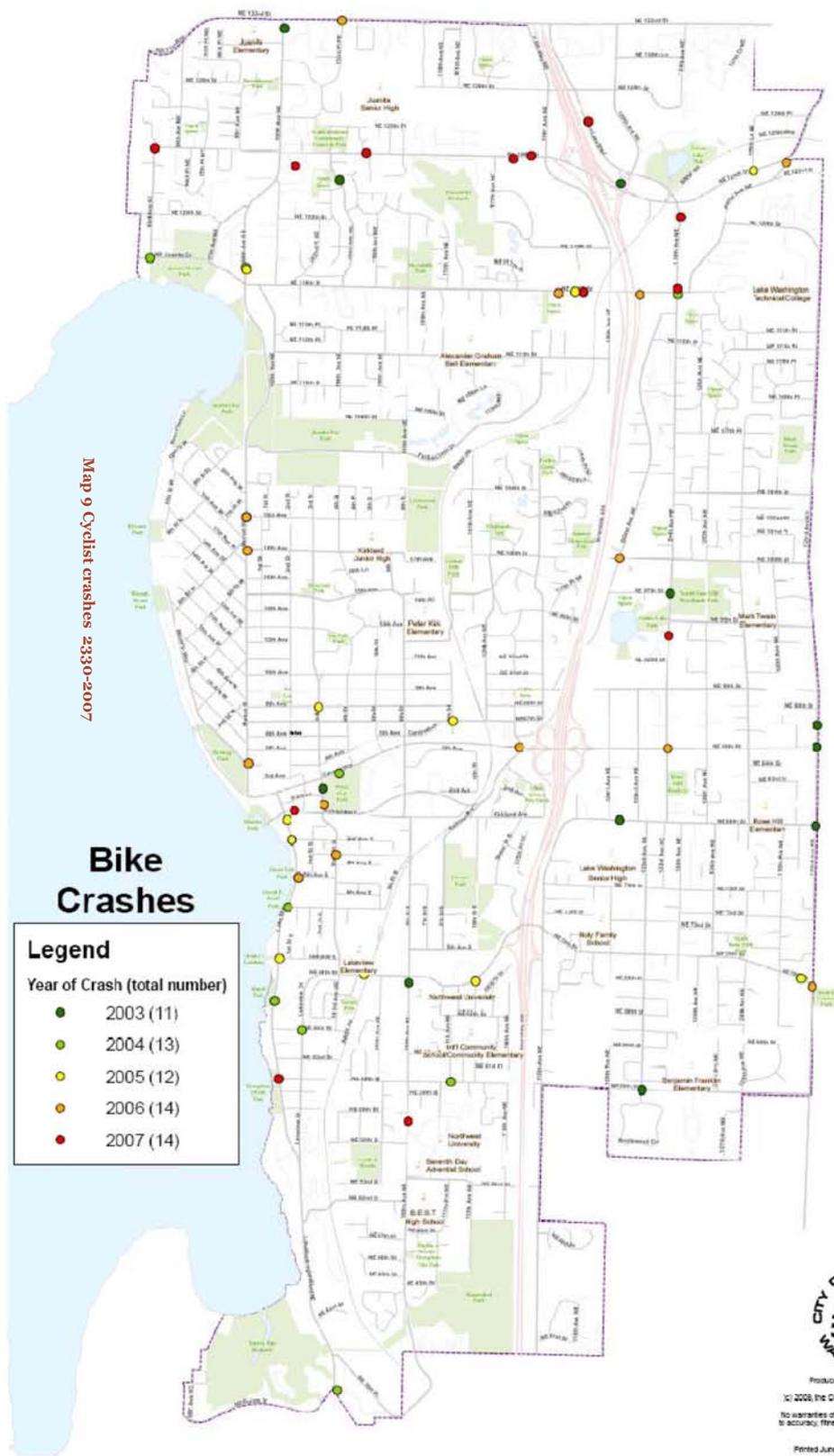


Figure 13 Annual number of pedestrian crashes fatal and non-fatal 1997-2007



Map 8 Pedestrian crashes 2003-2007





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CYCLIST CRASHES

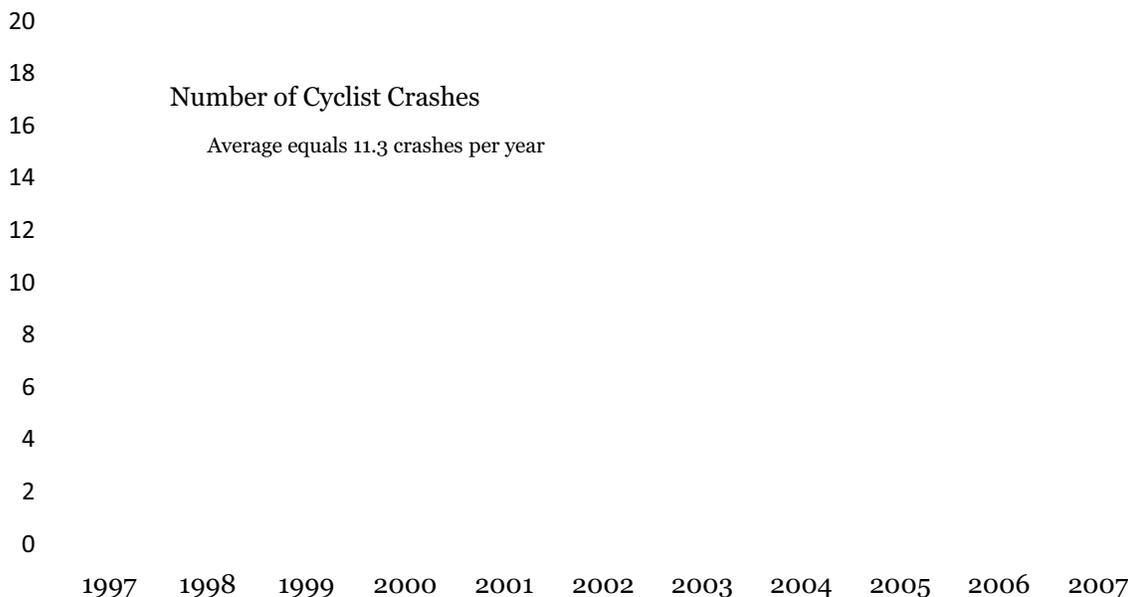
The City of Kirkland maintains a database for crashes involving bicycles. Figure 7 shows that The annual number of bicycle crashes has remained relatively steady over the past 11 years. Although each of the past 6 years has been at or above average, the number of crashes is so small that it is hard to call it a trend. Most years are within three crashes of the average, with the two outlier years averaging to almost exactly the 11 year average. Reliable estimates of the rate at which cycling miles are increasing or decreasing is not available. Therefore the rate of cycling crashes is unknown. It is unlikely that the number of miles cycled is decreasing indicating the number of crashes per mile cycled is probably decreasing.

Like crashes involving pedestrians, about 3/4 of crashes involving cyclists happen at intersections. At intersections, crashes are almost evenly split between those that involve turning vehicles and those that do not.

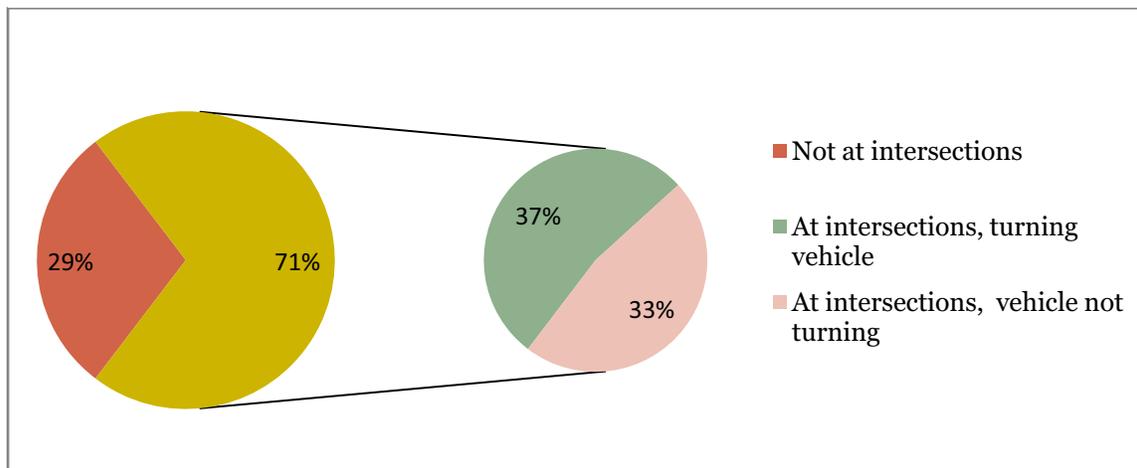
Bicycle crash facts 1997-2007

- 59% of bicycle crashes happen during the five months from May to September.
- About three-fourth of all bicycle crashes happen on dry pavement during daylight
- Almost half of bicycle crashes happen during the PM drive time; between 4:00 and 7:00.
- Just over half the crashes involve motorists that failed to yield.
- 84% of crashes involving bicycles result in some injury and 18% of them are incapacitating injuries.
- Males are more than four times more likely (81% to 19%) than females to be involved in pedestrian crashes.
- Cyclists were using a crosswalk/side walk in 43% of all bike crashes, a bike lane in 31% and was in the travel lane in 26% of all crashes.

Figure 14 Annual number of cyclist crashes 1997-2007



Based on reported crashes involving at least one cyclist. There were no fatal crashes during this time period.

Figure 15 Crashes involving cyclists at intersections, by vehicle action 1996-2007

TRANSIT

Both transit agencies that serve Kirkland - Sound Transit and King County Metro- have bicycle racks on every coach in their fleets. Most racks hold two bicycles, but racks that hold three bicycles are under development. Sidewalk exists on both sides of most streets on which transit runs in Kirkland.

Of the approximately 322 bus stops in Kirkland, 9% have shelters and 88% are accessible for handicapped lifts. King County Metro runs a bicycle locker program that includes facilities at Kingsgate, and South Kirkland Park & Rides as well as the transit center in downtown Kirkland. Bike racks are also available at South Kirkland Park & Ride and the downtown transit center.

SCHOOL WALK ROUTES

Kirkland has 7 public elementary schools⁵ within its borders that have school walk routes (SWR). The Lake Washington School District is responsible for producing a safe school walk route map for each school. Each map describes in detail the preferred walk routes within approximately a mile of each school. Map 13 is a sample of such a map. The District considers the presence of sidewalk when it determines the routes. For example, if there is sidewalk on only one side of a street, that side is designated as the walk route. If there is sidewalk on both sides of a street, then both sides are designated as the walk route.

Kirkland has just over 30 miles of school walk routes. The majority of SWR are on local and collector streets. There is about 1 mile on principal arterials and about 5 miles on minor arterials. Almost 80% of the routes have walkways on at least one side. Table 4 describes walk route completion by roadway classification. Goal G4 addresses increasing the number of children who walk to school.

In October of 2000 the City Council created a School Walk Route Committee including residents, parents, representatives from the School District and others. In May of 2002, after numerous

⁵ Community School is an elementary school in Kirkland. Because it is a choice school it does not have a designated school walk route.

meetings, discussions, open houses and interaction with the various schools, the City Council approved their recommendations. These recommendations included:

- Build \$1 M worth of “priority” SWR projects as identified by each school
- Rank other identified SWR’s using the CIP Project Evaluation Criteria
- Explore possibility of a Sidewalk Bond ballot measure to provide funding for sidewalks
- “Call” concomitant agreements that would fund sidewalks through private funding. (see Page 55 for more information about concomitant agreements.)

The priority SWR projects were completed at all seven elementary schools by the Fall of 2002, and other routes continue to be evaluated for funding. After further study, a sidewalk bond measure was not pursued, and the concomitant process was modified. Including the priority improvements that were undertaken in 2002, approximately \$2.2 M has been invested in improvements along school walk routes over the last few years. Between the time that the inventory of school walk routes that was done in preparation for the School Walk Route Advisory committee in 2001 and today, significant progress was made in completing the walk routes

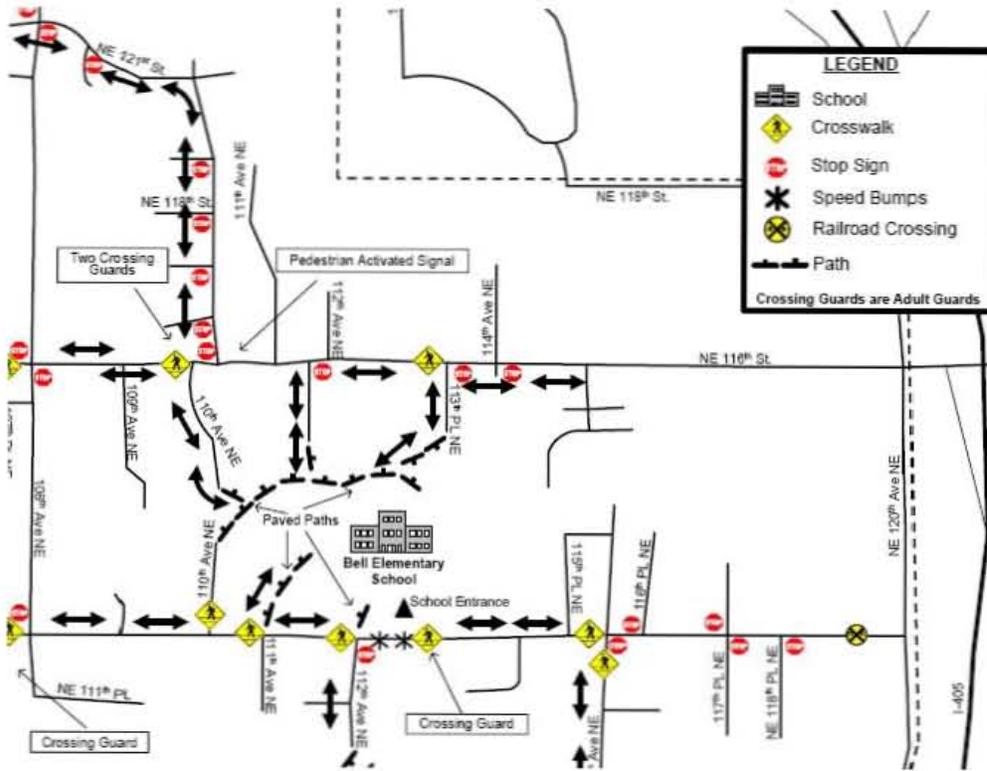
Table 4 Centerline miles of school walk routes by street type and walkway completion type

<i>General condition</i>	<i>Specific condition: presence of walkway by side of street</i>	<i>Local Street</i>	<i>Collector</i>	<i>Minor Arterial</i>	<i>Principal Arterial</i>	<i>Total</i>
Walkway not complete either side	None on either side	2.2	0.6	0.0	0.0	2.8
	Some on one side only	0.8	1.3	0.5	0.0	2.5
	Some on both sides	0.7	0.4	0.0	0.0	1.1
	Subtotal neither side complete	3.7	2.3	0.5	0.0	6.5
Walkway complete on one or both sides	Complete on one side, none on the other	1.9	3.8	0.5	0.0	6.2
	Complete on one side, some on the other	2.1	3.6	0.2	0.0	5.9
	Complete both sides	3.3	3.6	3.9	1.0	11.8
	Subtotal at least one side complete	7.2	11.0	4.6	1.0	23.9
TOTAL		11.0	13.3	5.1	1.0	30.4

around schools as shown in Figure 14. As a result of concerted efforts to improve school walk routes, the number of routes that have sidewalk on at least one side of the street has increased to a minimum of 80%.

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Figure 16 Portion of A.G. Bell Elementary School walk route map.



Section 2: Current Conditions

Map 10 School walk routes

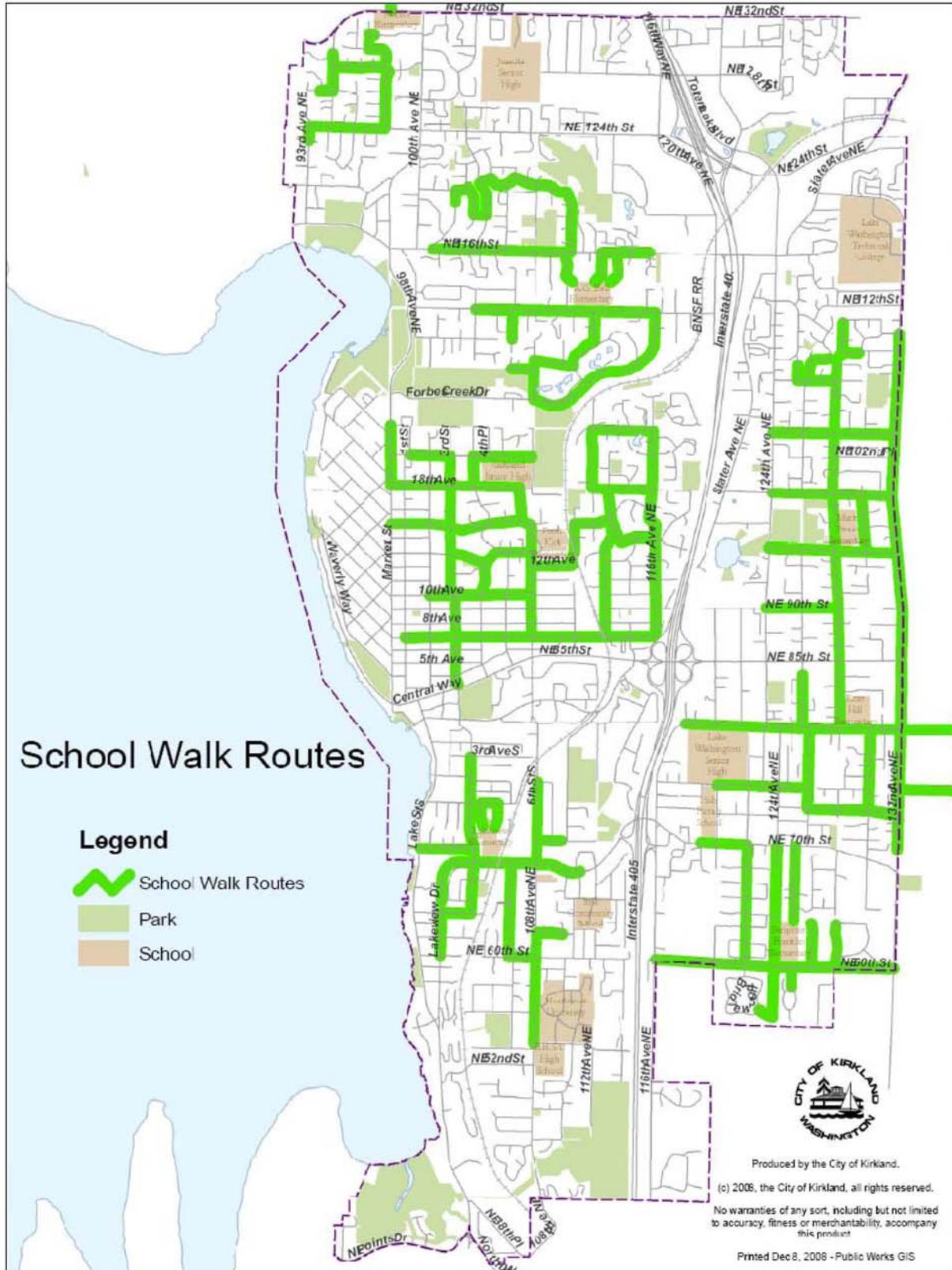


Figure 17 Inventory of school walk route completion by school. Funded projects reflected in projected columns.

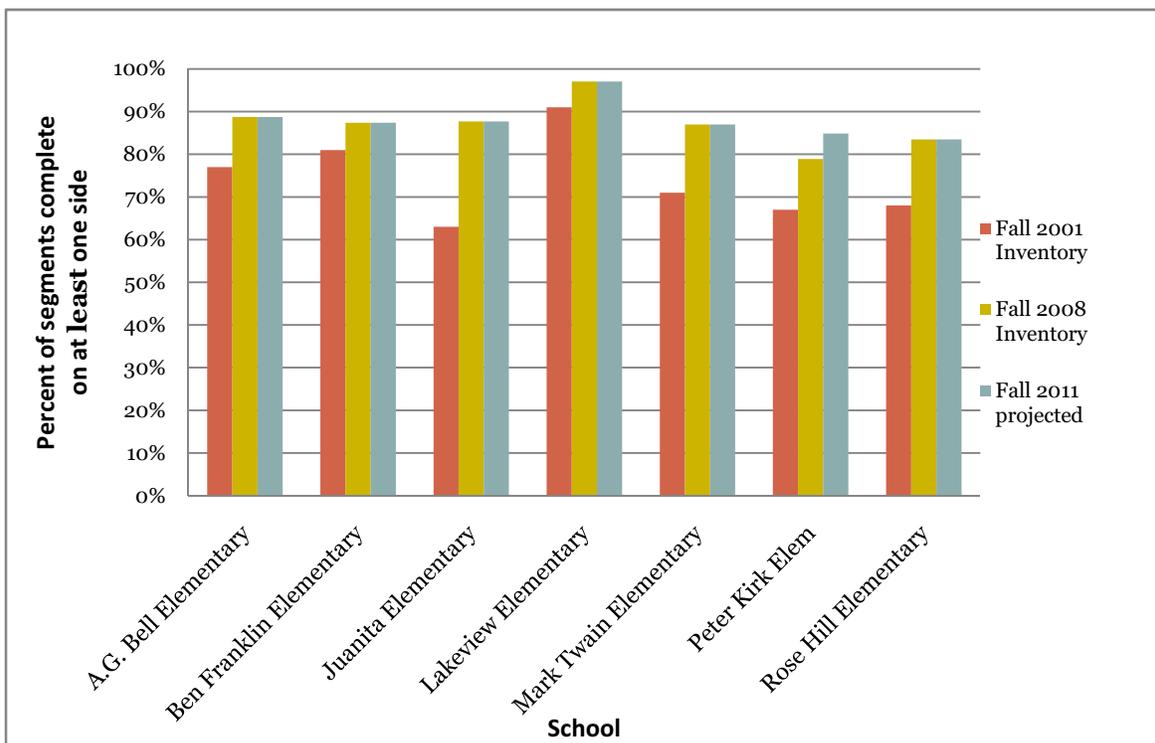


Figure 18 School walk route completion by street type

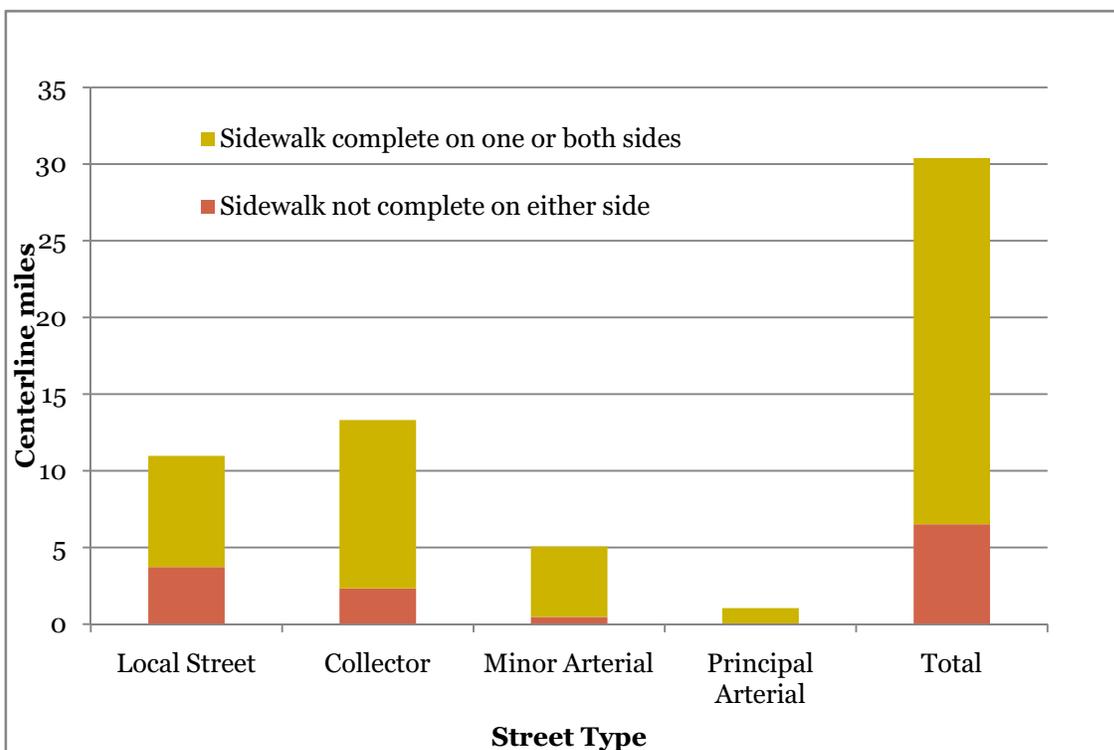


Figure 19 Detailed completion of school walk routes

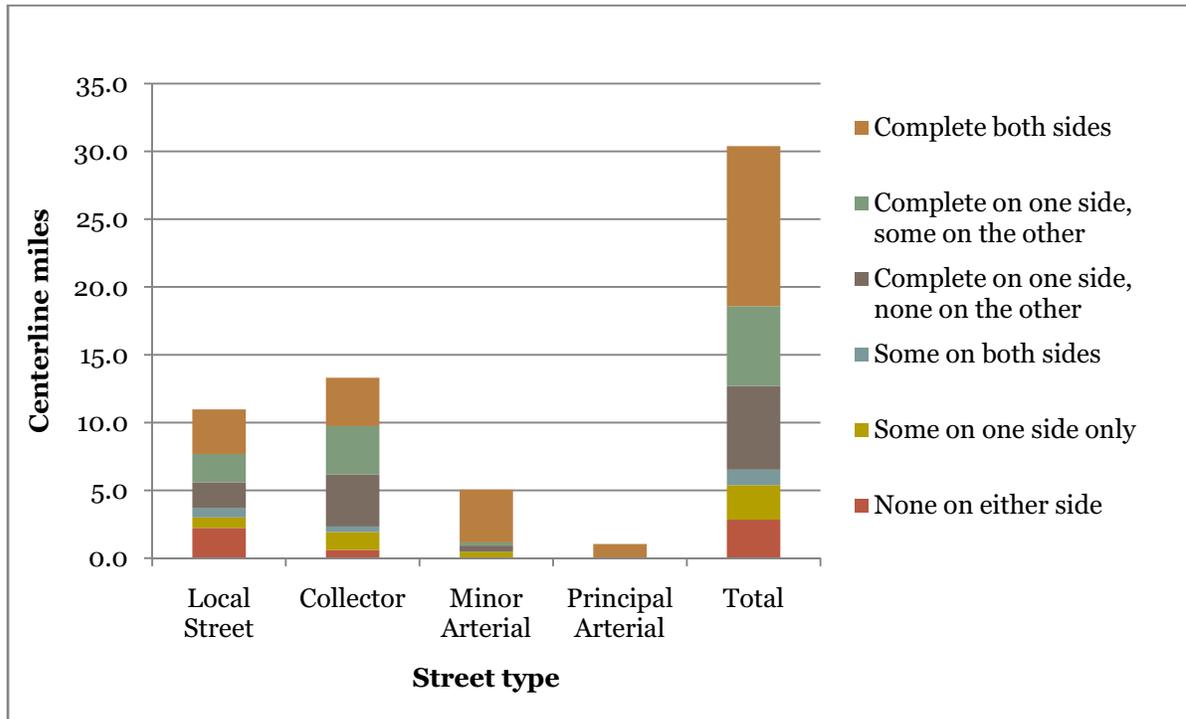


Figure 20 Detailed completion of school walk routes by street type; percentage

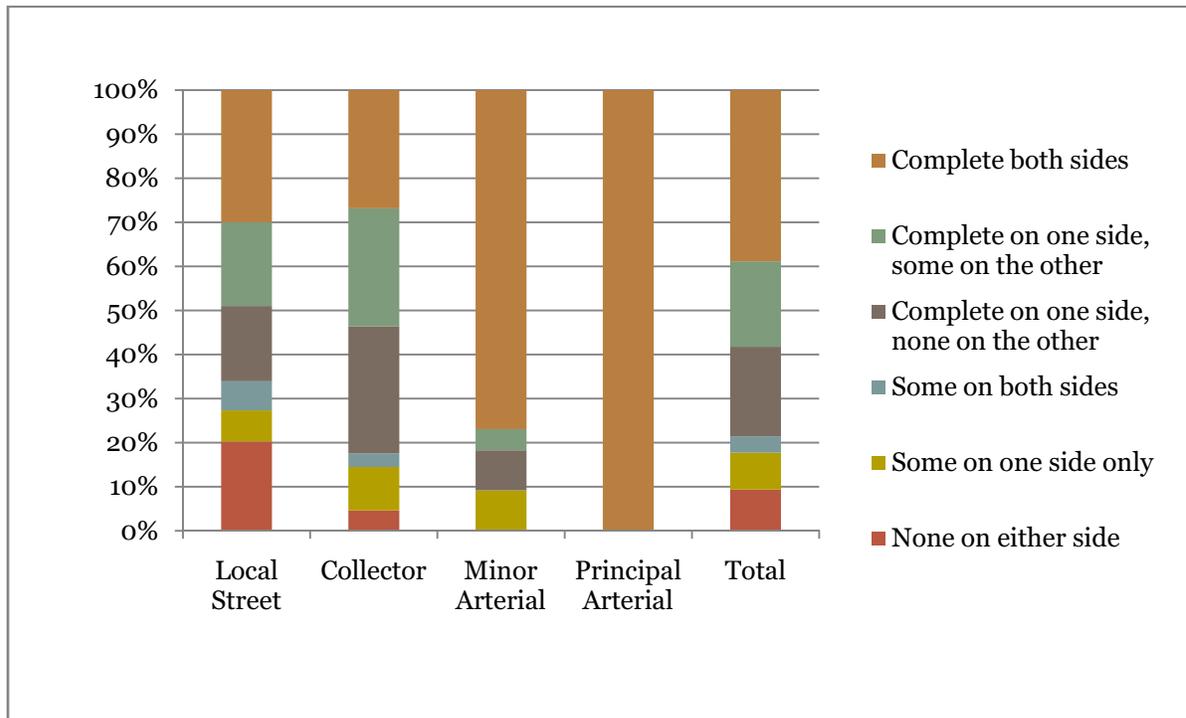


Table 5 Completion costs of school walk routes

	Length (mi)	Cost (\$M)	Length (mi)	Cost (\$M)
Principal Arterial	0.0	0.0	0.0	0.0
Minor Arterial	0.2	0.4	1.3	2.9
Collector	1.6	3.6	10.1	23.3
Local	3.2	7.4	10.0	22.9
Total	5.0	11.3	21.4	49.0

Cost estimate based on \$300/lin. ft and 45% overhead and contingency.

MAINTENANCE

PEDESTRIAN FACILITIES

According to the Kirkland Municipal Code, sidewalk maintenance is the responsibility of the adjacent property owner. Nevertheless, the Public Works Department has several programs to address sidewalk maintenance.

Concrete sidewalks are constructed by forming separate panels of sidewalk each about 10’ long. When the sidewalk is new, all the panels are at the same level, creating a smooth walkway. Tripping hazards are caused when these sidewalk panels shift relative to each other by 1/2” or more. An inventory of all the walkways in Kirkland was conducted in 2004. This survey indentified a number of offsets which have been corrected. When new problems are reported to the City several methods are used to remove the offset. The most common treatment is to grind a portion of the higher panel, but sometimes the entire lower panel is raised or material is placed on top of the lower panel to bring it up to the level of the higher panel.

Tree roots pushing on sidewalk panels is the cause of most of the offsets in the sidewalk system. Improper installation or damage by heavy vehicles can also cause offsets but this is rare. City policy is to protect the trees versus the sidewalk; in other words, trees are not removed because their roots are damaging sidewalks. There are several strategies that are used to accomplish this. Rubber sidewalk has been used as a pilot project; the rubber sidewalk is able to flex and maintain a smooth surface even when roots push on it. Asphalt is more flexible than concrete and can also be used in areas where

What does the Kirkland Municipal Code say?

Although the City has several programs that help property owners maintain sidewalk, the law holds adjacent property owners responsible for the cost of sidewalk maintenance. Here are the applicable section of the KMC:

19.20.020 Abutting property owner to maintain sidewalk in safe condition.

It shall be the responsibility of the owner of property abutting upon a public sidewalk to maintain the sidewalk at all times in a safe condition, free of any and all obstructions or defects, including but not limited to ice and snow. (Ord. 2654 § 1 (part), 1982)

19.20.030 Expense of maintenance and repair to be borne by abutting property and owner thereof.

The burden and expense of maintaining sidewalks along the side of any street or other public place shall devolve upon and be borne by the owner of the property directly abutting thereon. The abutting property owner shall also be responsible for performing and paying for sidewalk repairs to the extent the need for repairs is caused by the actions or omissions of the abutting property owner. (Ord. 4123 § 1, 2008; Ord. 2654 § 1 (part), 1982)

Section 2: Current Conditions

tree roots are damaging standard sidewalk. Simply moving the sidewalk so that it avoids trees is also sometimes possible.

In some cases, sidewalk panels themselves crack or otherwise deteriorate. In these cases, asphalt sections are sometimes used as an interim replacement for the damaged concrete. Concrete is restored as a component of the pavement maintenance program when the street pavement is overlaid. The Capital Improvement Program also includes \$200,000 per year to make repairs to sidewalks.

Although they have a lower initial cost, the shorter life and therefore higher maintenance cost of asphalt paths give them a higher lifecycle cost than concrete sidewalks. Gravel paths have an even greater maintenance cost and are used only as a short term solution; typically where concrete or asphalt is to be installed soon or where special users such as horses need a softer surface.

The most common sidewalk maintenance complaints are about obstructions in the walkway. This is usually landscaping, brambles, or tree branches that reach across the sidewalk. Because it is the responsibility of the adjacent property owners to maintain a clear sidewalk when the city receives a complaint that sidewalk is obstructed several steps go into resolution of the complaint. First the complaint is checked to see if it is a safety hazard that warrants immediate action. If it is, City staff removes the obstruction. If it is not an immediate hazard, a letter describing the problem is sent to the adjacent property owner. The letter explains that the property owner has two to three weeks to remove the obstruction. If the work is not done, a 2nd letter is sent reminding the resident of their responsibility, setting a shorter time line, and stating that if not done, it will be removed by the City. About 75% of the complaints are taken care of by property owners within the allotted time.

Waste and recycling containers are another common sidewalk obstruction. When specific blocking problems are reported, letters are sent by the city to the offending property owners.

There are about 180 pathways and small connectors that are the maintenance responsibility of the City. These are the kind of facilities that make connections between cul-de-sacs for example. These are maintained semi annually or on a complaint basis depending on the amount of staff available.

BICYCLE FACILITIES

Keeping bicycle lanes free of obstructions free of debris is a major maintenance concern of cyclists. On average, every street in the city is swept 11 times a year. The downtown area is swept 100 times a year. Downtown sweeping frequency increases in the summer when activity is highest and in the autumn when leaf debris can clog storm drains.

Although there is no special program to specifically sweep bicycle lanes, there is an active program that responds to specific complaints. Spot sweeping is performed on bicycle lanes whenever a focused complaint is received. Many requests of this type are handled each year.

Figure 21 Installation of rubber sidewalk panels on 103rd Avenue NE



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Being detected at traffic signals is also a major concern for cyclists. Traffic signals in Kirkland should be able to detect bicycles. City technicians can respond and work with cyclists at any location where a problem is reported.

Small bumps and holes in the pavement that car traffic doesn't notice can be a problem for cyclists. As with sweeping and traffic signal detection, pavement irregularities are also handled as they are reported.

Figure 22 Overhead flashers at a former site of in-pavement lights, NE 124th Street at 105th Avenue in Juanita



Section 3: Existing Plans and Programs

2001 NON-MOTORIZED TRANSPORTATION PLAN

System maps are at the heart of both the 2001 Non-Motorized Plan and its 1995 predecessor. These maps designated priority one and priority two classifications for both bicycle and pedestrian facilities. In both plans, the priority one facilities were to be “given priority when selecting projects to construct” and the priority two facilities were to be “given priority during project selection, but to a lesser degree than Priority One Corridors”. These priority routes were used to help rank CIP projects for funding and were used in development review to decide where bicycle facilities should be installed by new construction. Figure 31 shows examples of the priority corridors.

The 1995 plan used a measure of miles of facility per population to evaluate performance of the non-motorized system. The 2001 update replaced this with two new measures. The first was a measure of the number of miles of complete facilities within the priority system. Note that this is not a measure of all the sidewalks that have been constructed, only those on priority routes. The second was a measure of completeness, as measured by priority corridors that were complete along their entire length. Goal 9 of the plan laid out four policies that had specific targets. These targets and current progress toward the targets are shown in Table 6 below.

COMPREHENSIVE PLAN

The Comprehensive Plan is the City of Kirkland’s guiding document that establishes a vision, goals and policies, and implementation strategies for managing growth within the City’s Planning Area over the next 20 years. All regulations pertaining to development (such as the Zoning Code, Subdivision Ordinance, and Shoreline Master Program) are consistent with the Comprehensive Plan. There are 17 framework goals that provide the basic structure of the document. The Transportation Element of the Plan focuses on how the transportation system should be developed. Specifically, the Plan’s framework goal 12:

FG-12 Provide accessibility to pedestrians, bicyclists, and alternative mode users within and between neighborhoods, public spaces, and business districts and to regional facilities.

From previous Non-motorized Transportation Plans:

The 1995 Plan contained the following Mission Statement:

Mission Statement

To integrate non-motorized transportation throughout Kirkland as an essential element of our transportation system, recreation system and community.

From the 2001 Non-motorized Transportation Plan

“Priority One Corridors represent significant north-south and east west routes, both existing and potential. The spacing between Priority One Corridors is approximately 1/2-mile in the pedestrian system and approximately one mile in the bicycle system.”

“Priority two corridors represent the next level of importance in non-motorized transportation connectivity. These corridors are approximately 1/4 mile apart in the pedestrian system and 1/2 mile apart in the bicycle system.”

Table 6 Goals from the 2001 Non-motorized Transportation Plan and progress toward them

<i>2001 Plan Policy</i>		<i>2000 status</i>	<i>2007 goal</i>	<i>2007 actual</i>	<i>2012 goal</i>
9.1 Pedestrian System mileage		102.1	105.2		131.0
9.2 Bicycle System mileage		41.0	41.5		50.7
9.3 Complete Pedestrian corridors	East-west	2	6	4*	n/a
	North-South	2	4		n/a
9.4 Complete bicycle corridors	East-west	1	4		n/a
	North-South	0	2		n/a

Within the Transportation Element there are several goals corresponding to the larger framework goal. The goal that most applicable to the non-motorized plan is Goal T-2:

Goal T-2: Develop a system of pedestrian and bicycle routes that forms an interconnected network between local and regional destinations.

Each goal has underlying policies that are designed to support meeting the goal. Goal T-2's policies are as follows:

Policy T-2.1: Promote pedestrian and bicycle networks that safely access commercial areas, schools, transit routes, parks, and other destinations within Kirkland and connect to adjacent communities, regional destinations, and routes.

Policy T-2.2: Promote a comprehensive and interconnected network of pedestrian and bike routes within neighborhoods.

Policy T-2.3: Increase the safety of the non-motorized transportation system by removing hazards and obstructions and through proper design, construction, and maintenance, including retrofitting of existing facilities where needed.

Policy T-2.4: Design streets with features that encourage walking and bicycling.

Policy T-2.5: Maintain a detailed Non-motorized Transportation Plan (NMTP).

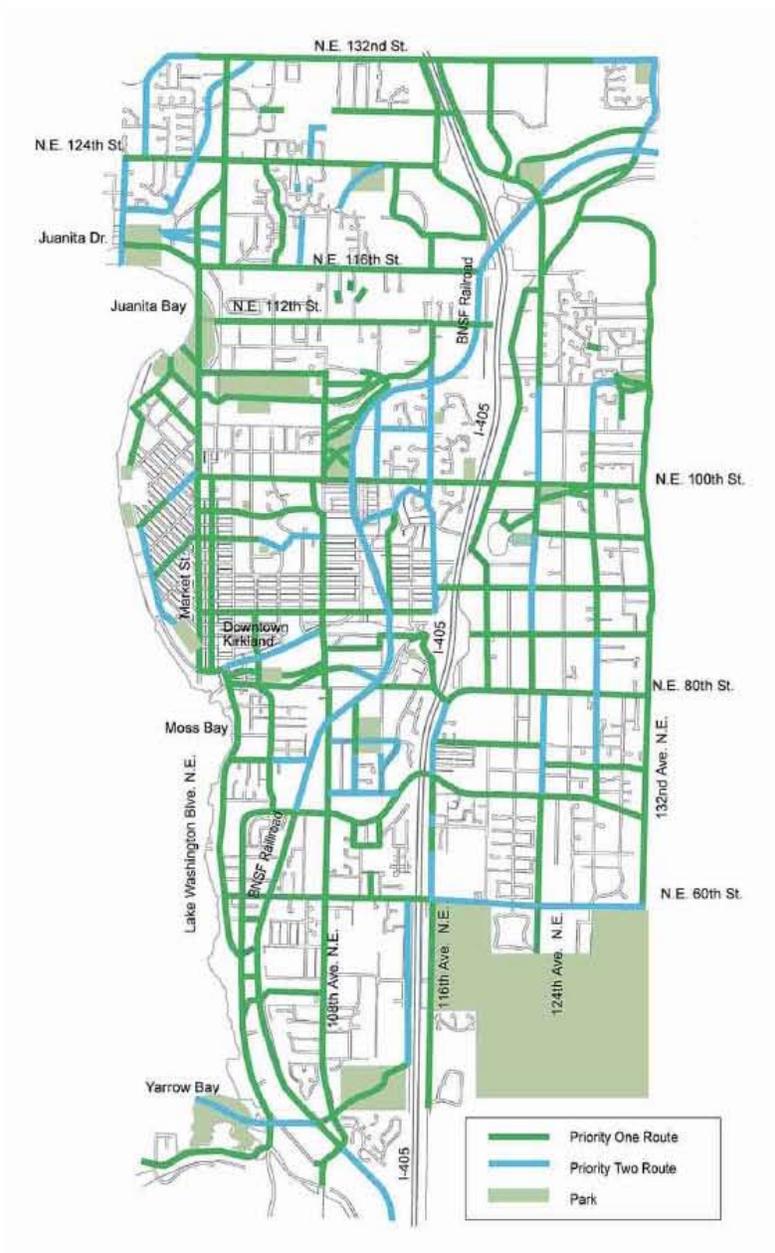
These policies have been taken into account as the existing pedestrian and bicycle networks have been developed and as this plan was prepared.

The Comprehensive Plan contains a separate plan for each neighborhood. Each neighborhood plan identifies bicycle and pedestrian routes in that neighborhood. For most neighborhoods, the majority of these routes follow the priority routes in the 2001 Non-motorized Transportation Plan. Some plans have not been updated in over 20 years, others have been updated recently. There is not a uniform understanding of what designation in the neighborhood plan means or requires. It is clear however that designation of routes indicates specific interest in particular routes at the time each plan was prepared.

Section 3: Existing Plans and Programs

Figure 23 Priority Corridor map from 2001 Plan

PRIORITY CORRIDOR NETWORK FOR PEDESTRIAN PLANNING
Figure 4-1



4. PLANNING GUIDELINES



2001 • KIRKLAND NONMOTORIZED TRANSPORTATION PLAN

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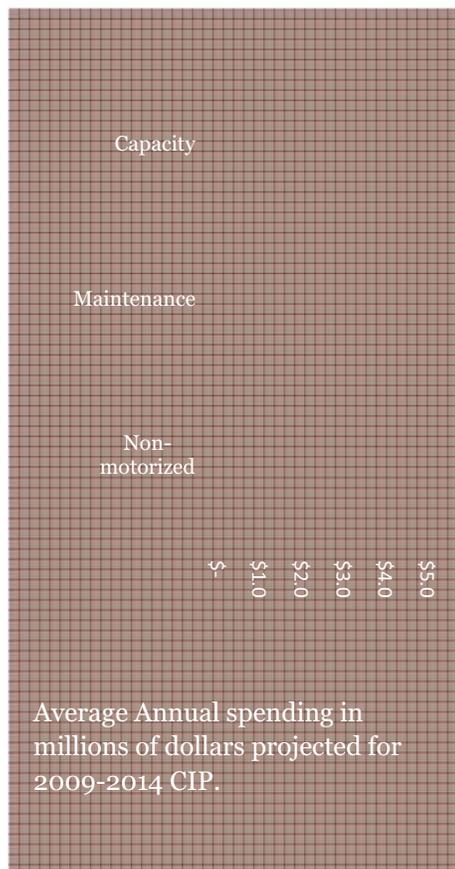
CAPITAL IMPROVEMENT PLAN

GENERAL

Kirkland’s Capital Improvement Program (CIP) is updated and approved by City Council every two years. It contains a list of projects that the City plans to construct over a six year period. Bicycle and sidewalk projects that involve a construction cost of more than \$50,000 are funded through the CIP.

PROJECT RANKING

Transportation projects can be divided into *capacity projects*; those projects that are intended to provide capacity for automobiles in order to meet specific concurrency⁶ targets, *maintenance projects* such as pavement overlay and *non-motorized projects*. Non-motorized projects are prioritized for funding using the Transportation Project Evaluation. In 1995, the City Council adopted a set of criteria which were developed by a citizen advisory committee for evaluating and prioritizing transportation projects. The Transportation Project Evaluation, criteria also known as the ad-hoc criteria (because the committee that formed them was nicknamed the Ad-hoc Committee) were then used in the City’s Capital Improvement Program for two years to prioritize all of the proposed transportation projects. After two full CIP prioritization processes, the City Council reconvened the original committee to ascertain whether or not the resulting CIP projects reflected the desired outcome of the committee. After looking at the projects that were being funded in the CIP, the committee concluded that the projects did not provide enough recognition for a school walk routes. As a result, the committee recommended, and the City Council approved, a modification to the criteria in May of 1998; the revised criteria give additional points to sidewalk project proposals on identified school walk routes.



These modifications were included in the Transportation Project Evaluation process and are used by staff to rate non-motorized projects for placement on the priority list and ultimately in the CIP. In addition, the Transportation Project Evaluation was included in the City of Kirkland’s Non-Motorized Plan adopted in 2001 by the City Council.

⁶ Concurrency is a system which is intended to insure that auto capacity is built at a rate commensurate with the rate at which auto trips from new development are added.

Section 3: Existing Plans and Programs

The system uses six factors to rank projects. Each project may receive up to 100 points:

- **Fiscal – (20 points possible)** What is the City's ability to leverage funding with other sources? Can grants be secured to extend the City's "purchasing" power?
- **Plan Consistency – (10 points possible)** How does the project compare with existing neighborhood or regional plans?
- **Neighborhood Integrity – (15 points possible)** What are the impacts that this project will have on the neighborhood that it is proposed for?
- **Transportation Connections – (15 points possible)** Will the proposed project fit into the network of the transportation system on a local/regional level? Are there nearby attractions that be served by this proposed project?
- **Multimodal – (20 points possible)** How does this project encourage alternate (non single occupancy vehicle) forms of transportation?
- **Safety – (20 points possible)** What are the existing conditions as compared to the improvements proposed by the project?

Inputs for project scoring include whether or not the proposed project is on a priority 1 or priority 2 route as described in the 2001 non-motorized plan. This factor enters into the scoring of both the Plan Consistency and Transportation Connections categories. As discussed in Section 4 since this Plan removes the priority network and evaluates the pedestrian accessibility each street. A revised system for evaluating projects is described in Section 5

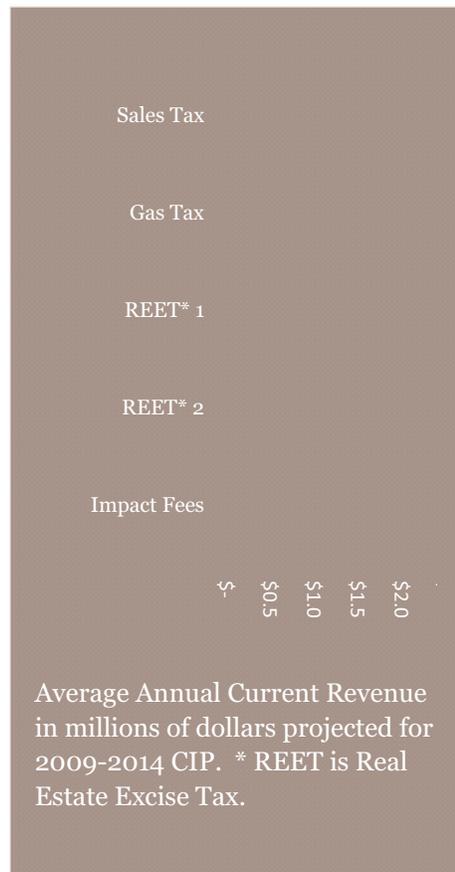
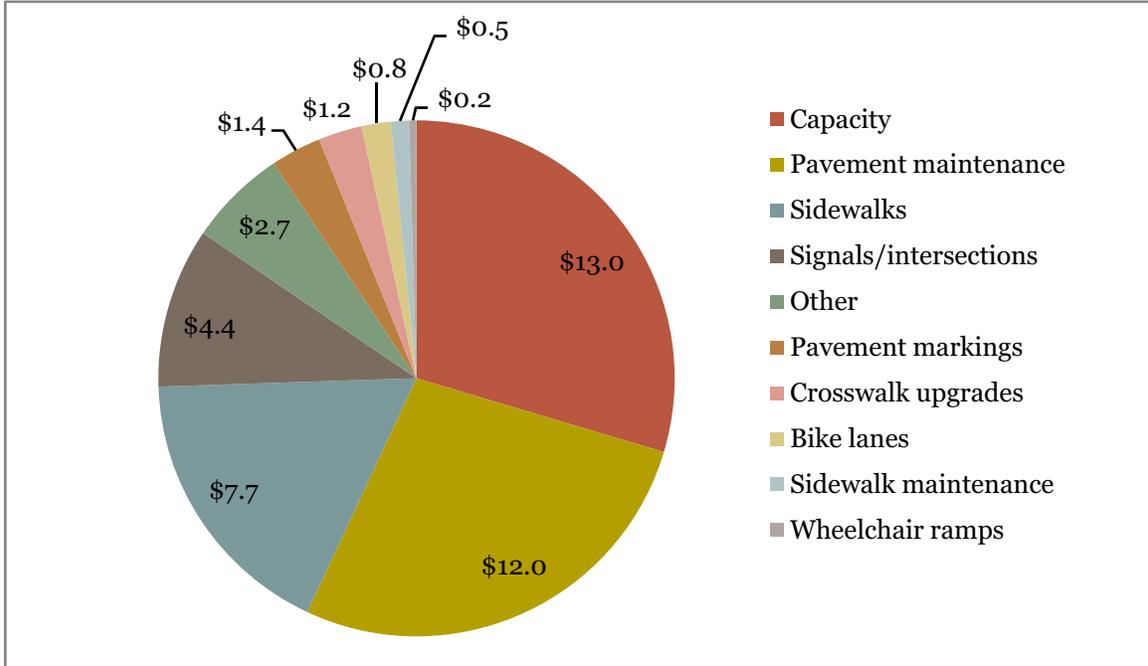


Figure 24 Relationship between previous plans and project evaluation

Transportation Project Evaluation
Points by category

Currently, sidewalk construction projects are ranked for funding on the CIP by their score on the Transportation Project Evaluation. Two sections of the ranking; Plan Consistency and Transportation Connections are dependent upon information from the existing Non-motorized Transportation Plan. Together, these categories can result in up to 9 points of the possible 100 points a project can score.

Figure 25 Cumulative CIP spending by transportation project type 1997-2007 (millions of dollars)



Section 3: Existing Plans and Programs

OTHER PROJECTS

In addition to projects specifically targeted for pedestrian or bicycle improvements, elements of benefit to walkers and cyclists are constructed through other roadway projects. For example, a street reconstruction project like the one that added a center turn lane on Slater Avenue north of NE 116th Street included bike lanes, sidewalks, planter strips, lighting and medians.

Figure 26 Slater Avenue north of NE 116th Street



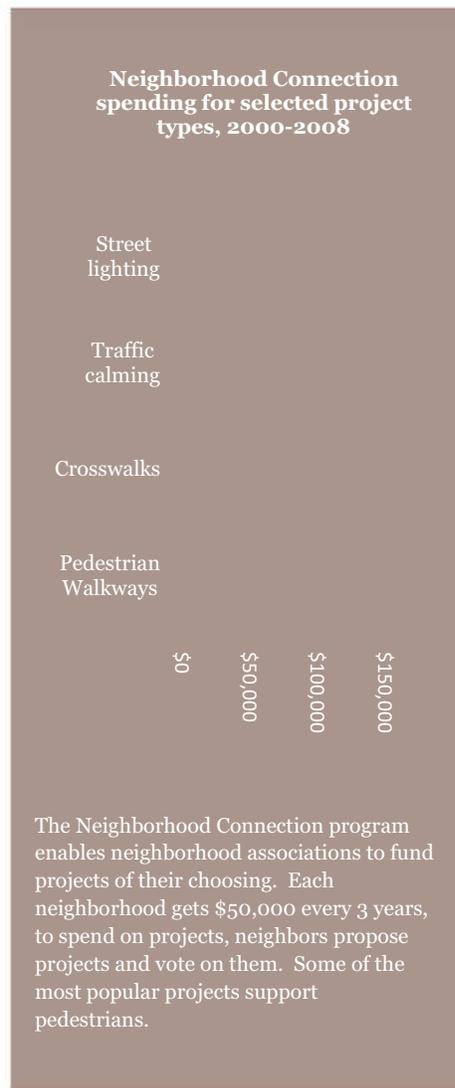
Whenever a street is scheduled for a pavement overlay, the adjacent sidewalk is evaluated. Sidewalk that needs replacement is replaced and accessible sidewalk ramps are installed. This work is funded from the pavement maintenance budget.

Table 7 Sidewalk and ramps constructed by pavement overlay program

2006	2266	47
2007	516	43
2008	461	27

If there is an in-pavement light installation at a crosswalk where pavement is being overlaid, the maintenance program removes and reinstalls the lights after the pavement is repaired.

CIP funding supports a crosswalk improvement program. Recently, funding has been \$70,000 every two years. This funding has been used to improve install in-pavement flashers and overhead signing at uncontrolled crosswalks.



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DEVELOPMENT GUIDELINES

Kirkland's Zoning Code and Pre-approved Plans work together to describe when and where and how non-motorized facilities are constructed in Kirkland. The Zoning Code describes *what* improvements must be made and the Pre-Approved Plans describe *how* improvements are to be made. Other sections of the zoning code specify other aspects of street design, for example districts where sidewalk width or planter strip width is required to be greater than usual.

WHERE IS SIDEWALK REQUIRED?

Beginning in about 1985, builders of individual single family homes were not required to construct sidewalk along the frontage of their property. Instead, they signed a promise to fund future construction of the missing sections of sidewalk, called a concomitant agreement. This avoided construction of short "islands" of sidewalk. At the same time, the property owner was responsible for the cost of their sidewalk if the City "called" the concomitant within 15 years of its signing.

In 2000 as the concomitants began to reach their 15 year life, concomitant holders were given the choice to either build the sidewalk or sign a new 15 year agreement. The holders of concomitants felt this was unfair and the City Council agreed. While the issue was being studied, neither concomitant agreements or new sidewalk was required.

Figure 27 A path (in green) connects the cul-de-sac on the left with the street on the right



After studying the issue, City Council decided to do away with new concomitants and require builders of individual single family homes to build the sidewalk when the home is built. This new policy took effect in January of 2005.

There are currently 3 cases where sidewalks are not required as a part of new development. The most common case is on dead-end streets less than 300' long. Another case is on local streets in the equestrian overlay area near Bridle Trails State Park. Beginning in 2005, residents could vote to waive the sidewalk requirement on their street. This is the third case where sidewalk may not be

required City approval is required to enter into the voting process. Streets that make key pedestrian connections or that have the potential for a substantial pedestrian trips or that are school walk routes are not eligible for the waiver process. Obtaining a waiver requires approval by a 70% majority of the property owners on the street. This process is detailed in policy R-14 of the Pre-approved plans.

CONNECTING PATHS

All new subdivisions are reviewed for possible pedestrian connections. Two cul-de-sacs can be connected by such a path, for example. These connections provide handy short cuts for walkers

and cyclists (see Figure 24) and sometimes allow them to avoid busy streets. Sometimes these connections are required in place of road connections. Because the need for connections depends on the context of the location and existing conditions, they are required on a case-by-case basis. The Kirkland Municipal Code authorizes the Public Works Department to require easements to be granted by developers. This same authority also allows the City to require sidewalk along private streets that connect with each other.

STREET WIDTHS

Chapter 110 of the Kirkland Zoning Code *Required Public Improvements* contains standards for how streets and sidewalks are to be developed. Chapter 110 describes street cross-sections and when facilities such as sidewalks and bike lanes are to be constructed within the right-of-way.

Local streets are 20', 24' or 28' wide. The width and cross-section elements on arterials and collectors are determined by the Public Works Director. For some streets; NE 132nd Street, NE 85th Street, 120th Avenue NE, 124th Avenue NE and 132nd Avenue NE, cross-sections are established in the Pre-Approved Plans.

Other sections of the zoning code specify other aspects of street design, for example districts where sidewalk width or planter strip width is required to be greater than usual.

Recent research⁷ shows that car lanes 10' wide do not have negative safety impacts as compared to wider lanes. Using 10' wide lanes often makes striping bicycle lanes possible on streets that would otherwise not accommodate them.

Table 8 A quick guide to street elements

<i>Sidewalks</i>	5' on most streets, 8' or 10' in business districts as identified in the zoning code. 7' on NE 85th Street	Always except on short dead end streets and equestrian zones. Can sometimes be waived by residents on local streets.
<i>Planter strip between curb and sidewalk</i>	4.5' with 5' sidewalks, no planter strips on wider sidewalks. .	Always, but planter strip requirement can be waived or modified if terrain is too steep.
<i>Bike lanes</i>	5' wide minimum with curb and gutter, 4' minimum with no curb.	Formerly on 2001 non-motorized transportation plan priority routes, now on bike network when auto volume over 5000 vehicles per day.
<i>Parking</i>	6' wide minimum, 7' typical	Case by case. Usually allowed both sides of street
<i>Auto travel lanes</i>	10' wide minimum, 11' typical.	Case by case depending on volume and street function.

⁷ *Relationship of Lane Width to Safety for Urban and Suburban Arterials*, Potts, Harwood, and Richard. Transportation Research Record 2023, Transportation Research Board.

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Table 9 Common local street widths

<i>Curb face to curb face width</i>	<i>Parking allowed</i>	<i>Common application</i>
20'	Yes, one side only	Shorter, low volume
24	Yes, two sides	Standard
28	Yes, two sides	Higher volume, multi-family applications

Figure 28 Example of an illustration from Chapter 110 of the Kirkland zoning code

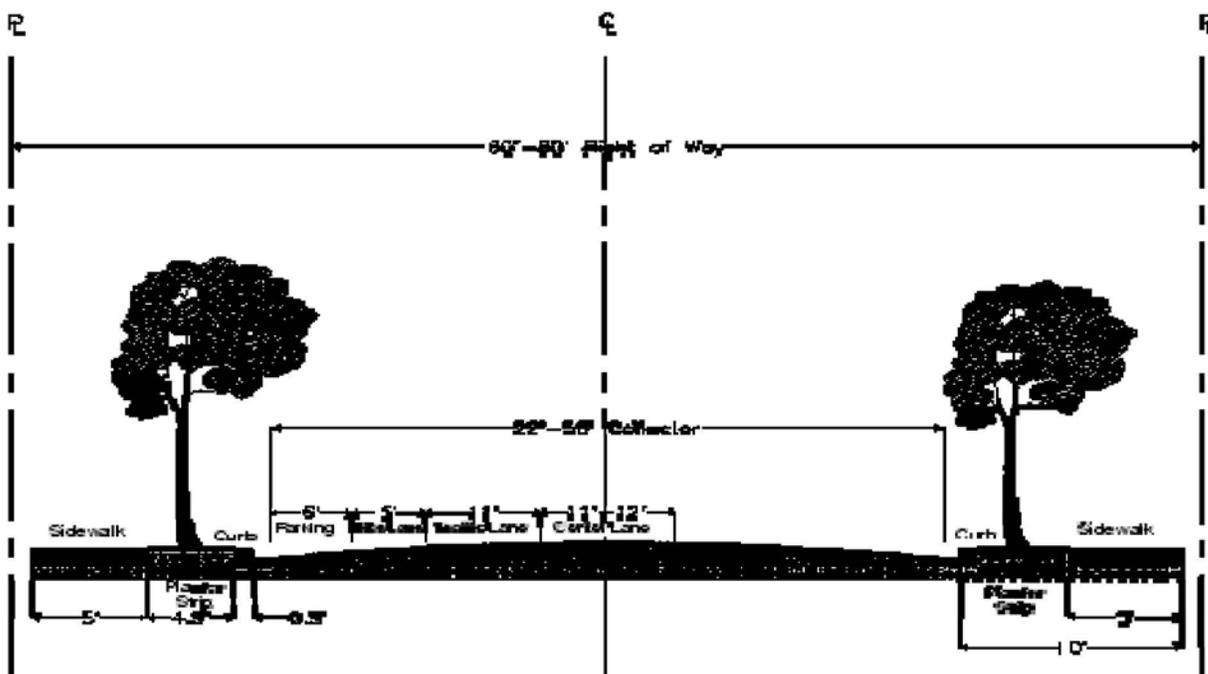
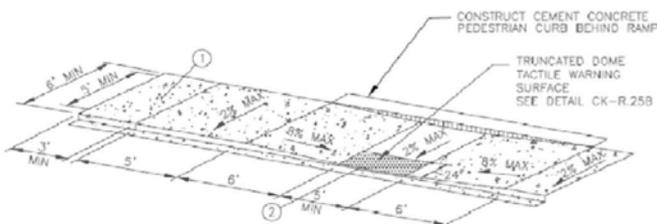


Figure 29 Sample drawing from pre-approved plans showing how to construct a mid block sidewalk ramp



NOTES

1. TEXTURE PATTERN NOT TO EXCEED 1/2" WIDTH.
2. CURB CUT NOT TO EXCEED 1/4" RISE.
3. RAMP SECTION AND MATERIAL THICKNESS SHALL MEET CITY OF KIRKLAND STANDARD SIDEWALK SECTION AS SHOWN IN CK-R.23.

PRE APPROVED PLANS

The City of Kirkland’s Pre-Approved Plans illustrate details of construction projects that are common to many projects. They exist to assure consistency across projects and to make plan preparation easier. The Pre-Approved Plans describe specifications for the placement and construction of items such as,

driveway ramps in sidewalks, Street tree wells, curbs and gutters and street lights. The Pre-Approved plans also contain policies on such items as driveway locations, signing, paving and right-of-way widths. The City's Public Works Department administers the Pre-Approved Plans.

STREET DESIGN GUIDELINES

Design Guidelines for Pedestrian Oriented Business Districts sets forth a series of design guidelines ,adopted by Section 3.30 of the Kirkland Municipal Code, that are used by the City in the in the design review process. The Design Review Board uses these guidelines in association with the Design Regulations of the Kirkland Zoning Code. Figure 37 is a page from the Design Guidelines that illustrates its contents.

CROSSWALK REVIEW

As a result of the 2003 study of crosswalk safety the following principles were developed for establishment of crosswalks.

1. The North Carolina ranking system is valid. Therefore, all other things being equal, crosswalks are improved in the order: N then P then C. Within a particular category, crosswalks are ranked for improvement by traffic volume, then by number of lanes and then by speed limit. No ped crossings are placed on routes with vehicular volumes of greater than 30,000 without a signal.
2. Crosswalks that have any pedestrian crashes in the past 5 years and 3 or more crashes in the past 10 years are an crash problem and rate higher for removal or for improvement.
3. All other things being equal, crosswalks that make connections to routes on the pedestrian network as described in the Non-Motorized Plan should be considered for improvement first.
4. School crosswalks are only on accepted school walk routes. SN, SP and SC crosswalks are treated as non-school N, P and C crosswalks respectively. Favor improvements on school routes.
5. Improved Crosswalk spacing on arterials of 1200' or less is desirable and a general minimum is 400'.
6. Lighting at crosswalks should be analyzed and a plan for improvement should be developed independent of other improvements.
7. Basic improvements beyond lighting are applied in the order 1) islands 2) flashing crosswalks 3) overhead signs 4) signals (half, full, etc).

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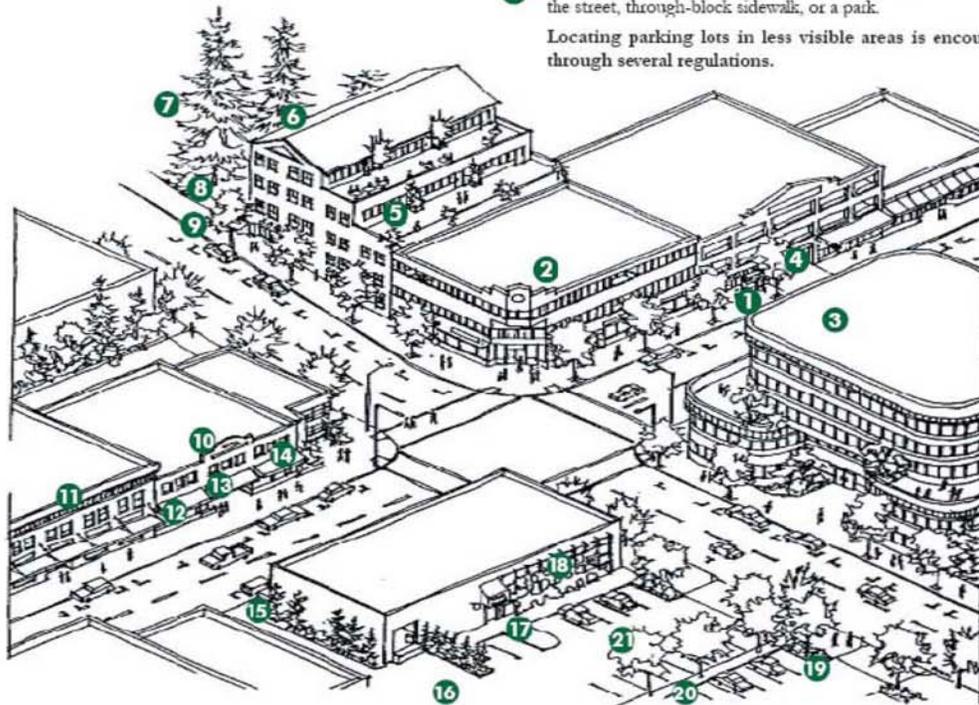
Figure 30 Page 2 of the Design Guidelines for pedestrian oriented business districts

Kirkland Design Guidelines

The drawing below illustrates many of the design Guidelines described in this appendix

- 1 Pedestrian plazas and places for vendors encouraged through several regulations.
- 2 Buildings on corner lots may be required to incorporate an architectural or pedestrian-oriented feature at the corner. Many options are possible including plazas, artwork, fountains, curved corners, etc.
- Special architectural requirements placed on use of concrete block and metal siding.
- 3 "Architectural scale" requirements direct large buildings to fit more comfortably with neighboring development. This example employs building setbacks, decks, curved surfaces, and recessed entries to reduce appearance of building mass.
- 4 Parking garages on pedestrian-oriented streets or through-block sidewalks may incorporate pedestrian-oriented uses or pedestrian-oriented space into front facades.
- Street trees required along certain streets.
- 5 Human scale features such as balconies or decks, bay windows, covered entries, gable or hipped rooflines, multiple paned windows, or pedestrian-oriented space may be required.
- 6 More flexible method of measuring building height on slopes.
- 7 New policies regarding tree protection and enhancement of wooded slopes. Standards for size, quantity, quality, and maintenance of landscape plant materials are set by the Zoning Code.

- 8 Standards for size, quantity, quality, and maintenance of landscape plant materials are set by the Zoning Code.
- 9 Standards are set for pathway width, pavement, lighting, and site features on required major pathways and public properties.
- 10 A building cornerstone or plaque may be required.
- 11 Covering up existing masonry or details with synthetic materials is restricted.
- 12 Ground story facades of buildings on pedestrian-oriented streets or adjacent to parks may be required to feature display windows, artwork, or pedestrian-oriented space.
- 13 Pedestrian weather protection required on pedestrian-oriented streets.
- 14 Architectural detail elements such as decorative or special windows, doors, railings, grillwork, lighting, trellises, pavements, materials, or artwork to add visual interest may be required.
- Size of parking lots abutting pedestrian-oriented streets may be restricted.
- 15 Quantity and locations of driveways are regulated.
- 16 Visible service areas and loading docks must be screened.
- 17 Provision for pedestrian circulation is required in large parking lots.
- 18 Blank walls near streets or adjacent to through-block sidewalks must be treated with landscaping, artwork, or other treatment.
- 19 Screening of parking lots near streets is required.
- 20 Standards for curbs, signing, lighting, and equipment are set for parking lots.
- 21 Internal landscaping is required on large parking lots visible from the street, through-block sidewalk, or a park.
- Locating parking lots in less visible areas is encouraged through several regulations.



8. All N rated crosswalks should have at least an island. If an island is not feasible, the crosswalks should be seriously considered for removal. Only if removal is not feasible should improvements other than an island be considered first.
9. Removal is an option if technical and non-technical factors are met.
10. Warrants for Pedestrian signals are driven by gaps, not necessarily by the MUTCD volume warrants.

PEDESTRIAN AND CYCLIST COUNTS

In late September and early October of 2008, the Washington State Department of Transportation contracted with the Cascade Bicycle Club to count the number of pedestrians and cyclists throughout Washington. The Washington Department of Transportation (WSDOT) Bicycle and Pedestrian Documentation Project is a statewide effort sponsored by WSDOT, conducted in conjunction with the National Bicycle and Pedestrian Documentation Project. Six locations in Kirkland were included in the survey, which was performed by volunteers. This data should be replicated and improved upon in future years.

Table 10 Cyclist and Pedestrian counts, fall 2008

Site	date	Cyclists heading					Pedestrians heading				
		North	South	East	West	Total	North	South	East	West	Total
AM											
1	9/30	5	12	8	0	26	6	20	33	33	92
2	No Data										
3	9/30	2	7	0	0	12	0	1	0	0	1
4	10/1	0	0	10	8	22	0	0	17	14	31
5	9/30	0	0	11	7	23	0	0	20	4	24
6	10/2	0	0	8	4	18	0	0	5	17	22
PM											
1	10/2	7	4	0	2	14	26	14	9	21	70
2	10/2	36	21	0	0	59	58	55	0	0	113
3	No Data										
4	10/1	0	0	5	5	14	0	0	16	6	22
5	No Data										
6	10/2	1	5	3	5	20	6	3	5	9	23

Site 1 -100th Avenue NE South of NE 132nd Street

Site 2 -Market Street north of Central Way

Site 3 -116th Avenue NE north of Kirkland/Bellevue city limit (south of NE 41st street)

Site 4 -NE 70th Street west of 122nd Avenue NE

Site 5 -NE 100th Street on pedestrian/bike bridge over I-405

Site 6 -NE 116th Street west of 124th Avenue NE

AM count periods 7:00-9:00, PM count period 4:00-6:00. PM at Site 6, 5:30-6:30

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION PLAN

The Washington State Department of Transportation recently completed an update to the state Bicycle Facilities and Pedestrian Walkways Plan. State law (RCW 47.06.100) calls for the Washington State Bicycle Facilities and Pedestrian Walkways Plan to include strategies for: - Improving connections, -Increasing coordination, and -Reducing traffic congestion. It also calls for an assessment of statewide bicycle and pedestrian transportation needs.

Because I-405 is the only route in Kirkland which is maintained by the State, the major impact of state projects in Kirkland is at interchanges with I-405. These interchanges are important because they are some of the most difficult locations for biking and walking in Kirkland. Funding for these projects is not driven by needs for pedestrian and bicycle facilities, but updated bicycle and pedestrian facilities are included when they are built. There is currently a funded plan to complete the reconstruction of the NE 116th interchange and to add a new interchange at NE 132nd Street. Both of these project will improve facilities for walking and biking in the vicinity of the interchange.

TRAFFIC CONTROL DURING CONSTRUCTION

Traffic control for pedestrians and cyclists is an important part of traffic control through work zones. The level of the control depends on several factors. One is the functional classification of the road on which work is being performed. Arterials require the highest level of planning and control. Higher volume collectors require more concern than do low volume collectors and local streets. The level of pedestrian and cyclist use is also a factor that determines the sophistication necessary in a traffic control plan. Finally, the duration of the construction is also factored into work zone planning; short duration work does not require as much as longer term projects do. The *Manual on Uniform Traffic Control Devices* serves as a guide for designing work zone traffic control.

OTHER PROGRAMS

POLICE DEPARTMENT PEDESTRIAN STINGS

Police crosswalk stings are targeted at drivers that violate crosswalk laws. A police officer dressed in plain clothes enters the crosswalk when drivers are far enough from the crosswalk to have adequate stopping distance and notice. If drivers do not stop for the crossing officer, other officers on motorcycles are positioned so that they can easily stop and cite the offending motorist. The Kirkland police department runs stings at sites of high pedestrian traffic several times a year.

7 HILLS OF KIRKLAND

The 7 hills of Kirkland bike ride is a fundraiser for Kirkland Interfaith Transitions in Housing. It begins and ends in Marina Park and draws over 1000 cyclists to Kirkland each Memorial Day. The route includes portions of Market Street, Lake Washington Boulevard, NE 70th Street and 116th Avenue NE.

Section 3: Existing Plans and Programs

WALK YOUR CHILD TO SCHOOL WEEK

Each fall, the Kirkland Public Works Department sponsors Walk Your Child to School Week. Kirkland is part of the nationwide event aimed at encouraging children to try walking to school and recognize those who walk year around. Each elementary school organizes their own events, and one day during the week, hosts city elected officials and staff to help celebrate walking to school.

Figure 31 Walk your child to school week at AG Bell School



BIKE TO WORK MONTH

The Cascade bicycle club sponsors bike to work month each May. One Friday of the month is designated as bike to work day, and commuter stations are set up all over the region, including at Marina Park in Kirkland. The Kirkland station is manned by Kirkland staff and at least one interested citizen. Snacks and prizes furnished by Cascade are distributed to riders who choose to stop. In 2008, over 200 visited the Kirkland station.

ACTIVE LIVING TASK FORCE

The Active Living Task Force (ALTF), created in 2007, is comprised of residents, community agencies, local businesses, and City representatives. Their vision is for community design, services and programs to enhance our quality of life by making it safe, enjoyable and easy for everyone to be physically active in their daily lives. Their mission is to advise Kirkland policy makers, advocate and provide support for local strategies aimed at promoting community-enriched physical activity as an integral part of everyone's daily life.

SENIOR STEPPERS

The Kirkland Parks and Community Services Department operates the Senior Steppers program. The program was developed to encourage otherwise sedentary adults age 50+ to walk regularly for fun and fitness. Each year 170-200 participants register to walk with the "Kirkland Steppers". They range in ability from long-time walkers to those who are just beginning to seek regular exercise and in age from 48 to 96. Walkers are given a bright fluorescent program t-shirt and on any given Tuesday and Thursday through the summer a sea of brightly clad walkers roam the streets of downtown Kirkland and neighborhood parks. Many of the walkers continue to walk together throughout the year, rain or shine.

Figure 32 The Lakeview walk uses wayfinding arrows to guide pedestrians.

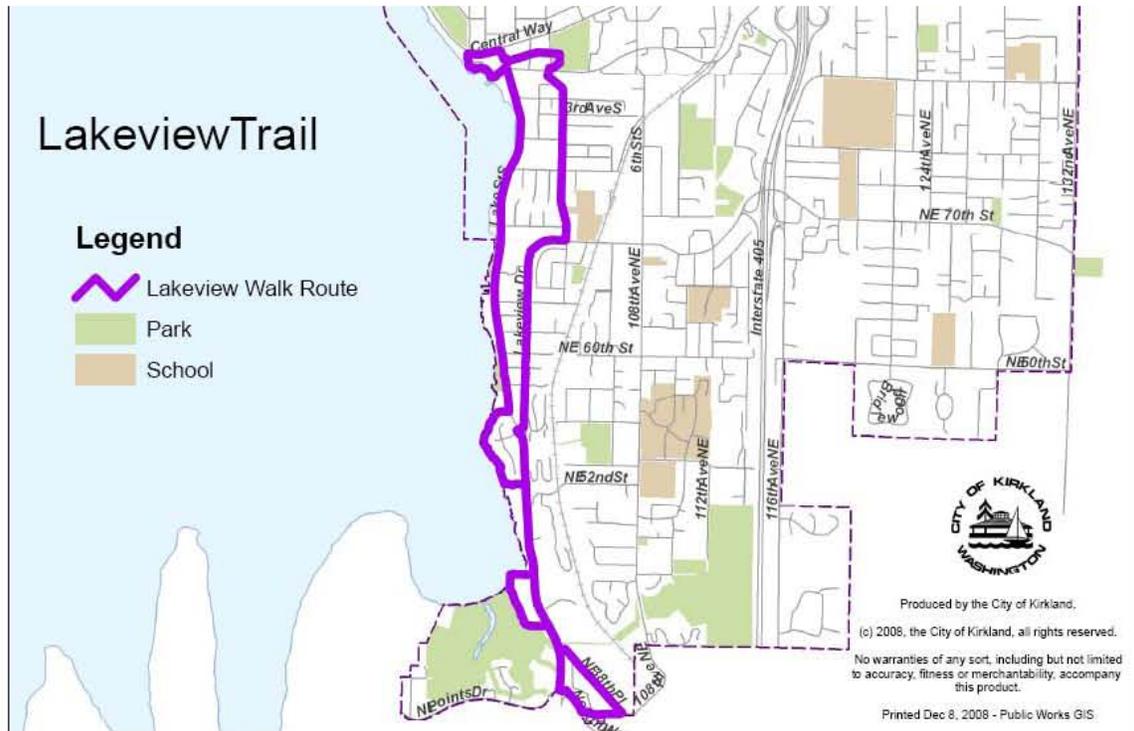


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PEDESTRIAN WAYFINDING ARROWS

The Lakeview walk is a signed route that forms a loop in the southwest area of Kirkland. It passes along the lakeshore and in

Map 11 Lakeview walk route



the Lakeview neighborhood from the city's southern boundary to downtown. Wayfinding arrows direct pedestrians along the route. The route was designed by the Interlaken Trailblazers Volkssport Club (www.ava.org) and is also a Volksmarch walk. Additional walks with similar wayfinding are planned for other parts of the city.

CTR PROGRAMS

The State of Washington's CTR law requires large employers to institute programs to encourage employees to walk, bike and use the bus to get to work. At any given time there are between 10 and 20 such employers in Kirkland. Some employers offer cash payments to those who walk or bike and some have less generous benefits. The City of Kirkland contracts with King County Metro Transit to support CTR employers in Kirkland. Metro fills this role with other cities as well, and has access to a wide range of resources to draw upon.

Section 3: Existing Plans and Programs

TRAFFIC CALMING

In 1993, Kirkland started a formal program for neighborhood traffic control. In response to citizen requests and with the support of neighbors, traffic control devices such as speed cushions, chokers and small traffic circles have been built in almost every neighborhood. Although pedestrians have widely supported traffic calming, some cyclists have reported difficulty with certain types of traffic control devices. The main complaint is that the devices force cars into space normally occupied by cyclists. Impact to cyclists is minimized by the fact that traffic calming devices are located on low volume streets, so conflicts between cars and bikes are rare. It is also felt that the reduced speed of cars is a plus for cyclists that offsets any negative effects.

Figure 33 Traffic calming devices in neighborhoods slow traffic but sometimes make cyclists and drivers compete for the same space.



COMPLETE STREETS ORDINANCE

At the prompting of the Cascade Bicycle Club, the City of Kirkland enacted Washington's first Complete Streets ordinance in September 2006. The City Council asked the Transportation Commission to develop and ordinance for their consideration and after a brief period of working with the bicycle club an ordinance satisfactory to all was proposed by the Commission and passed enthusiastically by City Council. Passage of the ordinance did not result in major changes in the way projects were designed and constructed because Kirkland has been using a complete streets approach for a number of years. However, codification of this commitment is helpful to see that facilities for all users is further institutionalized.

STAFFING

THE TRANSPORTATION COMMISSION

The Transportation Commission is one of the several Boards and Commissions that is appointed by the City Council. The Transportation Commission is unique because its bylaws specifically call for appointment of transportation experts to some of the board positions. Seven commissioners serve 4 year terms. The Commission also has a youth member that serves 2 year terms. The Commission usually meets once a month and deals mostly with transportation policy issues.

PUBLIC WORKS DEPARTMENT

Staffing for walking and cycling programs is a responsibility shared in part by every City Department. Most programs are coordinated by the Public Works Department including design, construction, operation and maintenance of walking and cycling facilities.

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KIRKLAND WALKS TEAM

The Kirkland Walks team was formed in 2007 and is made up of representatives from the Police, Parks, Public Works, Information Technology and City Manager's Departments. The purpose of the team is to develop programs to increase pedestrian safety. Members of the group have worked together to produce several videos that run on Kirkland's community television channel. Each of the videos has won one or more awards.

INTERAGENCY PARTNERSHIPS

The City of Kirkland has good communications with its neighboring jurisdictions on matters of cycling and pedestrian planning. Representatives from Kirkland, Redmond and Bellevue held joint meetings to coordinate development of their non-motorized transportation plans. The three cities regularly confer on regional transportation issues such as construction and operation of I-405 and SR 520.

Complete Streets

Section 19.08.055 of the Kirkland Municipal Code is Kirkland's "complete streets" ordinance.

- (1) Bicycle and pedestrian ways shall be accommodated in the planning, development and construction of transportation facilities, including the incorporation of such ways into transportation plans and programs.
- (2) Notwithstanding that provision of subsection (1) of this section, bicycle and pedestrian ways are not required to be established:
- (a) Where their establishment would be contrary to public safety;
 - (b) When the cost would be excessively disproportionate to the need or probable use;
 - (c) Where there is no identified need;
 - (d) Where the establishment would violate comprehensive plan policies; or
 - (e) In instances where a documented exception is granted by the public works director. (Ord. 4061 § 1, 2006)

SECTION 4: ONLINE SURVEY RESULTS

In the summer of 2007, online surveys were conducted as a part of the development of this plan. The survey was not intended to be a statistically valid. Instead, it was to take the place of the normal open house where only a small number of participants might be able to take part. Two surveys were available, one for pedestrians and one for cyclists. Respondents indicated their top three attributes for prioritizing construction of new facilities. They were also asked how often they biked and walked by purpose. By asking questions about the best and worst places to walk and bike information about preferences and needs for improvement were obtained. This information is described below. More details about the survey are located in Appendix A.

PEDESTRIAN SURVEY

In the pedestrian survey respondents were asked:

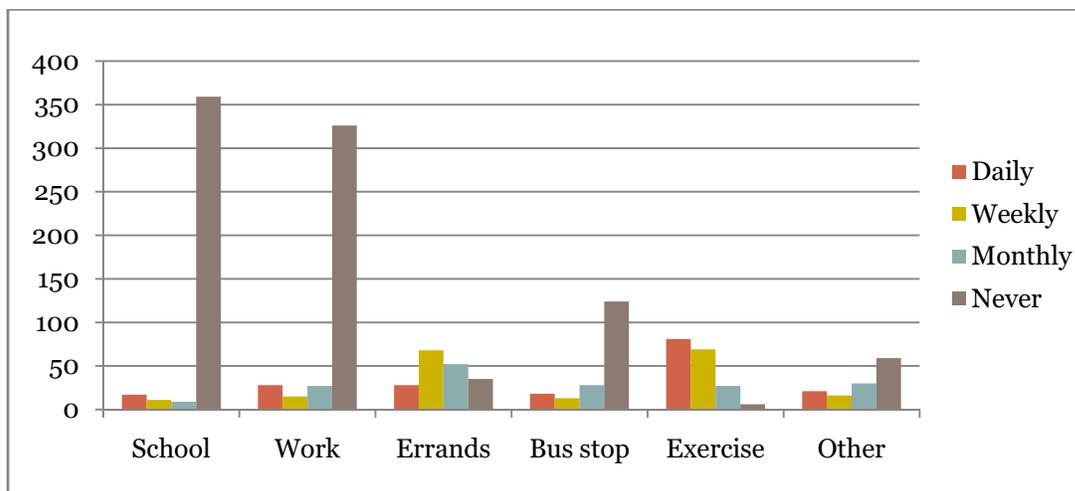
How often do you walk/run in Kirkland? For each purpose below indicate the frequency that BEST describes how often you walk. Here are some examples: if you do an activity on weekdays only, choose daily. If you do an activity 3 times a month, choose monthly. If you do an activity once or twice a week, choose weekly.

Respondents were asked to select *daily*, *weekly*, *monthly* or *never* for each of the following walking trip types:

- all the way to school
- all the way to work
- to run errands like shopping, etc.
- to the bus stop for work or school
- for exercise/fitness/pleasure
- other

Results for this question are shown in Figure 19. Among those who responded to the survey, Exercise/fitness/pleasure is by far the most common trip type. Note that walking to perform errands is also an important trip type for survey respondents.

Figure 34 Frequency of walking trip by purpose as reported by survey respondents



Those responding to the walking survey were also asked:

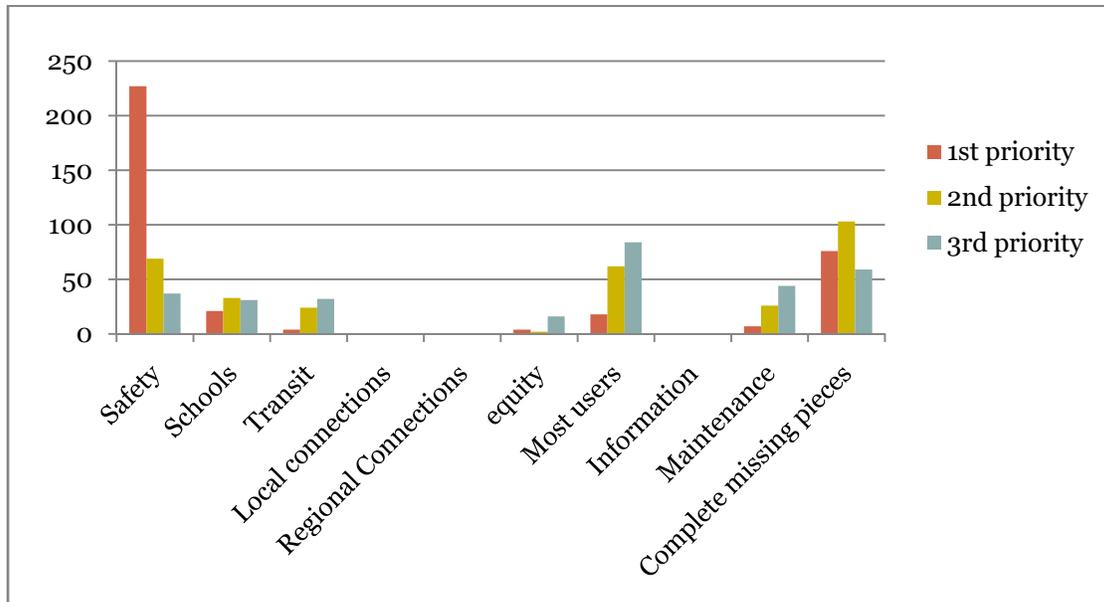
What factors should be used to prioritize construction of pedestrian improvement projects? Indicate how highly each factor should rank when determining funding priorities

A list of possible choices was shown in a drop down menu for each of the first, second and third highest priorities. The choices for priorities were explained in the survey as:

- **Safety** - Address locations where crashes have occurred. This includes street lighting improvements.
- **Complete missing pieces** - Create longer continuous walkways
- **Most users** - Build facilities that will serve the most users
- **Connections** - Facilitate pedestrian travel to shopping, restaurants and other services
- **Equity** - Spend similarly in various neighborhoods
- **Transit** - Increase easy walking access to Metro bus stops
- **Schools** - Build projects near schools and that access school bus stops
- **Maintenance** - Maintain existing pedestrian facilities

Figure 20 shows that by far safety is the most important criteria by which projects should be ranked. Respondents also felt strongly about constructing projects that fill in gaps in the sidewalk, and the criteria with the highest number of votes for the third priority was projects that serve the most users.

Figure 35 Priorities for selecting criteria by which pedestrian improvement construction projects should be evaluated



For the optional question

Where are the most problematic locations for walking in Kirkland? Be as specific as possible.

Figure 21 shows the major categories respondents chose to answer this question. These responses when looked at in combination with responses in Figure 22 to the question:

Tell us more about anything that would make walking in Kirkland easier for you.

Subjects could include:

• Any walking/running issues you've always wanted to comment about. • Questions or comments about walking facilities or programs. • Things that you've seen elsewhere that you would like to see in Kirkland.

Show that general concerns about sidewalks and crosswalks in a variety of areas are of most concern to pedestrians. In general there was a strong desire for more sidewalks in all areas of the city. Other areas where there were a group of similar concerns included:

- The intersection of NE 116th Street/Juanita Drive and 98th Avenue NE
- Crossings of I-405 on NE 85th Street and NE 124th Street.
- Clearing of obstructions such as trees and leaves on sidewalks
- Policy for requiring construction of sidewalk along street frontages of new homes.

Figure 36 Responses to the question: Where are the most problematic locations for walking in Kirkland? Sorted by major category

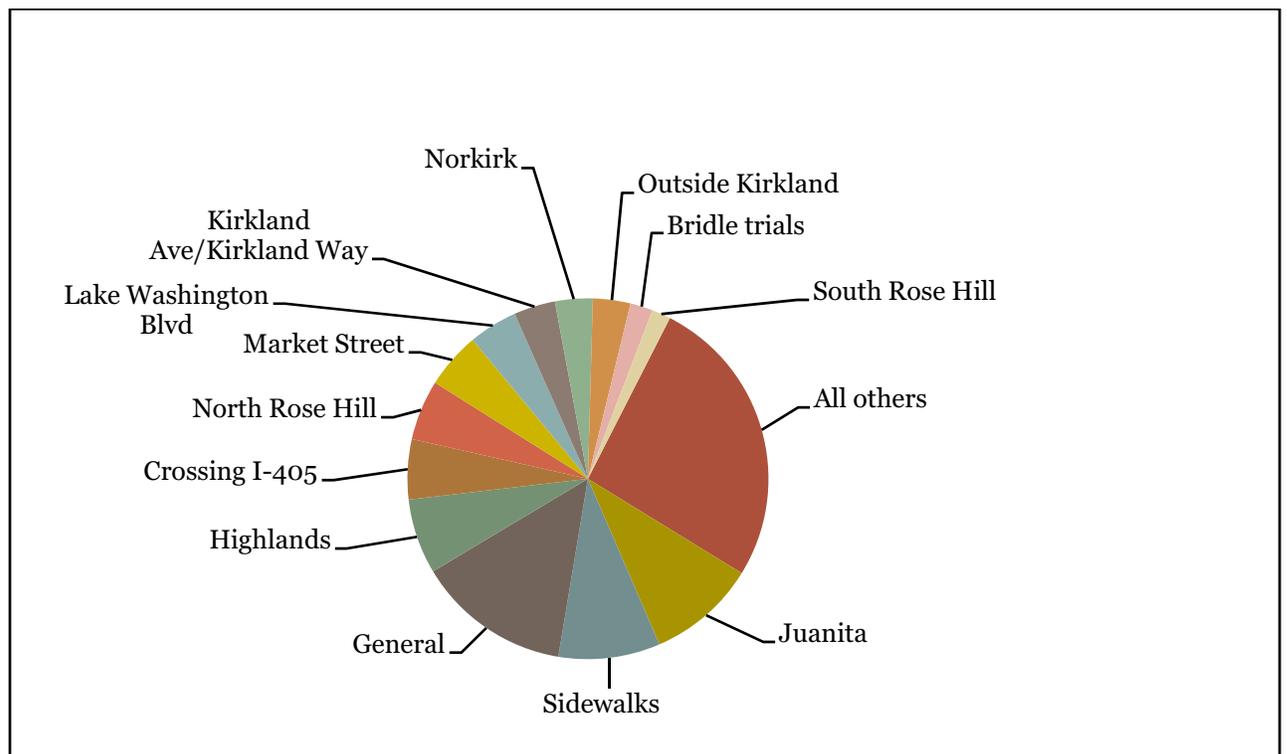
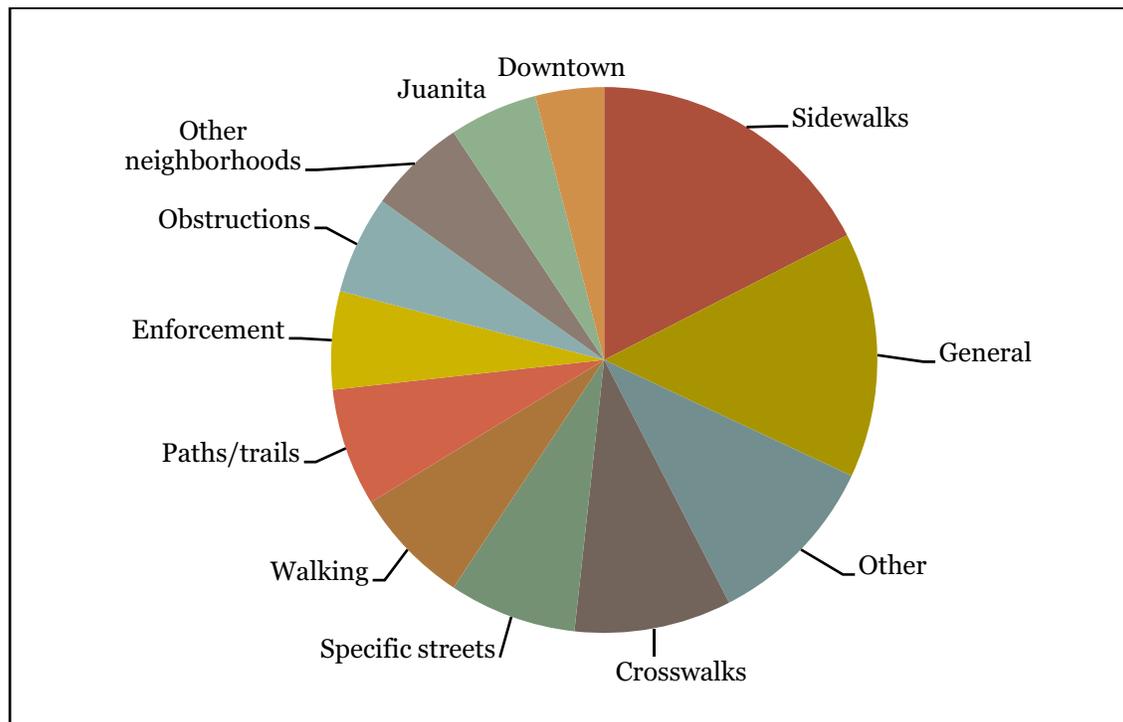


Figure 37 Responses to the question: Tell us more about anything that would make walking in Kirkland easier?



Responses to the question:

Where is an excellent location for walking in Kirkland? Be as specific as possible

Were the clearest of any of the questions asked. Combining the number of responses choosing the Lakefront, downtown and Parks accounts for over 60% of the total responses as shown in Figure 23.

As mentioned earlier, the on-line survey was not intended to be a statistically valid but to serve as option to an open house with the hope that access would be greater. As can be seen in Figure 24, about twice as many woman responded to the pedestrian survey as did men. Statistically valid surveys show that nationally, woman and men make walking trips at about the same rate. Relative to national statistics⁸, respondents to the survey fall disproportionately in the 30-49 year old age group. Nationally, about the same amount of walking takes place among all ages from 16 to 64.

The results of the survey shaped the prioritization system for sidewalk construction projects as well as the programmatic elements of the plan. Prioritization is discussed further in section 5.

⁸ National survey of Bicyclist and Pedestrian Attitudes and Behavior, Volume 1 Summary Report, August 2008, National Highway Traffic Safety Administration.

Figure 38 Responses to the question: Where is an excellent location for walking in Kirkland? Grouped by location.

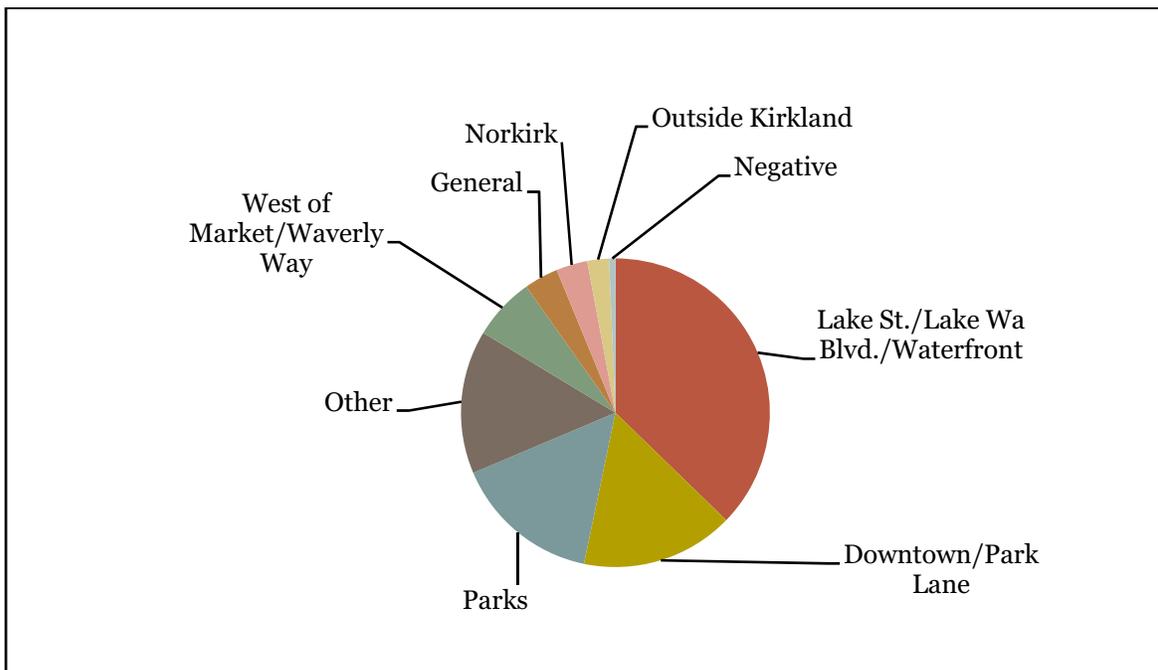
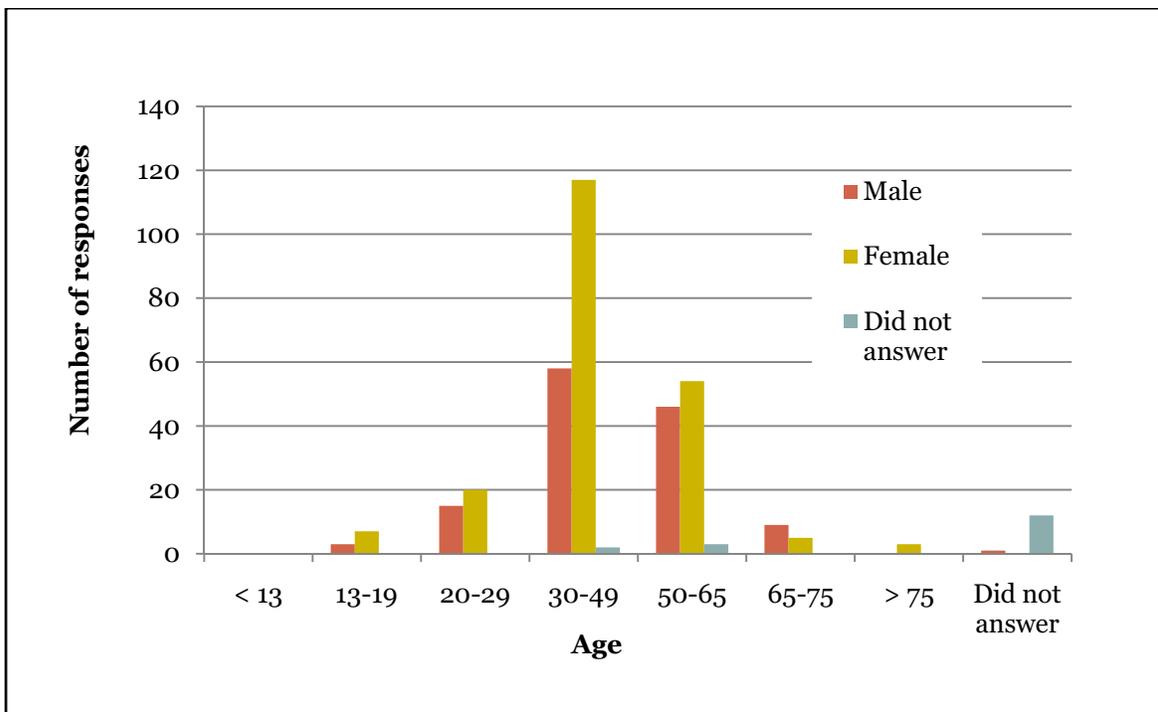


Figure 39 Age and gender of respondents to the pedestrian survey



CYCLIST SURVEY RESULTS

In the bicycle survey respondents were asked:

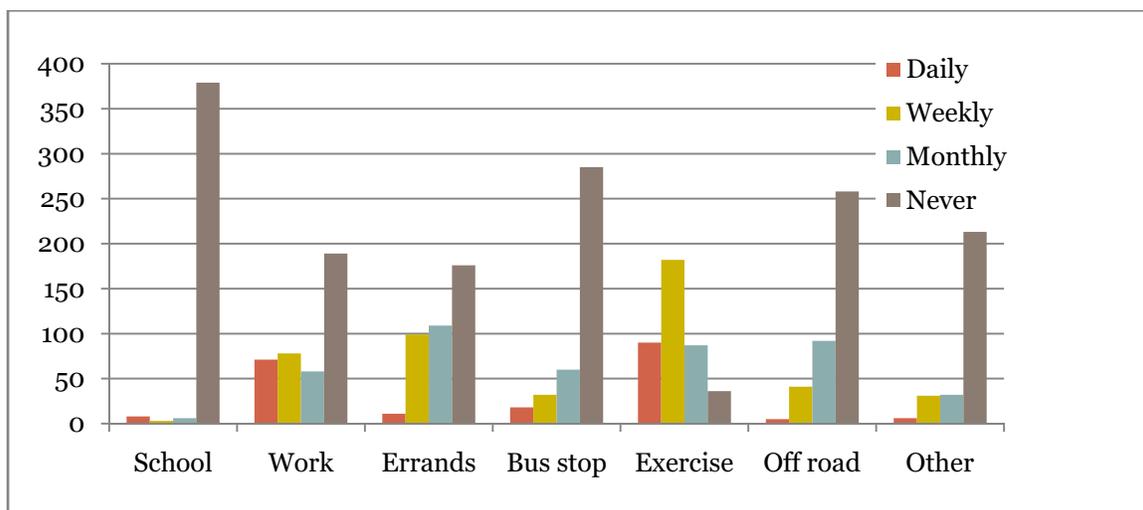
How often do you bicycle in Kirkland? For each purpose below indicate the frequency that BEST describes how often you bicycle. Here are some examples: if you do an activity on weekdays only, choose daily. If you do an activity 3 times a month, choose monthly. If you do an activity once or twice a week, choose weekly.

Respondents were asked to select *daily, weekly, monthly* or *never* for each of the following walking trip types:

- all the way to school
- all the way to work
- to run errands like shopping, etc.
- to the bus stop for work or school
- for exercise/fitness/pleasure
- Mountain bike/off road
- other

Results for this question are shown in Figure 25. Respondents indicated that exercise, errands and work are the most important trip types. This suggests a need for both local access for errands and regional access for longer work and exercise trips.

Figure 40 Frequency of bicycling trip by purpose as reported by survey respondents



Those responding to the bicycle survey were also asked:

What factors should be used to prioritize construction of bicycle improvement projects? Indicate how highly each factor should rank when determining funding priorities

A list of possible choices was shown in a drop down menu for each of the first, second and third highest priorities. The choices for priorities were explained in the survey as:

- **Safety** - Address locations where crashes have occurred. This includes projects that improve lighting.

- **Regional Connections** - Projects that connect to regional trails/other cities **Most users** - Build facilities that will serve the most users
- **Local Connections** - Connect to shopping, restaurants, other services
- **Equity** - Spend similarly in various neighborhoods
- **Transit** - Increase easy bike access to Metro bus stops
- **Schools** - Build projects near schools and that access school bus stops
- **Information** - Mark bike routes and add other information like distances to key destinations
- **Maintenance** - Maintain existing bicycle facilities

Figure 26 shows that, by far, safety is the most important criteria by which projects should be ranked. Respondents also felt strongly about completing connections, with regional connections more important than local connections. Judging from the responses to the question about things that can be done to make biking easier (Figure 28) maintenance concerns center on sweeping bike lanes and making sure that bicycles can activate traffic signals.

Figure 41 Priorities for selecting criteria by which pedestrian improvement construction projects should be evaluated

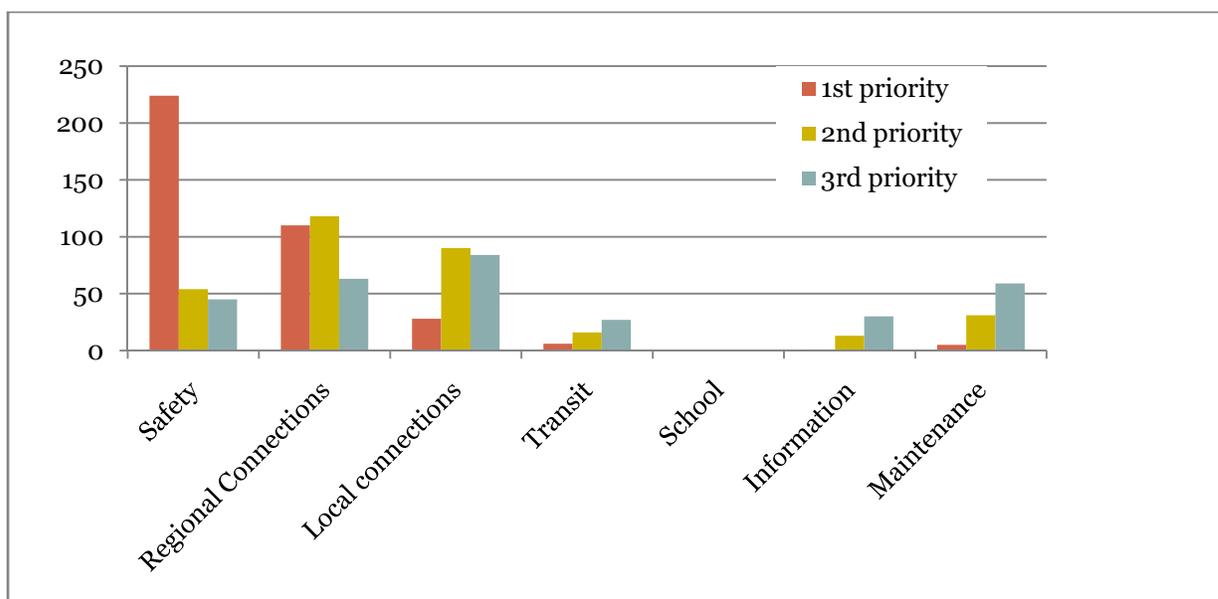


Figure 27 shows the major categories respondents chose to answer the optional question:

Where are the most problematic locations for biking in Kirkland? Be as specific as possible.

The high volume, higher speed, multilane streets NE 85th Street, NE 124th Street (along with their crossings of I-405) and the section of 100th Avenue NE north of NE 124th Street were, not surprisingly, all cited as locations where cycling is difficult. Lake Street between downtown and NE 60th Street was also mentioned fairly frequently, but bike lanes were striped on this section in the fall of 2008.

As illustrated in Figure 28, when cyclists responded to the question:

Tell us more about anything that would make biking in Kirkland easier for you. Subjects could include:

- Any bicycling issues you've always wanted to comment about.
- Questions or comments about bicycle facilities or programs.
- Things that you've seen elsewhere that you would like to see in Kirkland.

The single largest response was for additional bike parking, particularly in downtown Kirkland. There was also support for more bike lanes and for paths that are separated from traffic. The two main maintenance items were additional sweeping of bike lanes and marking traffic signals to be more easily activated by cyclists. Traffic speed and volume represents a small fraction of the problem areas, but when combined with the responses to problem locations, its clearer that traffic speed and volume are major contributors to cyclist dissatisfaction.

Figure 42 Responses to the question: Where are the most problematic locations for biking in Kirkland? Sorted by major category

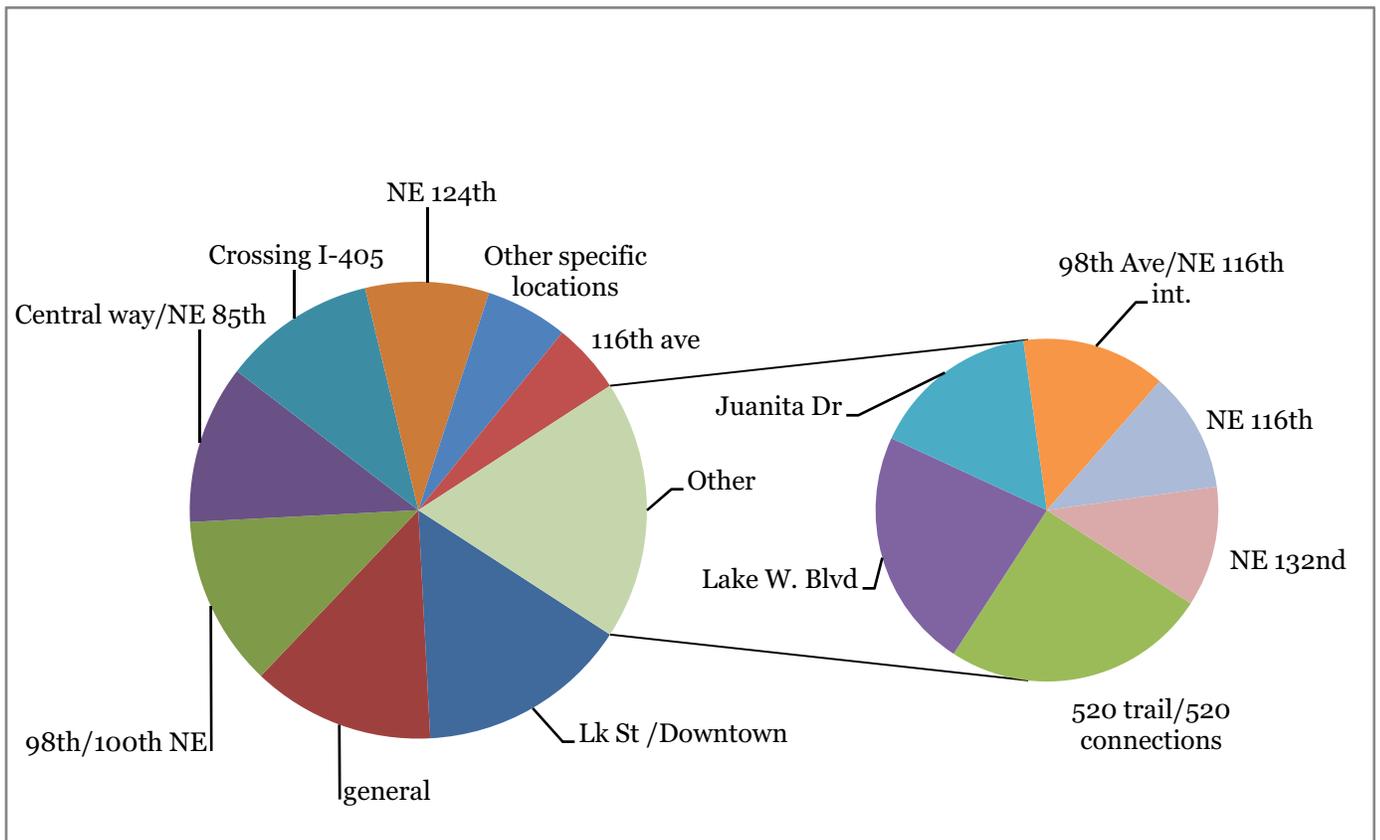


Figure 43 Responses to the question: Tell us more about anything that would make biking in Kirkland easier? sorted by group

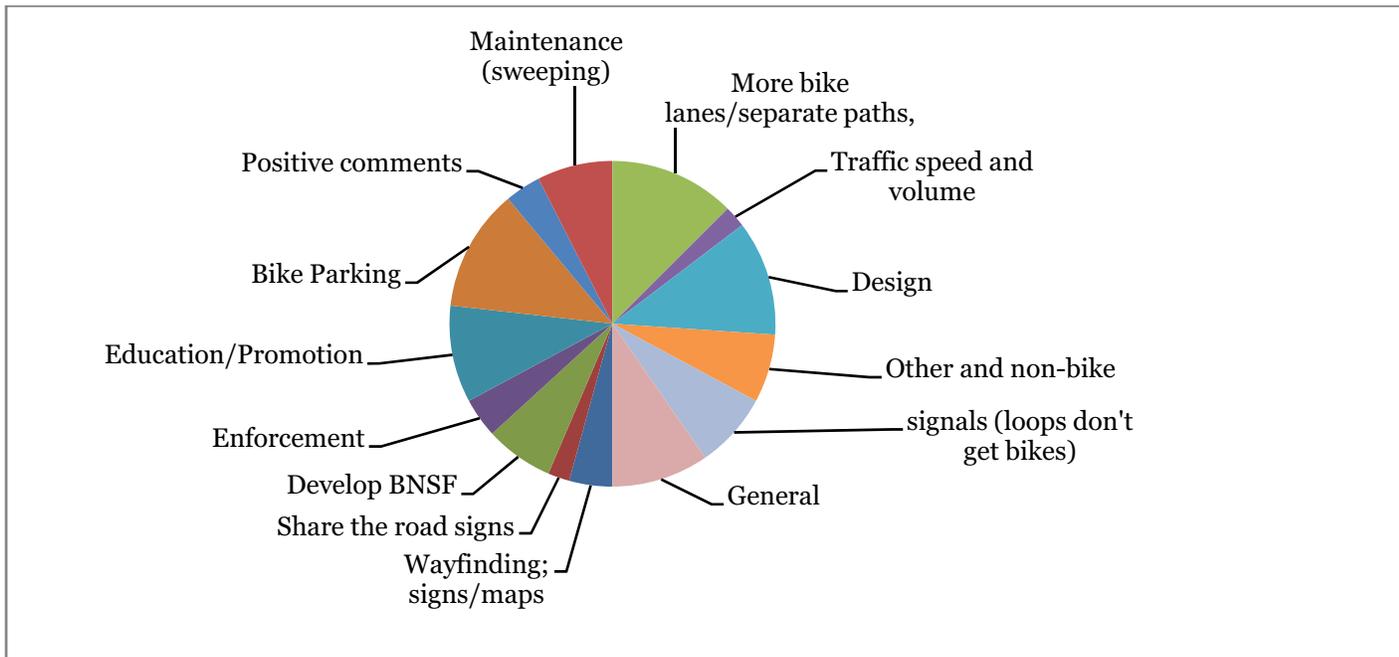
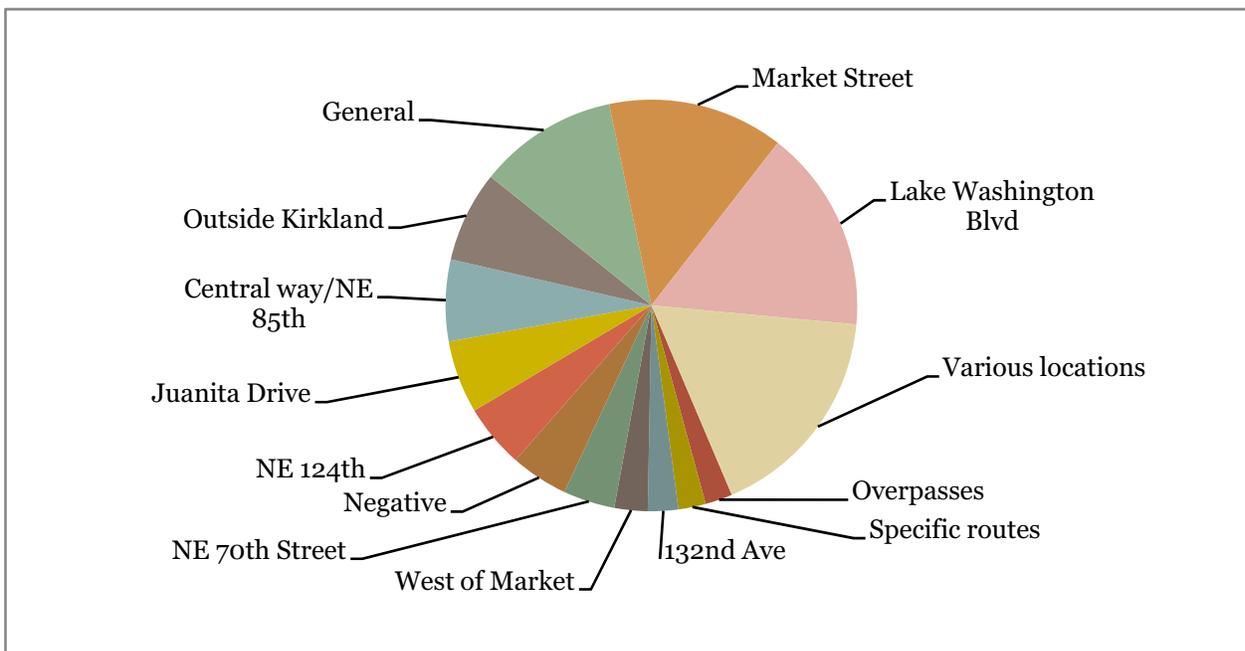


Figure 29 shows that responses to the question:

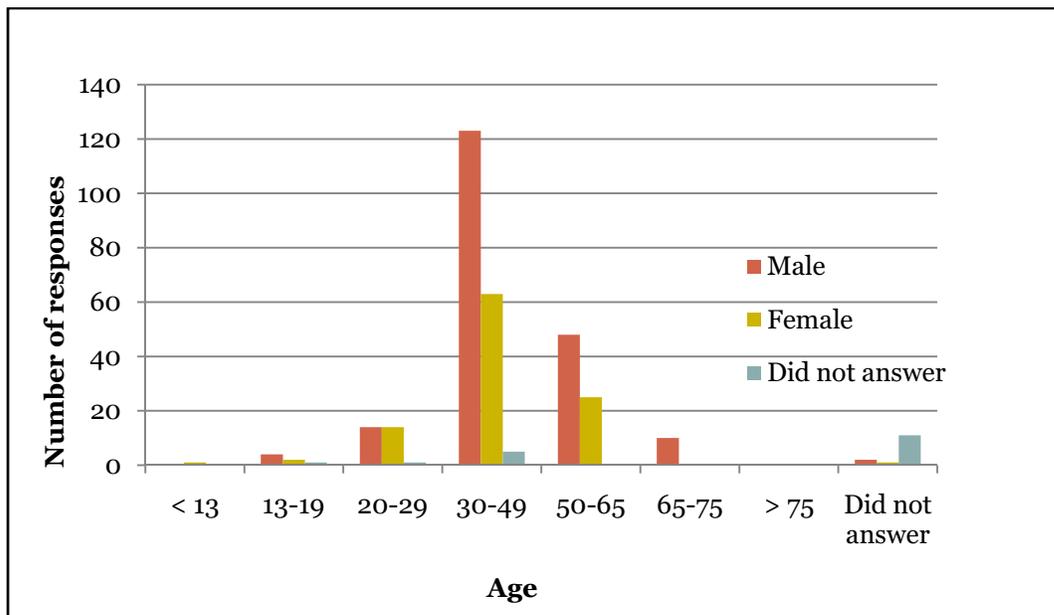
Where is an excellent location for walking in Kirkland? Be as specific as possible

Figure 44 Responses to the question: Where is an excellent location for biking in Kirkland? Grouped by location.



Confirmed the popularity of the Lake Washington Blvd./Market Street/Juanita Drive portion of the Lake Washington Loop Route. Other responses were divided among a number of locations.

Figure 45 Age and gender of respondents to the bicycle survey



According to one statistically valid national survey, males make about 68% of all bicycle trips and females make about 32% of all trips. Figure 30 shows a similar difference between male and female respondents to the bicycle survey.

The prioritization of bicycle improvements is discussed further in section XX. It reflects the information gathered from the survey for both network improvements and programmatic elements.

SECTION 5: PROJECT PRIORITIZATION OF FACILITIES FOR PEDESTRIANS

Like previous non-motorized plans, this plan does not propose specific pedestrian projects. Instead, it proposes a ranking system for evaluating sidewalk construction projects. This replaces the priority 1 and priority 2 route networks contained in earlier plans. As described on Page 52, the priority networks fed information to the Project Ranking System. This plan revises that ranking system, originally developed to evaluate all kinds of projects, with a system tailored to sidewalk ranking. In general, the ranking system gives first priority to construction of facilities on higher volume streets, close to schools, parks, commercial areas and bus routes. It favors construction on school walk routes. And, it favors locations where existing walkways are narrow and not constructed from concrete. See Goal G3.

Four sections make up the ranking system:

Access potential *35 % of total score*

Access potential measures the proximity of a given street segment to uses that pedestrians walk to. It reflects the responses to the pedestrian survey; errands, exercise and transit are typical uses for those who answered the survey.

Missing sidewalks *35% of total score*

This category evaluates the amount of sidewalk already constructed, favoring locations that have no sidewalk over those that have sidewalk on one side. This is also one of the places where school walk routes are taken into account and given extra points.

Existing Conditions *20% of total score*

Existing walkway surface type and walkway width are examined in this category. More points are given for projects that build where concrete sidewalk is not already present on the segment and where walkways are less than 4' wide.

Fiscal *10% of total score*

This category is based on the existing project scoring criteria; it evaluates the anticipated cost of the project relative to typical projects of the same type.

ACCESS POTENTIAL

Proximity to parks, commercial areas, bus routes and schools are the location factors used to develop a system for prioritizing sidewalk construction. Each of the four destinations is ranked relative to each other; Schools and Parks at 30% and Transit and Commercial areas at 20%. Using Kirkland's GIS system, the city was divided into a grid of 25' squares then, points were assigned to each square based on how distance to the various features. Each square was assigned points based on the number and proximity of features attractive to pedestrians as shown in the table below.

Table 11 Relative weighting between and within destination types.

<i>Destination</i>	<i>Relative weighting within destination by type</i>				<i>Total % weighting for destination</i>
Schools	One school		Shared campus		30%
	1/8 mile or closer	between 1/4 and 1/8mile	1/8 mile or closer	between 1/4 and 1/8mile	
	1.25	1.00	1.30	1.10	
Transit	Peak hour		All-day		20%
	1/8 mile or closer	Between 1/4 and 1/8mile	1/8 mile or closer	Between 1/4 and 1/8mile	
	0.95	0.75	1.25	1.00	
Parks and Commercial areas (counted separately)	1/8 mile or closer	Between 1/4 and 1/8mile	Not used, only one type		Parks 30%
	1.25	1.00			Commercial areas 20%

Higher weights were given to parks and schools than to transit and commercial areas to reflect their higher importance as expressed by the community. For simplicity, each park and commercial area are considered to draw the same amount of pedestrian traffic (hence equal weighting among parks and among commercial areas) even though different parks have different features as do different commercial areas. Different weightings were given within schools and within transit. Campuses with more than one school get higher weighting than campuses with only one school. Transit that runs all day gets higher weighting than transit that only runs in the peak period. Proximity to features is measured separately. For example, if a particular location is within 1/4 mile of three different parks, it will receive three times the value of a site within 1/4 mile of only one park. The only exception to this is transit. Scores for transit are capped at 5 routes; in other words a location that is close to more than 5 routes scores the same as one that is close to only 5 routes. This helps to prevent locations where transit routes meet from having too high an influence on the overall score.

Section 5: Project prioritization of facilities for pedestrians

Distances of ¼ and ⅛ miles were used because they are conservative in that only a few people would consider distances of ¼ mile or less to be inconvenient.

Distances were measured from the edges of parks because it is less likely to exclude any possible access. Some parks have only one or two discrete entrances, others have many entrances.

Adjacent commercial areas were combined to avoid double counting. For example, the nine separate zones that make up Totem Lake are considered one, not nine separate areas each with its own influence. Distances to schools are measured from the edges of the school buildings to compensate for the large and irregular boundaries of some school properties. This also helps to account for the fact that some campuses have multiple schools on their campus. For simplicity, it's assumed that transit stops are uniformly spread along the routes and distances can be measured from the routes. Portions of routes along freeways are not considered, although stops at freeways are.

Peak hour transit routes typically run in one direction, for example to Seattle in the morning and the other direction –to Kirkland for example -- in the evening. There are typically eight or less runs on these peak hour routes in each direction as opposed to the 40 or so in each direction on an all day route with evening coverage. Therefore, peak hour routes get fewer points.

Schools are included here because they can generate walking trips that are outside the school day or made by non-students. These might include trips to use play fields, to attend athletic events or for evening activities. School walk routes which are intended for use by elementary school students, are accounted for elsewhere.

Map 11 shows the results of the pedestrian access analysis.

Each segment in the roadway system was given a score based on the pedestrian access ranking described above⁹. These scores were translated into a 1-35 range because this section of the ranking accounts for 35% of the project score. Map 12 shows access scores on road segments. More details on this process are in Appendix D.

Comparing the existing and proposed project ranking systems.

The existing project ranking system is described on page 51 in Section 3. Most of the factors that have been used in the current system are also used in the new system. These factors include:

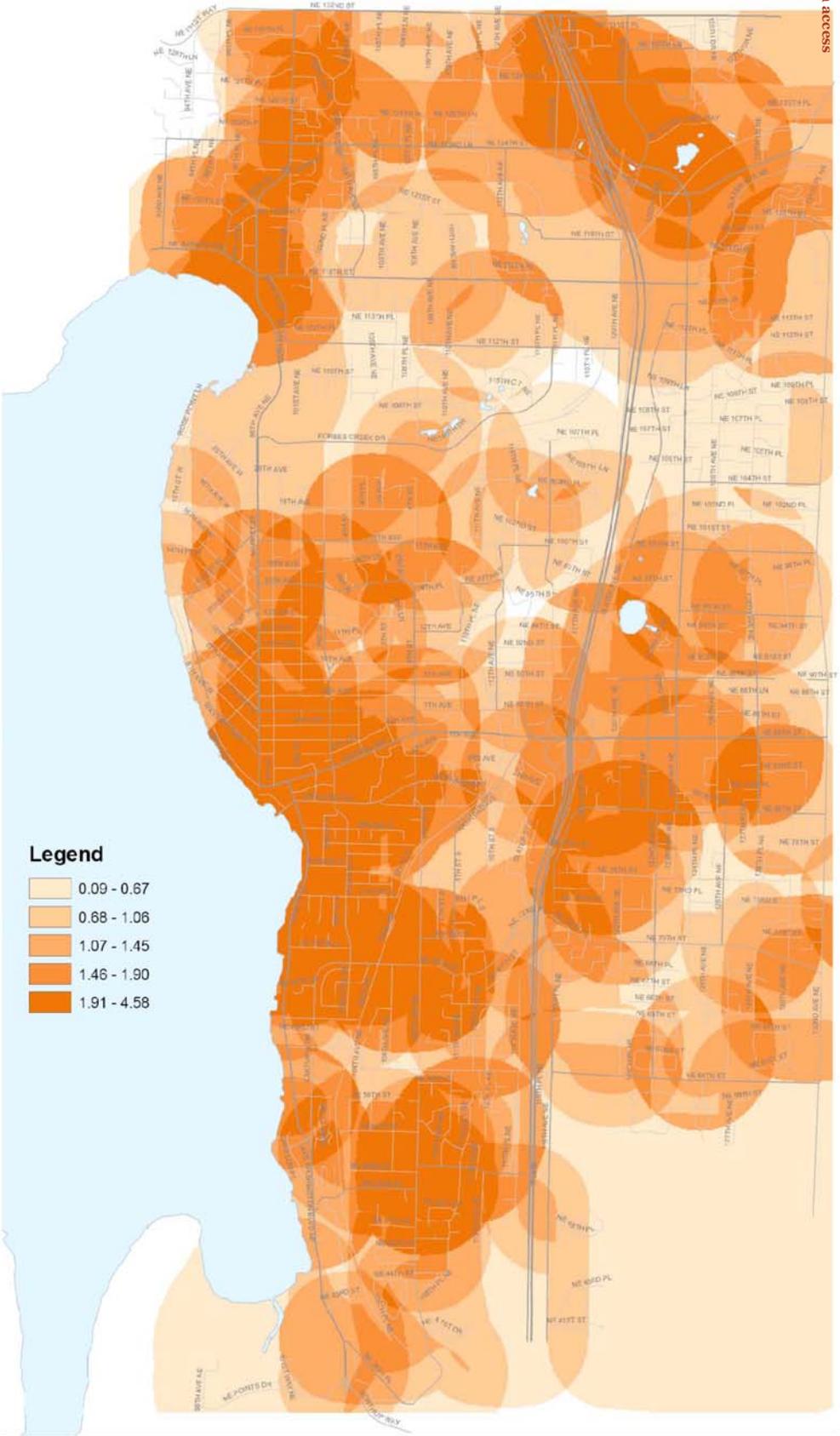
- Proximity to pedestrian generators like parks, schools, commercial areas
- Width of existing shoulder, presence of existing walkway
- Type of existing walkway
- School walk route

The system described here gives about twice as much weight to the project's proximity to pedestrian traffic "generators" like parks, commercial areas and schools.

The revised ranking system also weights school walk routes more heavily – about 8% to 17% of the total score compared to about 4% in the current method.

⁹ Each segment passes through multiple 25' grid squares. The value of the highest scoring grid square was assigned to the segment.

Map 12 Pedestrian access scores



**Map 13 Pedestrian
access scores shown on
segments**

MISSING SIDEWALKS

Along with pedestrian access --features that are important because of where the segment is-- there are other important characteristics that are associated with existing conditions on the segment itself. Scoring based on these factors; the type of roadway¹⁰, the existing sidewalk and whether or not the segment is on a school walk route is incorporated in the Missing sidewalk category. Unlike the pedestrian access component, the missing sidewalk component is computed directly on road segments.

The type of road –its functional classification – is a surrogate measure for the auto volume on a segment. In one sense it is also a predictor of crash history. For the five year period 2003-2007 only 5% of all crashes took place on local streets the rest occurred on arterials or collectors. Very few (2 out of 165, about 1%, during the period 1996-2007) crashes involved vehicles striking pedestrians that were not crossing the street. Therefore, based on crash history, constructing sidewalk may not have an important direct effect on safety, but it does have an important and direct effect on pedestrian comfort and that effect is proportionate to the volume of the adjacent street. When pedestrian comfort is improved, the number of pedestrians who walk regularly will increase, supporting the goals of this plan.

Table 12 Segment scores based on street classification, school walk routes and walkway completion.

MISSING SIDEWALK <i>segments where Sidewalks are not complete on both sides</i>				
Street Class	School walk route points	Existing walkway		
		Neither side complete		One side complete
Principal	+3	12		10
Minor		10		8
Collector	+2	8		6
Local	+1	No walkway	Some walkway on one or both sides	1
		2	3	

¹⁰ The types of roadways are based on functional classification: Principal arterials, minor arterials, collectors and local streets. Functional classification is closely associated with the street's auto volume.

Section 5: Project prioritization of facilities for pedestrians

Constructing sidewalks along school walk routes is an important value to the community. Therefore a higher priority is given to segments that are on school walk routes.

The nature of the walkway that is currently available is also a consideration when determining the priority of a route for additional sidewalk. For arterials and collectors, there are two categories of completion; either sidewalks are complete on one side or it is not. There are various subcategories, within each of the larger categories such as complete one side, with some sidewalk on the other side or some sidewalk on both sides but neither side is complete and so on. Figure 8 on Page 26 shows that very few segments that fall within any of these subcategories. Therefore, they can be collapsed into the two major groups described above. For local streets the picture is a little different. There are many more miles of local streets and two subcategories have more than 10 centerline miles of segments. For local street segments where sidewalks are not complete, a distinction is made between those segments where there is no sidewalk at all and those where there are some sidewalks on one or both sides.

For a given sidewalk completion status, the highest priority for sidewalk improvements is assigned to principal arterials. Minor arterials and collectors receive the next most points and local streets receive the fewest points. Similarly, within a given street classification, the most points are given to segments where sidewalk is not already complete on one side. For local streets, more points are given to segments where there is some sidewalk but it is not complete on one side. This supports Goal G3 and the desire to build upon sidewalk that is already in place and fill in gaps, first on busy streets.

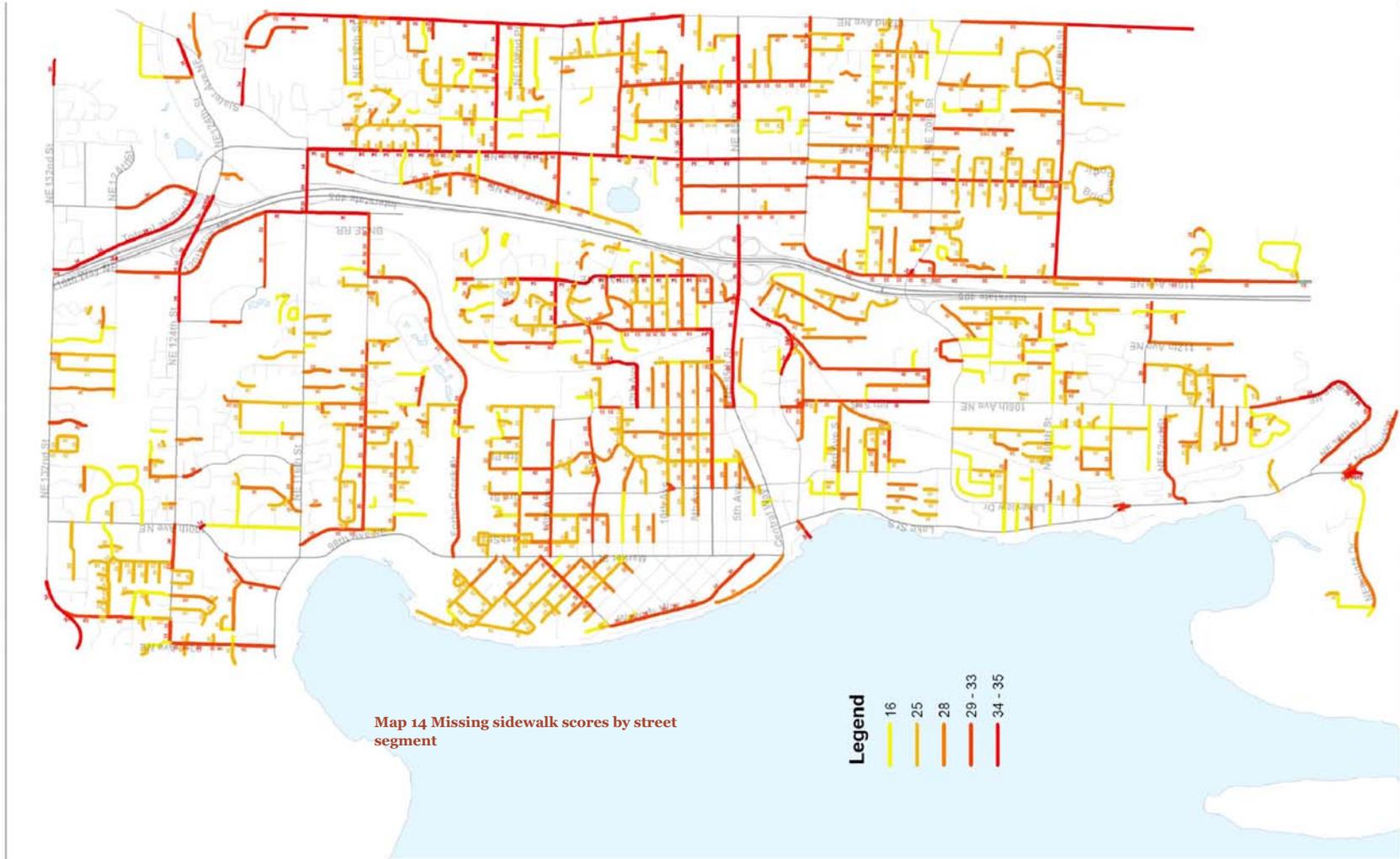
Map 14 shows the segment scores based on the missing sidewalk analysis. Like the pedestrian analysis scores were translated into a 1-35 range because this section of the ranking accounts for 35% of the project score.

Scoring projects

The purpose of the prioritization system is to be able to evaluate different projects against each other and decide which should be built first.

Sidewalk projects are scored by using the segment scores from Maps 12 and 13 and then adding the appropriate values from Tables 13, 14 and 15.

Place example here.



Section 5: Project prioritization of facilities for pedestrians

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EXISTING CONDITIONS

Along with location and segment specific features, determining the priority of projects also depends on characteristics that are measured on a project by project basis. As points are assigned for location and segment elements, points are also assigned for project specific features.

SURFACE

For walkways adjacent to streets, asphalt and gravel are usually better than nothing, but not as good as concrete sidewalks with curb and gutter. Asphalt and gravel are acceptable surfaces for trails and sometimes gravel is used for equestrian paths.

Points are assigned based on the amount of non-concrete walkway on a segment. If there are no complete walkways of any type, the maximum points are assigned. No points are assigned if there is concrete sidewalk on both sides. Points are assigned even if there is a complete sidewalk on one side, but it is not concrete.

For a given set of existing conditions more points are assigned to street classifications with higher volumes. Extra points are given for school walk routes. A maximum of 10 points is assigned.

WIDTH

When determining where sidewalk should be built, priority is given to locations where there is the least area to walk. Segments where at least one side has areas at least 4' wide to walk on get higher priority than segments where both sides have areas 4' or wider. For a given set of existing conditions more points are assigned to street classifications with higher volumes. Extra points are given for school walk routes. A maximum of 10 points is assigned.

FISCAL

As mentioned above, the fiscal component of project evaluation is taken from the existing project evaluation criteria. It is made up of three subparts; the project's basic construction cost it's maintenance cost and its affect on the cost of existing maintenance operations. A maximum of 10 points can be assigned to a project that has lower than average construction and maintenance costs.

Table 13 Points for projects based on existing surface conditions

<i>Surface</i> 10 POINT MAXIMUM	<i>Functional class</i>				<i>School Walk routes</i>
	Principal	Minor	Collector	Local	
<i>Neither side is complete and neither is concrete</i>	10	10	10	10	Add 2 points for school walk route
<i>Only one side is complete, and it is not concrete</i>	9	8	7	6	
<i>Both sides are complete, but neither is concrete</i>	8	7	6	5	
<i>Only one side is complete and it is concrete</i>	7	6	5	4	
<i>Both sides are complete and only one is concrete</i>	6	5	4	3	
<i>Both sides are complete and both are concrete</i>	0	0	0	0	0

Table 14 Points for projects based on existing walkway width

<i>Width (area available for pedestrians)</i> 10 POINT MAXIMUM	<i>Functional class</i>				<i>School Walk routes</i>
	Principal	Minor	Collector	Local	
<i>Both sides are less than 4' wide</i>	10	10	8	6	Add 2 points for school walk route
<i>One side is less than 4' wide</i>	7	6	5	4	
<i>Neither side is less than 4' wide</i>	0	0	0	0	0

Table 15 Points for projects based on fiscal factors

<i>Fiscal factors 10 POINTS MAXIMUM</i>		
<i>Difference between forecast project unit construction costs and the standard unit construction costs for a similar project</i>		
<i>More than 25% greater than standard unit costs</i>	<i>0-25% greater than standard unit costs</i>	<i>Less than standard unit costs</i>
<i>0 points</i>	3 points	6 points
<i>Difference between forecast maintenance costs of project and the standard maintenance costs for a similar project</i>		
<i>Greater costs</i>	Similar costs	Lower costs
<i>0 points</i>	1 point	2 points
<i>Project affect on existing maintenance needs</i>		
<i>Greater than existing</i>	Same as existing	Less than existing
<i>0 points</i>	1 point	2 points

Section 6: Network and project prioritization of facilities for cyclists

DEFINING A NETWORK

This plan is formulated on the idea that a basic bicycle network will be established followed by an evaluation of places that need improvement and prioritization of the projects that are necessary to make those improvements.

The first step is to determine a bicycle facility network that will guide where investments are made in the medium term (0-10 years). All streets must have appropriate accommodation for cyclists, but not necessarily bicycle lanes. Most of the street miles in Kirkland are low volume and do not need special facilities to safely carry cyclists. Striped bicycle lanes are generally limited to collectors and arterials that have volumes over 3000 ADT.

Bicycle network and bicycle lanes

Bicycle lanes are generally suggested when auto volume exceeds 5,000 vehicles per day. Therefore, some segments of the bicycle network do not need bicycle lanes to adequately support bicycle travel.

Portions of the bicycle network that don't need bicycle lanes will still be signed for wayfinding.

Respondents to the bicycle survey indicated that cyclists are interested in regional destinations/relatively longer routes. Therefore, a starting point for developing a bicycle network is to examine the endpoints of Kirkland roads and identify the places they lead to. These are shown in the table below. The routes in the left hand side of the table should be on the bicycle network.

Table 16 Regional destinations that connect to streets in Kirkland

<i>Juanita Drive</i>	Kenmore/B. G. Trail
<i>124th Ave NE, BNSF row</i>	Woodinville
<i>Lake Washington Blvd</i>	Bellevue
<i>100th Ave NE</i>	Bothell/Samm Rvr Trail
<i>NE 132nd St, NE 124th St.</i>	Sammamish River Trail
<i>116th Ave. NE</i>	Bellevue SR 520 Trail
<i>108th Ave NE,</i>	Bellevue
<i>132nd Ave NE Sbnd</i>	Overlake/Bellevue/520 Trail
<i>132nd Ave NE Nwnd</i>	Woodinville
<i>NE 100th Ave (via Willows Rd),</i>	Redmond
<i>NE 80th St. (via 140th Ave NE) NE 70th St.</i>	
<i>BNSF right of way</i>	Woodinville/Bellevue

Some streets were specifically described as important by the survey respondents. These routes should also be on the bicycle network.

- LW Blvd/Lake St/Central Way/Market Street/Juanita Drive from S. city limits to west city limits.
- 100th Ave NE between NE 124th and NE 132nd St.
- NE 68th St/NE 70th St between west of the BNSF and 132nd Ave. This suggests adding Lakeview Dr. between NE 68th St. and Lake Washington Blvd. along with State Street

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between NE 68th St. and Central Way. Adding these last two pieces connects 68th/70th to something on the west end.

- 116th Avenue NE between S. Kirkland City limit and NE 80th St. This suggests adding another connection all the way to Totem Lake via 124th Ave. NE/Totem Lake Blvd./120th Ave NE. Adding 122nd NE between NE 80th and NE 60th Streets completes that N/S corridor.
- 108th Avenue/6th Street between S. city limits and Central Way

Kirkland has a existing bicycle facilities on an number of streets and those streets that must also be on the network

- 132nd Ave NE/NE 120th St. between south City Limits and Slater Ave.
- NE 132nd Street between east city limits and west city limits
- NE 80th St./I-405 overpass and portions of Kirkland Ave/Kirkland Way between 132nd Ave NE and Downtown
- NE 116th Street between 100th Ave NE and Slater Ave.
- NE 100th Street NE/18th Ave between 132nd Ave NE and Market St.
- 108th Avenue NE/6th Street from south city limits to Kirkland Way

The Eastside Rail Corridor and will eventually form the centerpiece of the off-street bicycle and pedestrian network in Kirkland.

- ERC right-of-way
- NE 60th St between 132nd Ave NE and Lake Washington Blvd
- 7th Ave, 6th St., between ERC and Central Way
- NE 112th St/Forbes Creek Dr. between ERC and Market St.
- 120th Ave NE/116th Ave NE between NE 112th St. and NE 132nd St. this suggests including NE 128th St between 116th Ave NE and 120th Ave NE.

Combining all the segments noted above result in the network shown on Map 11.

CROSS KIRKLAND TRAIL

A multi use trail on the former Burlington Northern Santa Fe Railroad right-of-way is Kirkland's highest priority non-motorized transportation project (See Goal G1). The right-of-way provides unprecedented opportunities for a number of reasons. Because it is designed for rail traffic it

NE 85th and NE 124th Streets

From a connectivity perspective, it would be ideal for both NE 85th and NE 124th Street to be part of the bicycle network. Although both were carefully considered for inclusion, neither NE 124 nor NE 85th Streets are part of the bicycle network. Reasons for this include:

- Auto volume of 30,000-40,000 vehicles per day with speed limits of 35 MPH combine to make both streets uncomfortable for most cyclists.
- Bicycle lanes cannot be placed through restriping, and given the speed and volume of auto traffic such lanes alone would be unlikely to make either street feel comfortable for cyclists.
- Interchanges at I-405 are barriers on both routes.
- There are no plans to develop NE 85th as a bicycle route in Redmond.
- NE 80th Street provides a reasonably close parallel route to NE 85th Street.

As a part of the 2008 resurfacing program, 10' wide inside travel lanes were striped on a section of NE 124th Street between NE 116th Avenue and about 108th Avenue. If this restriping is successful as judged by comments from the public and crash experience, other sections of both streets may be restriped to allow wider outside lanes. Wider outside lanes will provide some support to the experienced riders that tend to use both facilities. Also, a climbing lane is proposed for the long hill on eastbound NE 124th Street between 100th and 105th Avenues.

Section 6: Network and project prioritization of facilities for cyclists

is practically flat. It cuts through the center of Kirkland on a diagonal, connecting Totem Lake, downtown and Houghton. Grade separation is already in place at I-405 and other key arterials but there is still adequate opportunity to connect to the street system through at-grade crossings. The trail can provide excellent regional connections to the north and south.

Efforts to develop the trail began in the mid 1990's but were stalled by the fact that the railroad was not willing to provide access to the right-of-way. As this plan is being prepared, the Port of Seattle is poised to obtain the right-of-way and sell a trail easement to King County. There are still questions about the future of passenger rail in the corridor and how some bridges will support a trail, but the promise of an outstanding trail is closer than ever to being realized. See Goal G1.

LOCATIONS THAT NEED IMPROVEMENT

Once the network is identified, the next step is to identify areas on the network that need improvements. In large part, this was done using information from the bicycle survey and public comment along with staff and Transportation Commission comments. In some cases the same segment has multiple projects. Usually this is the case when there is a simple project such as restriping that can provide an interim improvement and a more complicated and comprehensive project such as widening to provide bike lanes.

- Cross-Kirkland trail on the Eastside Rail Corridor right-of-way.
- 98th Ave NE /100th Ave NE between NE 116th and NE 132nd Sts.
- 116th Ave NE between NE 124th and NE 132nd Sts. No bike facilities on street
- Connection across Cross-Kirkland trail between 18th Ave and NE 100th St.
- Kirkland Way between Railroad Avenue and 6th Street.
- NE 60th St. across Cross-Kirkland trail.
- 116th Ave NE between S. city limits and NE 60th St.
- NE 70th St at I-405 interchange
- Lake St. between 2nd Street S. and Central Way
- 6th St. S. between Kirkland Way and Central Way
- Central Way between Market St. and 6th Street
- Various signalized intersections where bike lanes are dropped such as: 98th Ave./NE 116th St, State St/NE 68th, Central/3rd, Central/6th

Sharrows

Sharrow is a nickname for shared lane markings and are also known as SLM. Their purpose is to indicate to motorists and cyclists that an area of the roadway is to be shared by both users. The City of San Francisco did research* to develop the sharrow marking; finding it the most effective of several they tried.

The City of Seattle has begun to install sharrows and they are included in the Seattle Bicycle Master Plan.



A bicyclist pedals toward a sharrow along Stone Way N. in Seattle. Grant M. Haller/Seattle P-I.

Sharrows are not a direct substitute for bicycle lanes, so they should not be used where bicycle lanes are feasible.

*San Francisco's Shared Lane Pavement Markings: Improving Bicycle Safety FINAL REPORT February 2004 San Francisco Department of Parking & Traffic

POTENTIAL PROJECTS

After defining the bicycle network and areas where improvements are needed, treatments for those areas were developed. These improvements are shown in Table 17, 18 and 19, and on Map 10. In some cases, a segment has multiple treatments. For example one project might simply restripe wider outside lanes on a segment of roadway while another reconstructs that same section to provide enough width for full width bicycle lanes.

Projects are broken into three groups: Those that require restriping alone or restriping and minor construction; those that require construction; and those that involve the eastside rail corridor. The restriping projects tend to be lower cost, but in some cases do not provide the level of improvement that the far more expensive widening projects provide. The Cross-Kirkland trail projects will be most valuable as connections once the trail is completed.

Because there are relatively few projects in each category further project prioritization is not necessary. Therefore, work should continue within the restriping program to complete the restriping projects. Projects that are associated with the Cross-Kirkland trail should be pursued as a part of trail development. The construction projects should be evaluated for funding from the CIP non-motorized construction budget.

Section 6: Network and project prioritization of facilities for cyclists

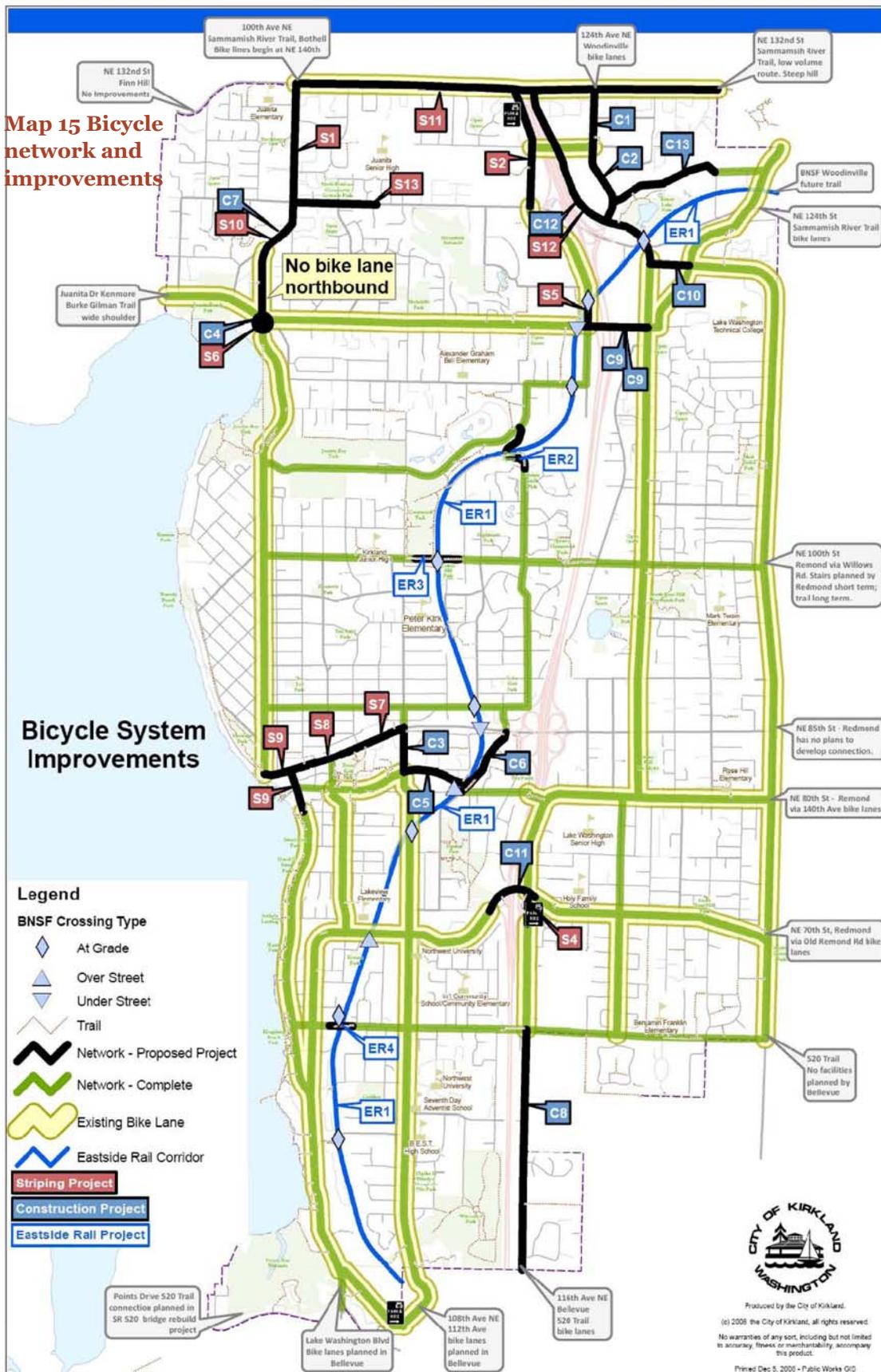


Table 17 Bicycle network projects that require construction

PROJECTS THAT REQUIRE CONSTRUCTION				
Number	Street	From	to	project
C1.	120th Avenue NE	NE 128th Street	NE 132nd Street	Add bike lanes. Not in initial scope of CIP project, but can be added.
C2.	120th Avenue NE	Totem Lake Blvd	NE 128th Street	Add bike lanes Not in initial scope of CIP project, but can be added.
C3.	6th Street	Kirkland Avenue	Central Way	Add bike lanes. Parkplace redevelopment would add lanes on west side.
C4.	98th Avenue NE	Juanita Bay bridge	NE 116th Street	Widening/rebuilding Possibly include a bike lane for NB left turn.
C5.	Kirkland Way	Railroad Avenue	NE 85th Street	Widen for bike lanes
C6.	Kirkland Way	6th Street	Railroad Avenue	RR bridge/overpass is a major obstruction. From 6th to about 4th could be restriped for bike lanes if parking was removed on one side.
C7.	98th Avenue NE	NE 116th Street	NE 124th Street	Widening to include bike lanes. Expensive and difficult. Probably done in connection with redevelopment.
C8.	116th Avenue NE	City limits	NE 60th Street	Add bike lanes. Design funded as CIP project NM-0001.
C9.	NE 116th Street	120th Avenue NE	124th Avenue NE	Complete bike lanes. Funded by WSDOT nickel project. Scheduled for construction in 2010.
C10.	NE 120th Street	124th Ave NE	Slater Ave NE	Construct new road connection. Funded CIP project ST 0057 construction in 2012. Project includes bike lanes.
C11.	NE 70th Street	I-405 west ramps	116th Avenue NE	Rebuild interchange . Unfunded WSDOT responsibility. NE 70th and NE 85th Street interchanges would be rebuilt together.
C12.	Totem Lake Blvd	NE 124th Street	NE 132nd Street	Add bike lanes
C13.	Totem Lake Way	east end	NE 126th Place	Construct trail to connect Totem Lake with 132nd Avenue. Unfunded CIP project NM 0043 estimated cost \$4.3m.

Table 18 Bicycle system improvements that require striping

PROJECTS THAT CAN BE COMPLETED THROUGH RESTRIPIING AND/OR MINOR CONSTRUCTION				
Number	Street	From	To	Project/Notes
S1.	100th Avenue NE	NE 124th Street	NE 132nd Street	Restripe to 5 car lanes@ 10 + 2 bike lanes @5'. Requires narrowing medians, coordinate with King County to extend north to connect to existing bike lanes.
S2.	116th Ave/Way	NE 124th Street	NE 132nd Street	Restripe for NB climbing lane. Perhaps add shared lane markings on downhill side.
S3.	Lake Street	2nd Street S	Central Way	Shared lane marking (sharrow). May also be able to extend bike lanes north of 2nd Street S.
S4.	116th Avenue NE	Houghton P&R S. entrance	NE 70th Street	Restripe for bike lanes in both directions. Need WSDOT approval, to narrow lanes, since area is in the limited access area of I-405.
S5.	120th Avenue NE	NE 116th Street	N. of BNSF	Restripe to complete Sbound lane
S6.	98th Avenue NE	Juanita Bay bridge	NE 116th Street	Restripe for wider outside lanes can add some width, but need to be careful to keep left turn lane of adequate width.
S7.	Central Way	4th Street	6th Street	Stripe wider outside lane Parkplace could provide extra width for eastbound lane.
S8.	Central Way	Lake Street	4th Street	Eastbound; stripe bike lane Westbound; stripe wider outside lane
S9.	Central Way	Market Street	Lake Street	Shared lane marking (sharrow), may be able to fit a bike lane in westbound
S10.	98th Avenue NE	NE 116th Street	NE 124th Street	Restripe for slightly wider outside lanes If project S1 completed, this could be sharrows especially Sbound between NE 124 and existing bike lanes at 120th PL.
S11.	NE 132nd Street	100th Avenue NE	132nd Avenue NE	Restripe for uniform width. Requires coordination/agreement with King County.
S12.	Totem Lake Blvd	NE 124th Street	NE 132nd Street	Restripe. Not enough width for standard bike lanes. May result in wide outside lanes or climbing lane/shared lane combination.
S13.	NE 124th Street	100th Avenue NE	105th Avenue NE	Stripe bicycle climbing lane eastbound. Requires median narrowing.
S14.	116th Avenue NE	City Limits	NE 60th Street	Narrow car lanes, more evenly balance shoulder widths to provide additional space for bicycles.
S15.	Various	At intersections		Look for locations where bicycle lanes can/should be continued through intersections. Consider sharrows.

Table 19 Bicycle projects that involve the Eastside Rail Corridor

PROJECTS THAT INVOLVE THE CROSS-KIRKLAND TRAIL/EASTSIDE RAIL CORRIDOR				
Number	Street	From	to	project
ER 1.	Eastside rail corridor	Southwest city limits	Northeast city limits	Complete a multipurpose trail on the eastside rail corridor. Waiting for BNSF/Port of Seattle/King County agreement.
ER 2.	116th Avenue NE Highlands	North end of 116th Avenue	Forbes Creek Drive	Connect to and across BNSF right-of-way. This could connect at other locations, purpose is to connect Highlands neighborhood to right-of-way.
ER 3.	NE 100th Street	6th Street	111th Avenue NE	Construct trail to connect through park and across BNSF
ER 4.	NE 60th Street	BNSF	BNSF	Construct trail to connect across railroad, approaches very steep.

SECTION 7: PROGRAMMATIC ELEMENTS

PEDESTRIANS

ADA TRANSITION PLAN

Kirkland is steadily making walkways more accessible. Substandard facilities were identified in the 2004 sidewalk inventory and are gradually being replaced while new construction complies with current standards. Most cities have adopted ADA transition plans as required by Title II of the Americans with Disabilities Act. Title II mandates that public agencies such as the City of Kirkland operate each service with accessibility to those with disabilities.

Title II also dictates that a public entity must evaluate its facilities and public areas to determine whether or not they are in compliance with the nondiscrimination requirements of the ADA. The regulations detailing compliance requirements were issued in July 1991. The requirements include completing a self-evaluation to identify any areas not within compliance of the ADA standards. Next, a transition plan is to be prepared describing any necessary structural or physical changes needed to make all required areas accessible and compliant with ADA.

Although the City of Kirkland has conducted most of the steps necessary to complete a transition plan, a formal plan has not been completed. In order to comply with regulations such a plan should be prepared and adopted. Goal G6 describes this work.

OBSTRUCTIONS

Despite the programs described in Section 4, walkway obstructions due to brush, debris and recycling or waste containers are a common complaint among Kirkland's pedestrians. This Project would include some measure of the magnitude of the problem, review the processes that are in place to assure clear sidewalks and develop strategies to increase the amount of clear walkways. Goal G6 describes this work.

SAFETY AT INTERSECTIONS

Data shows that most pedestrian crashes happen at intersections (see Figure 11, Page 32). At signalized intersections, slightly more than half of the crashes involve turning vehicles. Many of these crashes could be avoided if pedestrians looked more carefully for turning vehicles and if drivers were more aware of the presence of pedestrians. Increasing the prevalence of these behaviors is not likely to be accomplished through traditional engineering measures. Instead, campaigns directed at changing behavior are more appropriate. An example of this type of effort is the Take it to Make campaign that focused on getting pedestrians to use pedestrian flags. A similar program should be conducted to increase the number of pedestrians that look for turning vehicles. Emphasis should be placed on understanding why pedestrians don't look for turning vehicles and developing strategies to overcome those barriers. The Take it to Make effort was grant funded and it is likely that a program of this type would also require grant funding.

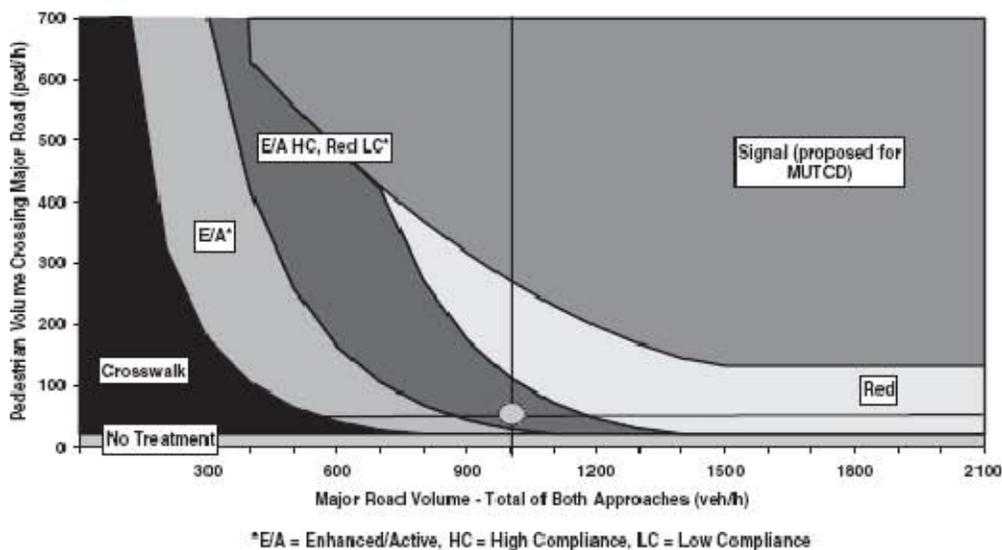
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CROSSWALK SAFETY REVIEW

All uncontrolled crosswalks were reviewed in 2003. This review is discussed in Section 2. A ranking system that was new at the time was used to evaluate the risk of crashes at uncontrolled crosswalks. This evaluation was combined with actual crash data to develop a list of candidate improvements. Since 2003 two other evaluation criteria have been developed, the Pedestrian Intersection Safety Index¹¹ and Guidelines for Pedestrian Crossing Treatments¹²

The intersection safety index is a method that allows a specific number reflecting the safety potential of any crossing at an intersection. The Guidelines for Pedestrian Crossing Treatments goes beyond the 2003 analysis to identify the type of treatment that is best suited for a particular crosswalk. Potential Treatments may range from a marked crosswalk only to a traffic signal. Goal G5 supports crosswalk safety.

Figure 46 A sample chart from Guidelines for Pedestrian Crossing Treatments showing the relationship between street volume, pedestrian volume and treatment type.



BICYCLES

The programs in the following sections support Goal G8.

WAYFINDING SIGNS

Bicycle wayfinding signs are being installed by cities throughout the region. Wayfinding signs in Kirkland should be of the same style that is used by the City of Seattle, Bellevue and Redmond. There are two types of signs that will make up the signing system as shown in Figure 44. On

¹¹ Pedestrian and Bicyclist Intersection Safety Indices: User Guide, Publication No. FHWA-HRT-06-130, Federal Highway Administration, April 2007

¹² National Cooperative Highway Research Project Report 562 Improving Pedestrian Safety at Unsignalized Crossings Transportation Research Board, 2006

Section 7: Programmatic elements

streets that are part of the bicycle network and on other streets that intersect with streets on the bicycle network, signs will be placed that show the distance and direction to key destinations. On regional routes or trails with designated names (like the Lake Washington Loop or the future Cross-Kirkland Trail) a second type of route specific sign will be used to identify the trail and on other streets that intersect with the trail. On the order of 150 signs would be needed to sign the existing network. Each sign would cost approximately \$150 to manufacture and install for a total estimated project cost of \$22,500.

Figure 47 Two types of bicycle wayfinding signs used in other surrounding communities. The sign on the left is used at junctions on the bicycle network. The sign on the right is used on named routes, such as the Lake Washington Loop.



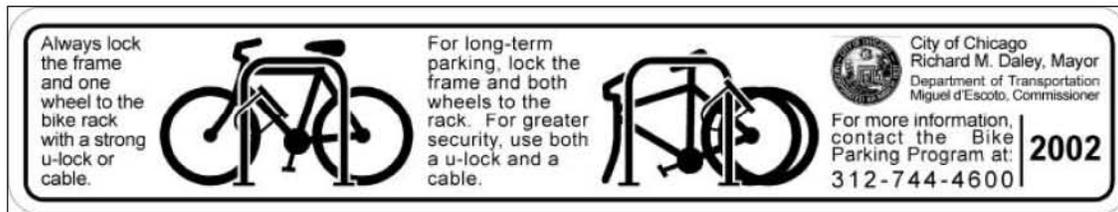
BICYCLE PARKING

Existing requirements for bicycle parking are discussed in section 2. Based on the number of comments obtained in the bicycle survey and based on past comment received in the past, there is strong support for additional bicycle parking. Experts on bicycle parking agree that simple, inverted U shaped racks best meet the goals of effective bicycle parking; namely that the bicycle is supported in two places and that the racks are easy to use and secure. In Kirkland, these racks could be incorporated on wide sidewalks between street trees and street lights. Another option is to convert street space into areas for storing multiple racks. The following tasks should be completed to improve bicycle parking in Kirkland.

- Identify where bicycle parking should be added candidates include Downtown, Juanita, Totem Lake , and/or other commercial areas.
- Identify the amount of additional parking needed. This could be based on having parking available within a certain distance, on increasing the existing supply by a certain amount, on developing locations where parking can be easily located or on other factors
- Revise the zoning code to require bicycle parking as a part of right-of-way improvements
- Review existing zoning code requirements for
- Add specifications for bike rack design and installation to the Pre-Approved plans
- Create additional bicycle parking
- Explore requiring special events in Downtown to provide bicycle parking.

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Figure 48 This information is printed on stickers and placed on bicycle racks in Chicago

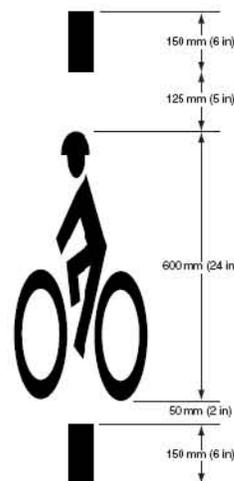


TRAFFIC SIGNALS

In Kirkland, most traffic signals are activated by loops buried in the pavement. The loops have an electric current passing through them making a circuit. When a vehicle passes over a loop the properties of the circuit change, the traffic signal equipment detects the change and the signal turns green for the direction where the vehicle is. Loops are most sensitive at their edges. Cars and trucks are large enough that they easily cover the loop and are therefore easy for the traffic signal equipment to detect them. Sometimes it's hard for cyclists to get a signal to respond because they don't know where to stop in order to activate the loop.

In order to make it easier for cyclists to activate the signals, markings like the one shown in Figure xx will be placed to give cyclists a clear location of where to stop. About 275 markings will be needed and based on 2008 prices they will cost about \$30 each for a total cost of \$8,250. This work could likely be accomplished through the City's pavement marking program.

Figure 49 Marking that could be used at traffic signals to indicate where cyclists should stop



STREET SWEEPING

Kirkland's existing sweeping program is described in Section 2. During the survey period a number of respondents cited increased sweeping of bicycle lanes as a measure that would improve their bicycling experience. A main purpose of street sweeping is to keep debris from clogging the stormwater system. Therefore, it's important to sweep both minor and major streets frequently. Increasing the sweeping of bicycle lanes by decreasing sweeping of other streets is not realistic. In order to sweep bicycle lanes more often, more person-hours would have to be added to the sweeping program. Given budget constraints this is probably not realistic. The spot sweeping of bicycle lanes is relatively inexpensive because the sweeper is out almost every day and can make a pass on the way to or from another job.

Two ideas should be considered to reduce debris in the bicycle lanes. One is the wider promotion of the fact that cyclists can call to get spot sweeping done and the other is the reconsideration of spreading sand for snow and ice control.

NE 116TH STREET/JUANITA DRIVE/98TH AVENUE NE INTERSECTION

This intersection was one that was viewed as difficult by both pedestrians and cyclists who responded to the survey. It is heavily traveled by cyclists connecting between Juanita Drive and downtown Kirkland on the popular Lake Washington Loop route, it's in the center of the Juanita Business district and used to connect to both Juanita Bay Park and Juanita Beach Park. It is also heavily traveled by motorists. There was one pedestrian crash and no bicycle crashes in the period 2003 to 2007.

In support of Goal G5, it is proposed that a Road Safety Audit (RSA) be conducted at this intersection. An RSA is a formal safety examination of an existing or future roadway that is conducted by a multidisciplinary (for example, traffic signal engineer, police officer, roadway designer, expert in disabled access, pedestrian safety expert, etc) team of people who don't work for the City and who were not involved with the development of the current configuration. The main objective of an RSA is to address the safe operation of roadways and crossings to ensure a high level of safety for all road users. RSAs are not intended to be a review of design standards or policies, but rather a review of site elements that, alone or combined, could contribute to safety concerns.¹³

¹³ Pedestrian Road Safety Audit Guidelines and Prompt lists. FHWA SA-07-007, USDOT FHWA July, 2007.

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INTRODUCTION

Urban equestrians face unique challenges in their use of the City's transportation system. Paved surfaces are not ideal for equestrians because they provide poor traction for horses and can be hard on their joints. In addition, horses can be frightened by other users of the transportation system such as motorists and cyclists.

To accommodate the needs of the equestrian community, it is important that care be given to the design and construction of equestrian facilities. These should incorporate the following considerations:

Shared equestrian and pedestrian use of a path can generally be safely managed. Where possible, some separation of equestrians from cyclists and motorists is desirable.

Equestrian paths should not be paved. Rather, paths should be constructed with a specially designed, stabilized granolithic mix to provide appropriate footing and to retain their integrity in Puget Sound's wet climate.

Clearances should be designed with the use by horse and rider in mind. Paths should be wide enough to support two-way travel equestrian travel and have enough vertical clearance for a horse and rider.

EXISTING FACILITIES

Bridle Trails State Park is a regional hub for equestrian activities and the key equestrian facility available to Kirkland residents. It has been owned by the State since the 1880s and has been a popular riding area for equestrians since the 1930s. In the 1960s, citizens successfully petitioned the State to make it a State Park.

The park encompasses 481 acres of forested land and includes 28 miles of equestrian/pedestrian trails as well as horse show arenas and spectator stands. It is a mark of how significant this facility is that, in 2002, users established the Bridle Trails Park Foundation. This 501c3 non-profit organization acts in partnership with the State to fund operating costs for the park.

In the neighborhoods north and west of Bridle Trails State Park, residents ride to the park and to areas within the larger region. Kirkland's Land Use Code establishes most of the area around the park as Low Density Residential. Much of it is zoned to allow one unit per acre, while some allows 1 -3 units per acre. This reduced density helps preserve the option for owning horses in the areas surrounding the park.

Figure 50 Placeholder Picture



Placeholder text box

Kirkland's Land Use Code establishes most of the area around the park as Low Density Residential.

Section 8: Equestrian System

PROPOSED FACILITIES

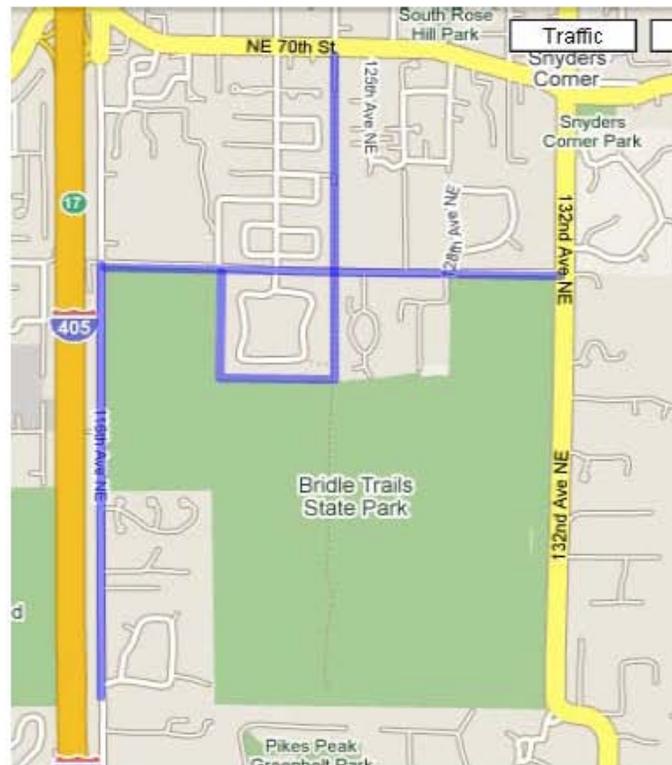
To take advantage of the equestrian opportunities presented by Bridle Trails State Park, a series of equestrian trails are planned along the surrounding and nearby rights-of-way. The trails need to be designed and constructed to accommodate the special needs of equestrians as described earlier in this chapter.

Map 16 shows the system of equestrian routes in the areas surrounding Bridle Trails State Park.

The proposed facilities are multi-use trails along:

- the east side of 116th Avenue NE from NE 60th Street south to the Kirkland city limit
- the south side of NE 60th Street from 116th Avenue NE to 132nd Avenue NE
- the 124th Avenue NE right-of-way from NE 60th Street to NE 70th Street
- The perimeter of the Bridlewood Circle development

Map 16 Placeholder for equestrian map



ACTION ITEMS

The following Action Items are necessary to implement and manage the equestrian element facilities described above:

Complete design of the 116th Avenue NE facility (2009)

Finalize equestrian path design standards for inclusion in City's Pre-Approved Plans (2009)

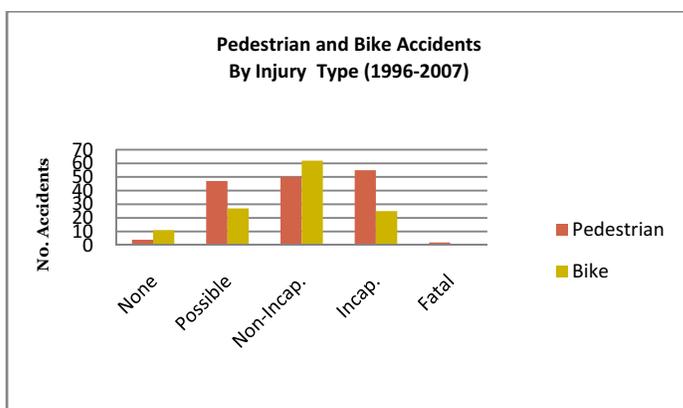
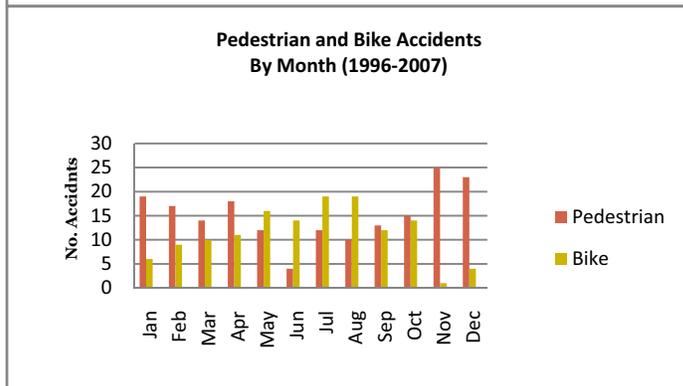
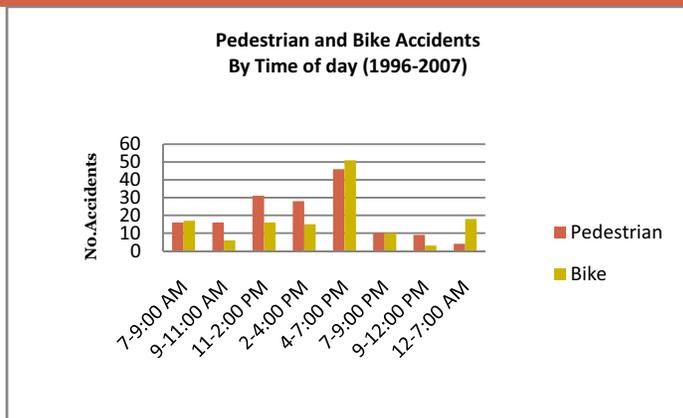
Secure funding for the construction of the 116th Avenue NE facility

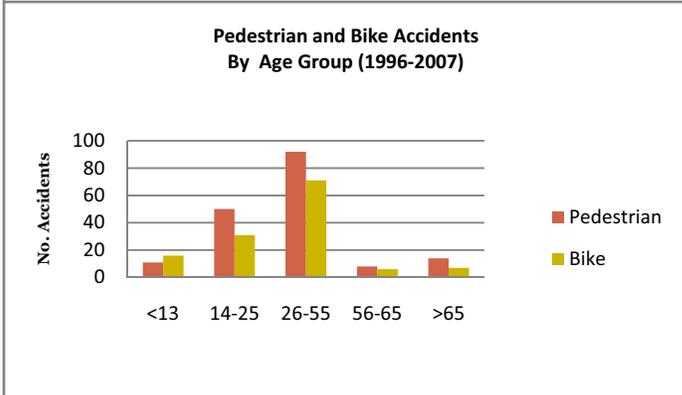
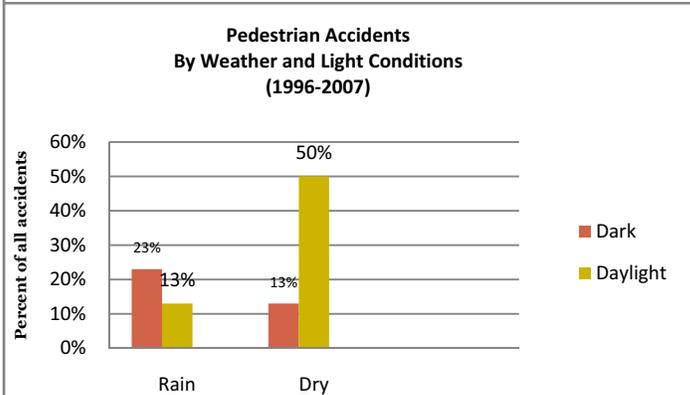
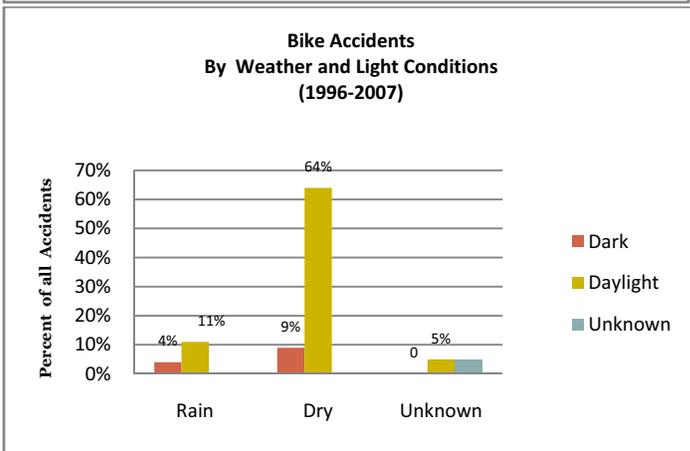
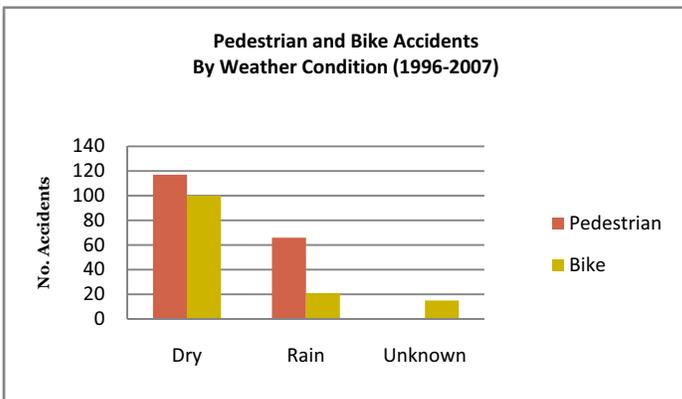
Seek funding for the design and construction of the remaining facilities

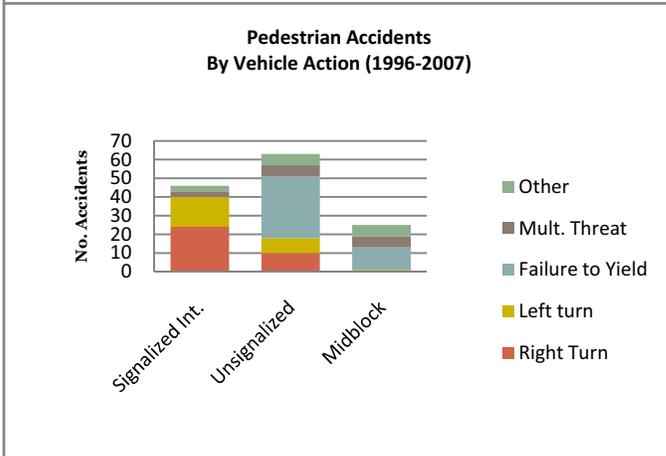
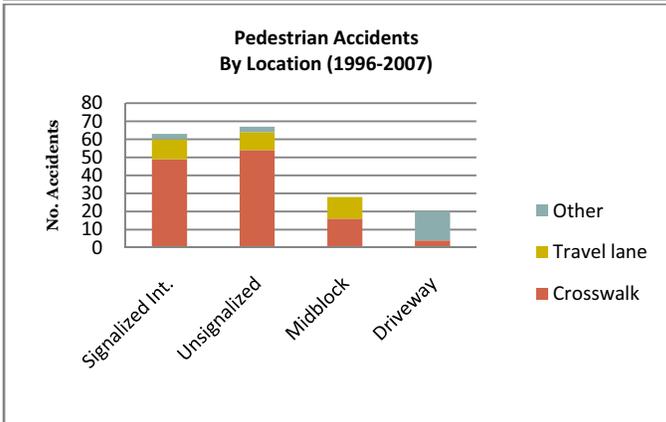
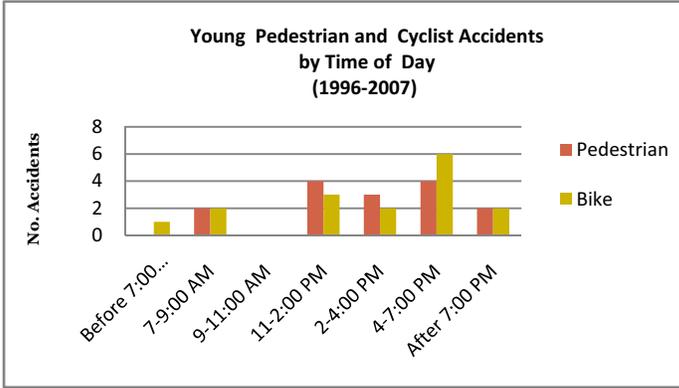
Preserve and maintain access through the existing equestrian easements around Bridle Trails State Park (ongoing)

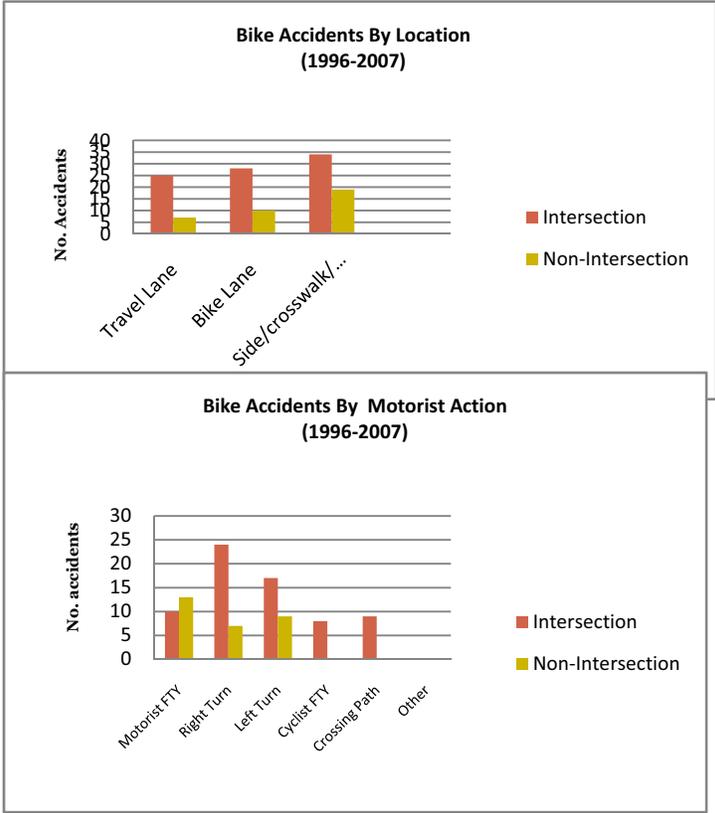
APPENDIX A ON-LINE SURVEY

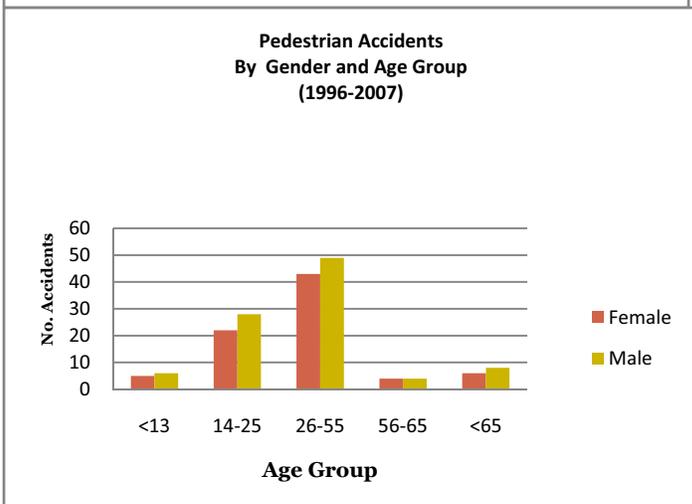
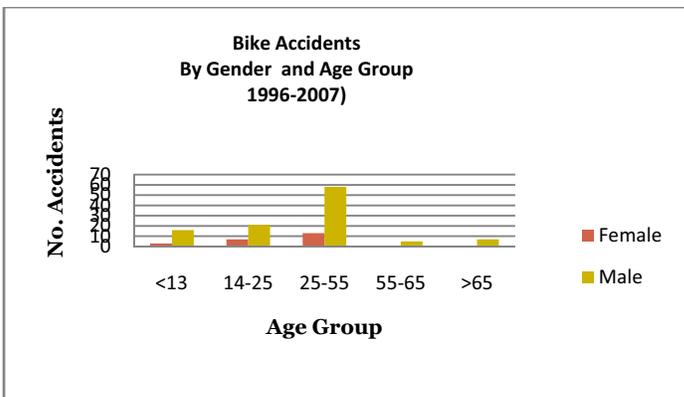
APPENDIX B SAFETY











APPENDIX C CROSSWALK EVALUATION

APPENDIX D BACKGROUND ON RANKING SIDEWALK PROJECTS

Parks

1. 132nd Square Park
2. Bridle Trails State Park
3. Brookhaven Park
4. Carillon Woods
5. Cedar View Park
6. Crestwoods Park
7. David E. Brink Park
8. Everest Park
9. Forbes Creek Park
10. Forbes Lake Park
11. Heritage Park
12. Highlands Park
13. Houghton Beach Park
14. Juanita Bay Park
15. Juanita Beach Park
16. Kiwanis Park
17. Marina Park
18. Mark Twain Park
19. Marsh Park
20. McAuliffe Park
21. North Kirkland Community Center and Park
22. North Rose Hill Woodlands Park
23. Ohde Avenue Pea Patch
24. Peter Kirk Park
25. Phyllis A. Needy Park
26. Reservoir Park
27. Rose Hill Meadows
28. Settler's Landing
29. South Rose Hill Park
30. Spinney Homestead Park
31. Street End Park
32. Taylor Fields at Houghton Landfill
33. Terrace Park
34. Tot Lot Park
35. Totem Lake Park
36. Van Alst Park
37. Watershed Park
38. Waverly Beach Park
39. Yarrow Bay Wetlands

Commercial Areas

1. Bridle Trails: BCX, BN1
2. Carillon Point: PLA 15A
3. Downtown: CBD 1-8
4. Houghton: BC
5. Juanita: JBD 1-2, 4-6
6. Lake Washington Blvd.: BN
7. Market Street south: MSC 3
8. Market Street north: MSC 2
9. NE 85th Street: RH1 A-B, 2 A-C, 3, 4, 5 A-C, 7
10. Totem Lake: TL 2, 4 A-C, 5, 6 A,B, 8, NRH 1A, 1B, 4

Schools

Lake Washington School District

Elementary (k-6)

1. AG Bell
2. Juanita
3. Peter Kirk
4. Mark Twain
5. Rose Hill
6. Lakeview
7. Ben Franklin

Jr. High (7-9)

8. Kirkland

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9. Rose Hill Shares campus with Stella Schola
- High Schools (10-12)
10. Juanita Shares campus with Futures School
 11. Lake Washington Shares campus with Northstar Jr. High
- Choice Schools
12. Community Elementary (1-6) Shares campus with International School
 13. Stella Schola (6-9) Shares campus with Rose Hill Jr. High
 14. Northstar Jr. High (7-9) Shares campus with Lake Washington High
 15. International School (7-12) Shares campus with Community Elementary
 16. BEST High School (9-12) Shares campus with Family Learning Center
 17. Futures School (10-12) Shares campus with Juanita High School
 18. Family Learning Center (k-12) Shares campus with BEST High School
- Other Schools
19. Holy Family (k-8)
 20. Seventh Day Adventist (k-8)
 21. Lake Washington Technical College
 22. Northwest University

Transit Routes

No	Route	Peak hour only	Freeway in Kirkland	Serves high schools
1	230			
2	234			
3	236			
4	238			X
5	244			
6	245			
7	248			
8	252	X	Between Totem Lake freeway station and Seattle	
9	255			
10	257	X	Between Totem Lake freeway station and Seattle	X
11	260	X	Between NE 116th St. and Seattle. Stops at Houghton Freeway Stop	
12	265	X	Between Houghton P&R and Seattle	
13	277	X	Between Houghton P&R and Seattle	X
14	291	X		
15	342		Serves only Totem Lake Freeway Station and Houghton Freeway stop	
16	532	X	Serves only Totem Lake Freeway Station	
17	535		Serves only Totem Lake Freeway Station	
18	540			
19	935			

City of Kirkland

More people, more places, more often



This plan will be of interest to you if you've ever wanted:

- new sidewalks
- more bicycle lanes
- sidewalks cleared
- bicycle parking
- safer crossings
- an easier walk to school
- a trail on the BNSF Railroad
- more street sweeping
- bike sharrows

Your Comments are Needed!

Kirkland's Non-motorized Transportation Plan is being updated for the first time since 2001. A draft version of the update - now called **Kirkland's Active Transportation Plan** is available for comment.

Inside: Highlights of the active transport plan.

Pedestrian flags make crossing safer

Early sidewalks on Market Street

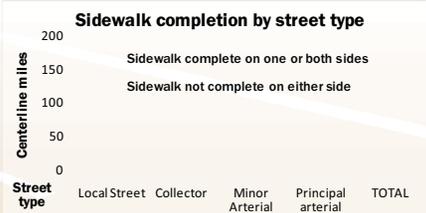
I-405 Overpass for pedestrians and cyclists at NE 100th Street

More people, more places, more often

A plan for active transportation

Develop the Cross Kirkland Trail.

Developing a trail on the BNSF right of way has been a dream of walkers and cyclists for many years. With a recent agreement between the port, the county and BNSF, a trail is closer than ever, but still unrealized. The plan calls this trail the number one priority for Kirkland's walkers and cyclists.

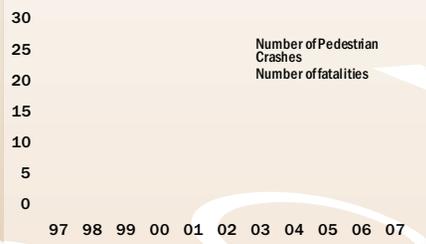


Increase the number of children who walk to school.

Walking to school is good for children and safe facilities encourage walking. The plan calls for building sidewalk on all the school walk routes on busy streets by 2019.

Reduce crash rates.

The number of crashes has stayed fairly steady over the past 10 years. At the same time, the number of walkers and cyclists has increased. This suggests that it's getting safer per mile walked or cycled, but we don't know how much. The Plan establishes a count program so we can figure out how much safety is improving. It sets a goal of 10% reduction in crashes rates.



Remove physical barriers to walking.

We've all encountered low hanging branches or garbage cans blocking sidewalks. For people using wheelchairs physical barriers are even more challenging. The plan calls for reducing obstructions and developing a plan to make walking more accessible for all users.

Add sidewalks.

The Plan proposes a new way of deciding which sidewalks should be built first. It's based on proximity to schools, parks, bus routes and commercial areas. Busy streets and school walk routes are given extra priority. Building sidewalks on at least one side of all arterials is to be completed by 2016.

Improve safety for people crossing streets.

Kirkland has a number of programs that help make crossing the street safe. The plan calls for new ways of identifying crosswalks that may need more protection.

Improve on-street bicycle facilities.

Throughout Kirkland bike lanes have been added by restriping streets with narrower car lanes. Sometimes restriping is not possible and construction is needed. The plan has a set of striping projects to be completed by 2011 and a set of construction projects to be completed by 2018.

Add programs that make bicycling more convenient.

In our on-line survey, cyclists said they want more bicycle parking and an easier way to get traffic signals to recognize them. The plan calls for adding more bicycle parking in downtown Kirkland and adopting standards that will make adding bike racks a normal part of building streets. The plan also calls for marking locations at traffic signals with symbols like the one to the left so that bicycles can be easily detected.

Existing Bike Lanes
Legend

STATUS

- Existing Bike Lane
- Park
- School



City of Kirkland

More people, more places, more often



The whole plan (about 100 pages) can be viewed or downloaded as a pdf at www.ci.kirkland.wa.us look under departments>public works> non-motorized plan

Offer your comments by January 31:

- **By email:** dgodfrey@ci.kirkland.wa.us
- **In person:** at one of the meetings scheduled below (On 1/20, comment at the council meeting that starts at 7:30)
- **By phone** at City of Kirkland Public Works (425) 587-3865
- **By letter:** City of Kirkland Public Works, 123 5th Avenue, Kirkland 98033

Schedule of upcoming meetings. The plan is scheduled to be discussed at the following meetings. All meetings at City Hall, check www.ci.kirkland.wa.us for more information

- January 8, Planning Commission 7:00
- January 14, Park Board 7:00
- January 20, City Council study session 6:00
- January 26, Houghton Community Council 7:00
- January 28, Transportation Commission 6:00

Plan Timeline: