City of Bellevue

Transportation Commission Study Session

7a

DATE: December 10, 2015

TO: Chair Lampe and Members of the Transportation Commission

FROM: Kurt Latt, Senior Transportation Engineer, 452-6020, KRL
klatt@bellevuewa.gov

SUBJECT: Bellevue's Crosswalk Practices

DIRECTION REQUESTED

Action

X Discussion

X Information

Staff will provide an overview of the Transportation Department's management practices as they relate to marked crosswalks at non-signalized locations. No specific action is requested from the Commission at this time.

BACKGROUND

Providing safe and efficient pedestrian facilities is a well-established goal of the City of Bellevue. In Bellevue's Comprehensive Plan and other City planning efforts such as the 2009 Pedestrian and Bicycle Transportation Plan Report, there has been significant work undertaken to identify policies that move the City toward an ever safer and more convenient environment for travel as a pedestrian. Pedestrian facilities are of particular importance as we try to reduce our dependency on the automobile and provide greater support for multi-modal travel and its many benefits. With this in mind, Bellevue's Transportation Department has established practices that aid in the evaluation of pedestrian crossing improvements as well as having strategies in place for allocating resources on a priority basis given the limited nature of available funding and staffing.

The Transportation Department receives many requests for new marked crosswalks or enhancements to existing marked crosswalks throughout the year. These requests for more convenient or safer pedestrian accommodations come from a variety of sources including residents, businesses, new development projects, and planning efforts. As these requests for improvements are made, a strategy is necessary to determine the relative merit of the improvement and to further consider opportunities with other improvements which might be planned. For instance, there may be a road widening project that includes repaving and utility

work where it becomes very cost effective to combine pedestrian related infrastructure such as a flashing crosswalk system with the other work already envisioned.

To ensure opportunities are realized and pedestrian crossing needs are sufficiently investigated in a consistent and methodical manner, the Transportation Department tracks requests received. Then, information on the candidate site is logged and, where appropriate, data is collected and analyzed and candidate sites grouped into one of several key Tier Levels. This in turn informs the work plan for the department related to crosswalk improvement implementation. This investigation and prioritization process is described below in more detail.

It should also be emphasized that this discussion primarily focuses on those street crossing locations commonly referred to as "uncontrolled" crosswalks. This is where the marked crosswalk may be located either midblock or at an intersection but the movement of vehicles and potential conflict with pedestrians is not controlled by a traffic signal or stop sign. The nature of pedestrian safety and methods for managing pedestrian crossings at traffic signals is a very different discussion and set apart from the discussion included herein. However, being aware of where planned signalized sites are located and their timing for improvement does play a role in the planning for new uncontrolled crosswalk sites and potential treatments. Thus, certain table summaries in the attachments include planned or completed traffic signals and are a part of the strategy for managing marked crosswalks at unsignalized locations.

INFORMATION

Attachment 1 provides an overview of the Transportation Department's Work Plan for 2016 as it relates to uncontrolled marked crosswalks. The work plan is developed each year in November/December but can be amended at other times, as needed. Included within Attachment 1 are several key elements to this discussion. There is the overall work plan which helps with assignments to ensure crosswalk projects are completed in a timely manner and aids with work load planning. There is also the methods of scoring candidate sites to help determine their relative merit for an improvement. Also included is the completed crossing improvement list which tracks pedestrian crossing improvements over the prior 5 years. Finally, there are three Tier Levels which are an important strategy in helping to manage how and when improvements are made for pedestrian crossings given limited resources. Each Tier Level shown in Attachment B is briefly described below:

Tier 1 – In progress (2016 Design and/or Construction)

This first Tier represents those crossing improvements which are currently either in design with known funding designated for the improvement or are pending construction soon.

Tier 2 – Unfunded/ Un-resourced Priority Candidate

The second Tier represents pedestrian crossings which have relatively high scoring and priority need with a general concept of improvement, but no funding or resources identified to further its design and implementation.

Tier 3 – Vetting and Options Investigations

The third Tier are sites which have merit for improvement but have not been fully vetted and may have various options to consider before improvements can or should be made. This Tier level may have sites that score relatively high but further investigation is necessary due to the need to develop the most cost effective strategy in accommodating pedestrians. For instance, can a segment of sidewalk improvement be made as part of another program that creates linkages to an already nearby established crosswalk?

How each crossing candidate site is categorized into each of the three Tiers described above, is a fairly elaborate process. It begins by first screening the potential site for consistency with sound principles of safe pedestrian accommodation. Those principles include having sufficient sight lines to the crossing, having minimum pedestrian activity levels which support greater compliance of the crosswalk laws, being consistent with national practices such as the Manual On Uniform Traffic Control Devices (MUTCD), and determining proximity to other established crossings and circulation options so unreasonably short spacing of crossings are not created. This first screening is conducted by an engineer assigned to investigate the requested crossing site. Some requests for crosswalk improvements will not pass this first screening and are logged in as such and the requester informed of the Department's findings. Should the site pass initial tests, more detailed assessments are made which may include data collection efforts to gather volumes (both vehicle and pedestrian), travel speeds, lighting level assessments, and historical accident reviews amongst other considerations. Because of the resource demands required of these types of investigations, a sequential screening process is conducted to allow the honing in on more feasible and merited crossings.

Following the investigation and scoring of candidate sites found to be feasible, each site is initially placed in general groupings based on their relative scores. From this, department staff vet candidates, consider opportunities for collaborative improvement with other planned projects, or otherwise adjust sites into one of the three Tier Levels described above. It should

be noted that although a scoring process is utilized, it is not used as a sole determining factor for decision making of which sites have the greatest priority. Its primary function is to assist in gaining a general sense of the merits of the crossing improvement relative to other sites. After the department team vetting exercises, there may be lower scored candidates which end up being assigned for immediate improvement if opportunities exist or other consideration necessitates such action.

RECOMMENDATION

No recommendation is brought forward at this time - for discussion only.

NEXT STEPS

The Transportation Department continues to develop and evolve its practices for managing these types of crosswalk installations. As technologies improve, and industry practices become more and more evident as to the most optimal means of accommodating pedestrians safely for any given situation, the department's practices will too evolve. This is intended to be a very dynamic process and one that is flexible enough to adapt to changing conditions while still establishing a solid framework for managing the many requests received by the department.

With the current planning effort of the Pedestrian and Bicycle Implementation Initiative (PBII), much more work is being conducted by the City to lay out a framework of policies and project specific implementation strategies and other guidance that more formally works toward an action plan of improvements. This discussion included herein on crosswalks will meld into that larger planning effort and be an important feature of how and where projects are completed.

ATTACHMENTS

1. Attachment 1 – Annual Crosswalk Priorities (includes additional Attachments A,B & C)

Attachment 1

City of Bellevue Transportation Department

Memorandum

To: Mark Poch, P.E., PTOE, Assistant Director, Transportation Dept.

CC: File

From: Kurt Latt, P.E., PTOE, Senior Transportation Engineer

Date: December 1, 2015

Re: Annual Crosswalk Priorities – 2016 Work Plan Summary

KURT A. LATT
STATE OF WASHINGTON
36052
REGISTERED
PROFESSIONAL ENGINEER
12/1/15

This memorandum provides an overview of the Transportation Department's practices in establishing priorities for enhancements at pedestrian street crossings. In doing so, a priority list of manageable improvements is developed reflecting available resources in funding and staffing able to accomplish the intended work. Prioritizing of resources is reviewed throughout the year. However, a work plan is established on an annual basis in December of each year to provide the necessary guidance and allocation of resources for the ensuing year.

As requests for improvements by citizens and various sources are made, and locations subsequently identified for review, they are incorporated into a master list of candidate sites. These candidates are then scored based on criteria as outlined in *Attachment A – Practices and Priority Guidance for Allocation of crosswalk related Resources*. This scoring provides a relative comparison of candidates but is not intended to represent a formal ranking of priority. This initial scoring process is intended to filter lower improvement need/satisfactory crossings, and to further, highlight crossings with the greatest need for improvement. As candidate sites surpass an established threshold score, they are placed into a discussion forum with City staff to consider the many factors of completing improvements including funding, staffing levels, timing, ability to coordinate with other projects, and other considerations. Through these staff discussions, candidate sites are assigned into priority tiers and a work program established for the ensuing year.

Attachment B – 2016 Crosswalk Priorities, provides a listing of crosswalk related improvements which can reasonably be accomplished in the coming year in consideration of staffing, funding, and other available or anticipated resources. Beyond these initial Tier

1 selected locations, there are other candidate sites that might be available for improvement if funding and staffing were to become available to support the additional work effort (Tier 2 and Tier 3). As this is a dynamic process, staff will consider amendments to the work plan as conditions warrant throughout the year. Contained in Tier 2 are sites which staff have a general concept of improvements but resources are not yet identified to further their design or implementation. While, Tier 3 represents those sites that require further vetting and options assessment to better determine scope of improvements. These Tier 3 sites will be further evaluated as staffing, data collection, funding, and other resources allow.

Attachment C – Completed Crosswalk Improvement Listing, provides a summary of completed or active improvements for pedestrian crossings since the year 2010.

Attachments –
Attachment A – Practices and Priority Guidance for Allocation of Crosswalk Related Resources
Attachment B – 2016 Crosswalk Priorities
Attachment C – Completed Crosswalk Improvement Listing

Attachment A

Transportation Department

Practices and Priority Guidance for Allocation of Crosswalk Related Resources

Department Practice:

The City of Bellevue's Transportation Department has developed practices and guidance for the consideration of marking crosswalks and for the allocation of enhanced crosswalk treatments at uncontrolled marked crosswalk locations. Where uncontrolled marked crosswalks are warranted based upon the conditions in the Manual on Uniform Traffic Control Devices (MUTCD), Engineering Judgment, and department practices, resources may be allocated to further support and enhance safety at a crossing location. However, with limited resources, priorities must be established to help guide the allocation of those limited resources. Additionally, improvements may be implemented in a staged manner, at the discretion of the Transportation Department, to better utilize available resources. Treatments such as advance signing, raised medians, curb bulbs, improved lighting, radar-speed feedback signs, and raised profile crosswalks are but a few options which may be implemented prior to consideration of flashing crosswalk systems or other more intensive resource demands. The practice described herein is intended to assist in developing priorities for the allocation of resources for pedestrian crossings.

Scoring Criteria and Priorities:

Scoring criteria were developed to reflect the relative merit for improvements at a pedestrian crossing. In some cases, dependent on conditions, it may be sufficient to have only pavement markings and signing for one crossing while another crossing merits more extensive resources. The criteria includes influences from schools, vehicle traffic, vehicle speeds, pedestrian activity and other considerations which play a role in the merit for additional improvements at a crossing location.

A location which satisfies a particular criteria is not justification in itself for alterations and no duty is implied or presumed for the city to provide a marked crosswalk or enhanced crosswalk treatment by use of this guidance. It should be recognized there are limited resources for managing the transportation system for all users and accordingly priorities for implementing new features or adjusting existing ones must be balanced with the needs citywide and assessed periodically by the City.

In consideration of limited resources, a minimum score of 20 must generally be achieved by the sum of criteria. However, there may be certain limited exceptions to a lower threshold if found by the Transportation Department to be in the interest of the overall prioritization process; for instance, coupling a candidate site with another nearby location as part of a CIP project. This minimum score of 20 may be adjusted up or down in the future by the Transportation Department to reflect changes in resources and priorities. Once this threshold is satisfied, the subject site will be considered a candidate for improvements together with other locations which also exceed this score threshold. The Transportation Department will then evaluate more subjective conditions such as community support, availability of funds relative to cost of improvement, engineering judgment of the site's safety, crosswalk study findings, or other considerations as deemed appropriate by the Transportation Department.

SCORING CRITERIA

A. Elementary School 5, Middle School 4, High School 3 (max score 5); _____**Score.**
B. Travel lanes – 2 score for each through travel lane, 1 score for center turn lanes or median areas, 2 score where bike lanes and/or parking exist (max score value 10); _____**Score**.
C. Posted Speed Limit – 5 score for 35 mph or higher, 4 for 30 mph, 3 for 25 mph, 2 for 20 mph established school zone. The 85th percentile speed data may be used in lieu of posted speed at discretion of the engineer; _____**Score.**
D. ADT – Average Weekday Daily traffic below 10,000 vehicles is 0, 10,000 to 15,000 is 3 and above 15,000 is 5; _____**Score.**
E. Accident History (pedestrian/bike) – one non-motorized accident within crossing location in past 3 years = 5. More than one pedestrian/bike accident within past 3 years or a single fatality is score of 10 if determined to be clearly located within the crossing limits as determined by the engineer; _____**Score.**
F. Accident History (vehicle) – 2 score for 5 or more rear end collision (or other relatable collision not included in E. above) in past 3 years associated with activity from the crossing as determined by the engineer;_____ **Score.**
G. Traffic Signal or existing marked crosswalk located within 500 feet of subject review location – deduct 5 score. Where traffic signals are within 300 feet of the crossing outside of the downtown district, flashing crosswalk systems will not be considered. Within the downtown district, this criteria may be overridden at the engineer's discretion;_____ **Score.**
H. Crossing is located on a designated arterial – Major is 5, Minor is 3, Collector is 2; Local Street is 0; _____ **Score.**
I. Coordination. Project can be coordinated with another Capital Improvement Project, Grant Opportunity, Development, or Overlay project for efficiency in design and construction and reduced resource demand is 5; _____ **Score.**
J. Pedestrian volume of 20 peds or higher in peak one hour period is 5 score. Where 20 peds is not achieved for a crossing assign 0 score; _____**Score.**
K. Site Conditions. This category allows the professional to assign up to 10 points for site conditions which are unusual, such as a side trail connection, or roadway gradient, or other aspect that in the opinion of the professional elevate the subject crossing beyond typical consideration; _____ **Score.**
L. Implementation Complexity. If the site meets criteria for installation or enhancement, satisfies certain community goals, and can be implemented relatively simply with minimal costs, staff time, or other resources as determined by the Department, assign a 5 score; _____**Score.**

The City retains the right to remove or modify any enhanced treatment or marked crosswalk within the public right-of-way at its sole discretion and may from time to time develop pilot projects to evaluate new technologies and advances in crosswalk safety. The above criteria is developed by the Transportation Department staff and any interpretation of criteria or conditions rests with the Department Director or their designee.

SUBJECT LOCATION: _____
TOTAL SCORING: _____

Prepared by: _____ Date: _____

ATTACHMENT B
Crosswalk Priorities (Nearterm)

Reference Number	Location	Comment
	TIER I - In Progress (2016 Design and/or Construction)	
47	Northup Way east of NE 33rd Pl	Constr./Coord. with CIP project
49	Northup Way near I-405 overcrossing	Constr./Coord. with CIP project
218	NE 4th St @ ERC (116th to 120th mid-segment signal)	Design/Coord. With develop. (signal)
203	112th Ave SE at SE 15th St	Design/Coord with East Link (signal)
220	Main St west of 124th Ave NE (new elementary school)	Coordinate with school district
221	Spring District Sites - various locations in Bel-Red area	Design/Coord with East Link
24	SE 36th St (38th) west of 150th Ave SE	Design/Coord. With MTS CIP
36	SE 25th St west of 108th Ave SE (reconfigured elem. school)	Coordinate with school district
215	112th Ave SE at SE 300 Blk (Hilton Vicinity)	Design/Coord with East Link (signal)
65	SE 36th St between 132nd Ave SE and 136th Ave SE (13400 blk)	Design/Coord. With MTS CIP
66	SE 36th St west of 146th Ave SE	Design/Coord. With MTS CIP
166	110th Ave NE btwn NE 6th St and NE 8th St	Design/Coord. with development
186	116th Ave NE btwn NE 12th St and Northup Way	Design/Coord. With overlay CIP
190	140th Ave SE at SE 5th St (vicinity)	Design/construction
70	Newport Way near KC Library and Community Center vicinity	Design/Coord. with CIP project
161	NE 4th St @ 105th Ave NE	Design/Coord. with development
187	106th Ave NE @ NE 9th St (Top Pot vicinity)	Design/Coord. with development
165	110th Ave NE btwn NE 4th ST and NE 6th St	Design/Coord with East Link
80	100th Ave NE @ NE 1st St (Downtown Park)	Design/Coord. with Parks project
211	Lakemont Blvd at 164th Ave SE	In Design - Signal
53	92nd Ave NE at NE 10th St (Sunset Ln)	In Design
	TIER 2 - Unfunded/Unresourced Priority Candidates	
79	156th Ave NE at NE 6th St	
74	Northup Way @ NE 10th St	Coordinate with Overlay
210	Coal Creek (Lakemont Blvd) at Cougar Mt. Park Trail crossing	
103	NE 24th St @ 166th Ave NE (Sherwood Elementary)	Coordinate with 189
118	156th Ave NE at NE 4th St	
76	Lake Hills Blvd at Lake Hills Trail Crossing	
214	164th Ave SE at SE 49th St	Coordinate with ADA program
60	140th Ave NE @ N. City Limit Trail Crossing	
64	164th Ave NE at NE 12th St	Coordinate with Overlay
189	164th Ave NE South of NE 24th St(link btwn elem. and high school)	Coordinate with 103
196	NE 1st St East of 100th Ave NE	
202	Somerset Blvd @ Somerset Drive	
142	SE 32nd St at 140th Ave SE (Eastgate Park & Ride)	Coordinate with ADA program
5	Lake Hills Blvd at 154th Ave SE	
	TIER 3 - Vetting and Options Investigations	
217	112th Ave NE btwn NE 12th St and NE 24th St	Coordinate with CIP PW-W/B-81
167	116th Ave NE between NE 4th St and NE 8th St	
209	156th Ave NE at NE 1st St	
71	100th Ave NE at NE 23rd St	Coordinate with 67,146,147
67	100th Ave NE at NE 21st St	Coordinate with 71,146,147
198	Lakemont Blvd south of Forest Drive at Tax Lot/Cougar Trail	Coordinate with Parks dept.
222	140th Ave NE at 4432 City Park in Bridle Trails Neighborhood	Coordinate with Parks dept.
213	108th Ave SE near Bellevue High School	
208	168th Ave SE at SE 21st Pl (Weowna Park and Phantom Lake loop)	
183	160th Ave SE @ SE 33rd St (DOE vicinity)	Coordinate with 184,192
184	160th Ave SE N. Of SE 33rd St (Boeing Access)	Coordinate with 183,192
219	Lake Wa. Blvd at SE 40th St vicinity(boat ramp street)	
219	Lake Wa Blvd at SE 40th St (Boat Ramp)	
192	160th Ave SE at Boeing Gate House (Airfield City Park)	Coordinate with 183,184
201	124th Ave NE at NE 2nd St	Coordinate with 220
206	SE 16th St between 148th and 156th	
204	Phantom Way @ 160th Ave SE	
146	100th Ave NE at NE 17th St	Coordinate with 67,71,147
212	Forest Drive Corridor/SE 63rd vicinity (5 crossings)	
194	NE 24th St @ 171st Ave NE (Park)	
147	100th Ave NE at NE 19th St	Coordinate with 67,71,146

updated 12/1/15, KAL

ATTACHMENT C

Completed Pedestrian Crossing Improvement Listing [1]

Ref. No.	Location	Improvements	Date Completed
205	Newport Way west of 152nd Ave SE (Easgate Elementary)	RRFB Flashing Crosswalk System	1Q - 2016
195	Main St @ 150th Ave Vicinity (Kelsey Creek Shop. Ctr.)	RRFB Flashing Crosswalk System	1Q - 2016
200	140th Ave NE @ 12th St Vicinity (2 sites with grants)	RRFB Flashing Crosswalk System	1Q - 2016
175	108th Ave NE @ Eastside Rail Corridor Trail Crossing	RRFB Flashing Crosswalk System	4Q - 2015
33	161st Ave SE @ SE 33rd Pl (Spirit Ridge Park)	RRFB Flashing Crosswalk System	3Q - 2015
199	Highland Drive @ 139th Ave Vicinity (Forest Park Open Space)	Raised Crosswalk/ADA upgrades	2Q - 2015
98	Lakemont Blvd at Cougar Mt. Way	Full Signal	3Q - 2015
213	108th Ave SE at Bellevue High School Pedestrian path	New Crosswalk/path conn. Upgrade	2Q - 2015
201	124th Ave NE at NE 2nd St	New Crosswalk/ADA upgrades	2Q - 2015
87	108th Ave NE at NE 38th Pl (near Kirkland P & R)	Full Signal	2Q - 2014
191	140th Ave SE Samm High School vicinity (SE 1st, SE 5th)	RRFB at SE 1st, ADA upgrades/5th	4Q - 2014
132	124th Ave NE at NE 5th St	ADA accessibility, new Crossing	1Q - 2014
22	SE 60th St at 128th Ave SE	RRFB Flashing Crosswalk System	2Q - 2014
32	Coal Creek Pkwy Tunnel/Walk Crossing	New Tunnel Crossing under Coal Cr.	4Q - 2014
28	120th Ave NE Vicinity CIP (NE 6th St, NE 4th St)	Full Signal at 6th, RRFB at 4th St	4Q - 2014
185	NE 8th St west of 164th Ave (Crossroads Park)	RRFB Flashing Crosswalk System	2Q - 2014
44	156th Ave SE S. of SE 27th St (Wilburton Trail)	RRFB Flashing Crosswalk System	3Q - 2013
46	156th Ave SE N. of Eastgate Way (midblock)	RRFB Flashing Crosswalk System	3Q - 2013
17	W. Lk. Samm. Pkwy Stage 1 Vicinity CIP (Vasa Park & 41.5)	RRFB Flashing Crosswalk System	3Q - 2013
207	Northup Way at 160th Ave NE (& ADA signal upgrades nearby)	ADA accessibility, relocated crossing	2Q - 2013
72	156th Ave NE @ NE 16th St vicinity (Crossroads midblock)	Pedestrian Traffic Signal	4Q - 2012
50	102nd Ave NE north of NE 8th St	RRFB Flashing Crosswalk System	3Q - 2012
188	NE 24th St @ 161st Ave NE (Interlake High School)	RRFB Flashing Crosswalk System	3Q - 2012
58	145th Pl SE Vicinity CIP (145th/144th & 145th/SE 22nd)	Overhead signing/median	3Q - 2012
42	SE 22nd St west of 150th Ave (Robinswood Park)	Raised Crosswalk	3Q - 2012
23	108th Ave NE @ NE 11th St vicinity (midblock)	Flashing beacon Crosswalk System	4Q - 2010
26	108th Ave NE @ NE 2nd Pl vicinity (midblock)	Flashing beacon Crosswalk System	4Q - 2010
48	NE 10th St west of 110th Ave NE (KC Library midblock)	Pedestrian Traffic Signal	4Q - 2010
24	SE 38th St west of 150th Ave (freeway path connection)	median, ADA accessibility	3Q - 2010

1. Projects on this list are either completed or under construction. Excludes locations with only markings and/or signing improvements. 2010 to current.

updated December 1, 2015