MEMO TO: Mayor Marchione and City Council

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DATE: May 24, 2011

SUBJECT: **STUDY SESSION ON TARGETED SAFETY IMPROVEMENT PROGRAM (TSIP)**

The purpose of the study session is to provide Mayor and Council with an overview of the TSIP program, annual update on projects, and seek direction on 2011-2012 proposed projects.

I. PROGRAM PURPOSE

The purpose and mission of the Targeted Safety Improvement Program (TSIP) is to identify existing and potential traffic safety problem areas and implement projects to reduce crashes, injuries, deaths, and their related losses – through proactive collision prevention; reactive collision response; and multi-modal safety consistent with the Transportation Master Plan (TMP).

HISTORY

The total number of police reported collisions on public streets has experienced only modest increases over the last 20 year time period despite a substantial increase in both land use development and traffic. Today, most of the reported collisions are due to driver inattention and are not as easily reduced through engineering solutions as in past years. More attention is now being focused on prevention of potential collisions, especially those that could involve pedestrians or cyclists. This is consistent with the TMP policy direction to promote "real mobility choices" for all modes of travel.

OVERVIEW

The TSIP was specifically identified in the 2005 TMP as an ongoing program and was first approved into the CIP in the 2007-2008 budget. In 2007, Council approved selection criteria and a ranking matrix to be used to identify projects to be funded by the TSIP program.

The current list of projects was selected using the selection criteria. These projects were then evaluated based on a ranking matrix that distinguishes between two categories; 1) risk, and 2) project complexity and cost. (See Attachment A.)

This program carries out the policy direction in the TMP, and is an action item in the 3-Year Priority Action Plan. It approaches traffic safety from both a proactive (collision prevention), and reactive (collision response) basis. It is a systematic method that clearly identifies, evaluates, and recommends safety projects of benefit to the community.

The budget per year is $450,000. Previous projects approved and completed with TSIP and other funding sources are in the table below.

II. STATUS OF PREVIOUSLY APPROVED TSIP PROJECTS

Project Location	Project Description	Status
1. Leary Way /WLSP	Add signage, modify signal and relocate crosswalk for better visibility	Complete
2. Citywide Signal Head Visibility	Tree trimming-one time	Complete
3. Avondale Road to Novelty Hill	Prioritize plan for delivering safety, access and mobility improvements	Preliminary design has begun
4. Old Redmond Road/ W. Lake Samm Way	Intersection improvements and signal	Complete
5. Willows Trail Crossing	Realign and signalize pedestrian crossing	Construction summer 2011
6. Citywide Countdown Heads	Change out pedestrian signal heads to show countdown	Complete

SUMMARY

Projects that began in the LEAP program have been coordinated with TSIP ranking and funding. TSIP has been used to leverage $2.8M in total project costs to date.

III. 2011 TARGETED SAFETY IMPROVEMENT PROGRAM

PROJECT SELECTION PROCESS

Attachment B illustrates the project selection process graphically. The last three steps represent the study session discussion with a review of the completed projects, and more importantly recommendation of 2011 proposed project list and Council review for approval. In the current 2011 process, 30 projects were identified using the selection criteria as the “list of potential projects.” Each potential project was ranked based on the ranking matrix and are listed in Attachment C. The highest ranked projects were identified for funding as part of the 2011 TSIP proposed projects list.

2011 TSIP PROPOSED PROJECTS

		Preliminary Design	Design	Construction	2011	2012
Proposed 2011-2012 Program						
1	148th Ave NE, Willows Road to Redmond Way	X			$42,000	
2	NE 40th Street at SR520 Ramp		X	X	$30,000	$70,000
3	Flashing Beacon Replacement			X	$80,000	
4	Red-Wood Road (south of 109th)	X				$68,000
5	164th Ave NE- Redmond Way to NE 87th			X	$20,000	$84,000
6	NE 116th Street at 162nd Ave NE - Design	X			$30,000	$95,000
					$202,000	$337,000

1 **148th NE, Willows Road to Redmond Way** - Staff will evaluate the 148th Avenue NE corridor from Willows Road to Redmond Way for possible reconfiguration of street and improvement of pedestrian crossing at 148th Avenue NE at NE 87th Street.

2 **NE 40th Street and SR 520 Ramp on the west side** - Design intersection improvements per the NE 40th Street Corridor Study to provide a median for pedestrians and bicyclists crossing at the SR520 Bike Trail. Move the curb on the south side to provide a shorter crossing on the south side of the intersection.

3 **Flashing Beacon Replacement** - Replace beacons at four locations. Existing system has become unreliable and failed at these locations.

4 **Red-Wood Road - South of 109th** - Design 420 feet of pedestrian improvements along the west side with a cantilevered sidewalk structure similar to Bel-Red Road south of NE 40th Street.

5 **164th Avenue NE from Redmond Way to NE 87th Street** - Reduce existing four travel lanes to three with bike lanes in both directions. Grant received for this project with matching funds provided by TSIP.

6 **116th Street at 162nd Avenue NE** - Begin design to construct 50' continuation of wide sidewalk on north side and install crosswalk with pedestrian-actuated flashing beacon.

NEXT STEPS: Continue discussion of proposed projects and assign a Project Manager to begin design or installation of each project.

ATTACHMENT A

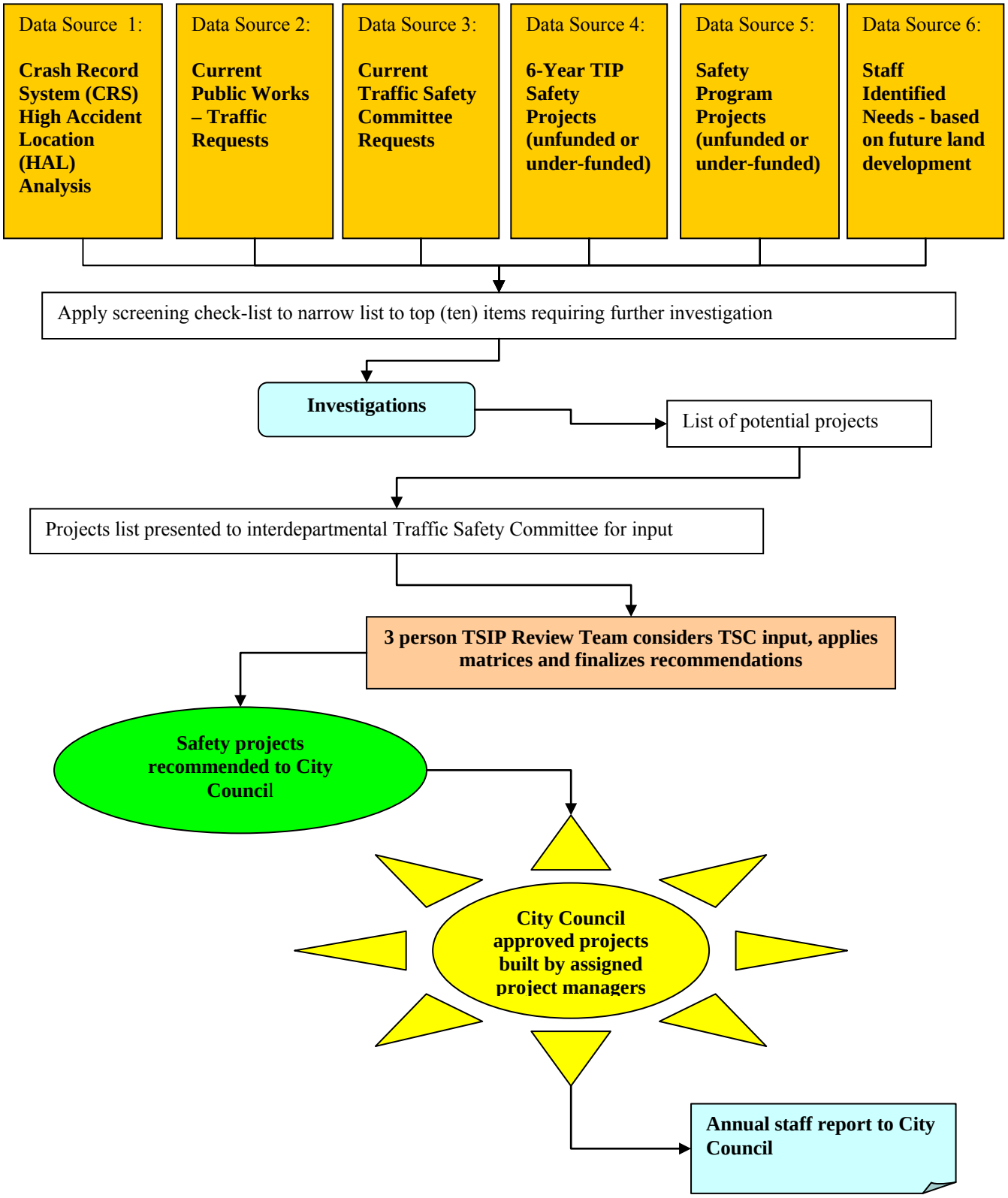
Note: Proactive items are to be reviewed using these matrices on a forward looking basis.

Risk Ranking Matrix			*Likelihood of Occurrence Score*		
			High-6	**Med-5**	**Low-4**
			Very likely - Possible to occur frequently	Occasionally - Possible to occur, but infrequently in most circumstances	Highly unlikely - Could occur but only in exceptional circumstances
Hazard Severity Score	**High-6**	Fatalities and/or extensive property damage	**36**	**30**	**24**
	Med-5	Moderate injuries and/or moderate property damage	**30**	**25**	**20**
	Low-4	No injuries and/or no property damage	**24**	**20**	**16**

Project Complexity & Cost Matrix			*Cost Score*		
			High-1	**Med-2**	**Low-3**
			$250,000 and over	$75,001 - $249,999	$25,000 – $75,000
Complexity Score	**High-1**	Project requires quite a few parts or segments and/or considerable coordination with other jurisdictions	**1**	**2**	**3**
	Med-2	Project requires more than a few parts or segments and/or new technology, or moderate coordination with other jurisdictions	**2**	**4**	**6**
	Low-3	Project requires few parts or segments, existing technology, and little or no coordination with other jurisdictions	**3**	**6**	**9**

Total Points	
High	**45**
	44
	43
	42
	41
	40
	39
	38
	37
------	**36**
Med	**35**
	34
	33
	32
	31
	30
	29
	28
	27
------	**26**
Low	**25**
	24
	23
	22
	21
	20
	19
	18
	17

ATTACHMENT B



Targeted Safety Improvement Program, 2011 Project List
Attachment C

TSIP #	Location	Project Description	Staff Comments	Collisions	Non-Motorized	Observations	Total Cost*	TSIP Amount	ADT	Risk	Complex-Cost	Total Points	Rank Order	TSIP Funding/Timing
23	148th Ave NE, Willows Rd to Redmond Way	Study pedestrian crossing and traffic signal to serve residents and office workers; access to bus stops on 148th (new Rapid Ride route)	High speed traffic on 5-lane 148th on hillside with sweeping curve makes pedestrian crossings difficult. Traffic signal study has been completed.	4 right angle collisions in three years	Sidewalks on both sides of 148th but no crosswalk to get to the bus stops	Limited sight-distance to south from NE 87th St	$75,000	**2011** $42,000	15,700	30	9	39	1	**Funded 2011-12 TSIP** TSIP Funding for DESIGN ONLY; implement after start of Rapid Ride
11	NE 40th Street at SR 520 Ramps (N side)	Construct raised median pedestrian refuge island with push button on NE 40th St along 520 Trail route; curb bump-outs at WB on-ramp; "No Right on Red" and "Yield to Pedstrian" signage; retime signals for leading ped phase	Protect growing volumes of pedestrians in the crosswalks and bikes on the SR 520 Trail. Coordination with WSDOT required due to limited access area. Design and funding coordination needed with Microsoft.	22 collisions in three years	Existing crosswalks; SR 520 bike trail crosses 40th E-W adjacent to ramps	High ped and bike volumes due to proximity of Microsoft Campus, Overlake P&R, and SR 520 Trail. Project would improve safety, comfort and convenience for non-motorized users, better serve transit stops	$100,000	**2011** $30,000 **2012** $70,000	32,600	36	2	38	2	**Funded 2011-12 TSIP** LEVERAGING potential with Microsoft to improve safety and access in campus vicinity. Start design, spend up to $30,000 in 2011
21	Flashing Beacon Upgrade: System-wide project	Upgrade smart studs at 4 locations: 1) 161st, 87th to 90th; 2) and 3) 83rd, 161st to 164th near Transit Center; and 4) Bear Cr Pkwy at 75th	Upgrading to higher safety standard and taking advantage of improved technology with longer design life	N/A	N/A	Improves visibility of pedestrians when functioning properly. Upgrade is important for longer term operations.	$80,000	**2011** $80,000	n/a	25	9	34	3	**Funded 2011-12 TSIP** Upgrade all 4 locations in 2011
19	Red-Wood Road (SR 202) south of 109th	Construct 420' sidewalk along west side using cantilevered structure (similar to Bel-Red Road near Microsoft campus)	Red-Wood Road Corridor Study proposed three lanes with bike lanes; steep slopes in ravines	Six rear-end collisions	West side has missing sidewalk link to complete a system that serves adjacent subdivisions	Cantilevered sidewalk minimizes slope and drainage constraints, unit cost is high	$605,000	**2012** $68,000	15,000	30	3	33	4	**Funded for 2011-12 TSIP** LEVERAGE with Ped-Bike program to start design
17	Redmond Way at Avondale Way	Remove separated right-turn lane from WB Avondale Way to Redmond Way; at eastern end of Downtown E-W Corridor	Need to slow traffic in congested area, improve pedestrian environment; conversion of Cleveland St to 2-way begins on west edge	22 collisions related to the right turn movement in 3 years	Existing sidewalks, proposed configuration would provide shorter crossing distance and better visibility	High congestion area with high pedestrian volumes and limited sight distance	$1,100,000	0	25,700 / 8,600	30	3	33	5	LEVERAGING potential with Downtown couplet project. Start design. (Spend up to $88,000)
16A	Redmond Way, 140th to 148th North Side	Construct 600 ' of missing sidewalk; solutions include extensive retaining walls or structured steel walkway w/railing	Example project is Bel-Red Road north side, east of NE 40th St w/structured steel sidewalk. Limits environmental impact and related permitting issues.	Few along corridor, one sideswipe not intersection related	Narrow paved shoulder only; no bike lane or sidewalk. North side is a missing link in an otherwise complete system.	Steep wooded slopes behind guardrails, need retaining walls or suspended walkway. Unit cost from Bel-Red project	$925,000	0	33,600	30	2	32	6	LEVERAGE with Ped-Bike program
28	164th Avenue NE (Redmond Way to 87th St)	Reduce existing four travel lanes to three lanes with bike lanes in each direction & upgrade curb ramps	Growing demand to serve all users. WSDOT involvement needed due to state route designation. Project has partial grant funding, needs local match to leverage grant as indicated in cost column.	58 collisons, 13 approach turn, 1 fixed object, 1 cyclist, 1 pedestrian, 23 rear end, 15 right angle, 4 sideswipe	Bike lanes from 80th to 87th; discontinuous route	Sidewalks appear adequate	$300,000	**2011** $20,000 **2012** $84,000	15,500	25	6	31	7	**Funded 2011-12 TSIP** LOCAL MATCH NEEDED to leverage existing grant funding.
27	156th Avenue NE (between 45th & 51st)	Construct a mid-block crossing between 45th and 51st Streets to serve Microsoft campus and residential use on east side	Bus stops now located on both sides of 156th Ave just south of Avalon Redmond driveway & landscaped median refuge; induce jaywalking	9 collisions along corridor between intersections	Sidewalks both sides with stairways up to Microsoft buildings; existing bike lanes both sides	Good sight-distance at existing bus stops; need design & funding coordination with Microsoft	$240,000	0	12,900	25	6	31	8	LEVERAGING potential with Microsoft contribution
18	Red-Wood Road (SR 202), 109th to 116th	Construct 2,180' of paved shoulder along west side. Shift centerline to allow continuous striped shoulder on both sides for pedestrians and cyclists	Red-Wood Road Corridor Study proposed three lanes with bike lanes. Striped shoulder would provide interim improvement for shared use.	13 rear-end collisons on corridor in 3 years	No existing sidewalks; missing link in bike network; nearby subdivision offers alternate route for N-S walking	Ditch along east side of roadway. Flat grade along west side with utility poles.	$150,000	0	16,500	24	6	30	9	LEVERAGE with Ped-Bike program.
13	NE 116th Street at 162nd Avenue NE	Continue existing sidewalk 50' on north side to new pedestrian crosswalk with flashing beacon	Initial low cost improvement; to be replaced with future roundabout construction	One fixed object and one rear-end in 3 years	No crosswalk, no sidewalks, existing bike lanes	Increasing residential development, church/school/daycare and nearby elementary school	$125,000	**2011** $30,000 **2012** $95,000	8,500/ 1,800	20	9	29	10	**Funded 2011-12 TSIP**
3A	Avondale Road at 180th Avenue NE	Add crosswalk on the south leg of the intersection, providing direct pedestrian access to bus stops	Low cost initial improvement to better serve pedestrians and bus riders. Requires 2 new ADA ramps & pedestrian push buttons. No added signal heads for south leg assumed.	23 collisions within intersection influence area	Large numbers of pedestrians in the area, limited crossings of Avondale Road; bike lanes both sides of Avondale Rd	Assumes 2 ADA ramps, ped push buttons, survey, traffic control, signing and striping w/minimal design cost.	$41,000	0	43,200 / 1,200	20	9	29	11	
6	Bear Creek Parkway at 164th Avenue NE	Install flashing beacon at the existing pedestrian crossing from Bear Cr trail	Warn motorists to yield to non-motorized traffic	Four collisions	No crosswalks to regional trail	Project would help calm traffic on Bear Cr Parkway while benefitting non-motorized users	$30,000	0	16,200	20	9	29	12	
20	Sign Upgrades: City-wide improvement	Sign upgrades on all arterial streets to enlarge text and improve retro-reflectivity; 400+ street markers w/mounting hardware	Need to bring up to new MUTCD standard. Specific design attention needed for proper placement	N/A	N/A	Careful field-checking required to design for maximum visibility	$75,000	0	n/a	20	9	29	13	
22	W Lake Sammamish Pkwy at NE 24th Street	Improve sight-distance by re-grading NW corner of intersection	Delay this project to match up with Bellevue's W. Lk Samm. Pkwy project	4 in 3 years 2 rear end / 2 right angle	No crosswalk; existing bike lanes	Site distance issue for NB and SB turns from EB NE 24th St	$25,000	0	4,500/ 6000	20	9	29	14	POSTPONE to coincide with Bellevue's project to improve West Lake Sammamish Parkway

*Total costs are conceptual for planning purposes only, obtained from multiple sources and subject to change

Targeted Safety Improvement Program, 2011 Project List
Attachment C

2	Avondale Road at Avondale Way	Intersection re-alignment and addition of pedestrian crosswalks	Addresses safety and accessibility issues; now a long distance between ped crossings of Avondale Road; improvement better serves bus stops and residents on both sides	18 collisions in 3 years-10 Right Angle, 6 Rear-end, 1 Fixed object, 1 right-angle	Serves residents and bus stops both sides of Avondale Rd, connects to future Bear Cr Trail; gap in SB bike lane at Bear Cr Br	High collisions and severity; opportunity to reduce speeds, improve safety and conditions for peds, bikes and transit	$1,000,000	0	35,000 / 12,100	25	3	28	15	
15	NE 116th Street at 172nd Avenue NE	Construct roundabout after purchase of right-of-way is completed (separate cost)	Preliminary design prepared. Assumes separate costs for ROW purchase & grading for construction	7 right angle collisions last 3 years	Intermittent shoulders, bike lane; NW quadrant lacks sidewalk, crosswalks needed	Sight distance issues on north side of 116th due to slope. Existing flashing beacon	$1,000,000	0	8,300/ 3,200	25	3	28	16	
26	154th Avenue NE (W Lake Sammamish Parkway to 8300 block)	Improve and pave existing soft-surface multi-use path along west bank of Sammamish River with wayfinding to/from 154th. Already has connections to Leary Way, NE 85th St, 154 Ave, Westpark campus & apartments	Pathway adjacent to River is the most desirable place for non-motorized users. The narrow area adjacent to 154th under Redmond Way and BNSF bridges limits ability to add sidewalk at back of curb.	Two fixed object and three intersection related collisions	Limited sidewalk along east side at Westpark office campus. Continuous muddy path along river w/existing connections to Leary Way, NE 85 St, 154, office park & apts	Possible application of porous asphalt surface. Coordination with adjacent land uses will be needed. Lighting is NOT included in estimate.	$200,000	0	15,500	24	4	28	17	LEVERAGING potential with sidewalk improvement program
5	Bear Creek Parkway at NE 76th Street	Intersection re-alignment with installation of traffic signal (esp. east leg at commercial parking lot)	Planned regional trail crossing on north leg adjacent to ST's E Link LRT; possible part of Redmond Connector project	Three collisions	No crosswalks to regional trail	Interconnected signals may be needed at Redmond Way and NE 76th St due to close spacing	$450,000	0	14,300 / 2,400	25	2	27	18	LEVERAGING potential is high with Parks Redmond Connector project
1	ADA Improvements, City-wide Phase 1	Supplement overlay program for curb ramps and accessibility improvements	Bring facilities up to ADA standard at time of improvement; overlays are typically the first opportunity	N/A	Address upgrades of pedestrian facilities to serve the 15% population that is disabled	Can be a significant additional cost	Up to $150,000	0	N/A	20	6	26	19	
3B	Avondale Road at 180th Avenue NE	Intersection reconfiguration to add eastern fourth leg serving Avondale Green subdivision and south leg crosswalk. Includes 1,200 feet of new street connecting to 183rd Court NE.	Provides signalized access to east side neighborhoood with ability to go north or south on Avondale Road. Assumes closure of Avondale Road median except at signalized intersections.	23 collisions within intersection influence area	Large numbers of pedestrians in the area, limited crossings of Avondale Road; bike lanes both sides of Avondale Rd	Estimate includes $1.4 million in ROW, full intersection improvement. Addresses access issues from east side subdivision.	$4,000,000	0	43,200 / 1,200	25	1	26	20	
16B	Redmond Way, 140th to 148th South Side	Construct 600 ' of missing sidewalk; solutions include extensive retaining walls or structured steel walkway w/railing	Example project is Bel-Red Road north side, east of NE 40th St w/structured steel sidewalk. Limits environmental impact and related permitting issues.	Few along corridor, one sideswipe not intersection related	Narrow paved shoulder only; no bike lane or sidewalk	Steep wooded slopes behind guardrails, need retaining walls or suspended walkway. Unit cost from Bel-Red project	$800,000	0	33,600	24	2	26	21	
30	185th Avenue NE at NE 68th Street	Install traffic control, pedestrian crosswalks to serve Genie employees and rain garden	All-way stop; add crosswalks on north and west legs with bulb-outs to shorten walk distance	No collisions	No existing crosswalks	Hillside adds to speeds for NB traffic. All-way stop and crosswalk will calm traffic.	$48,000	0	7,300 / 4,700	20	6	26	22	FUNDED by other sources for traffic calming and environmental improvement
7	Bear Creek Parkway at 166th Avenue NE	Install crosswalk on west leg, providing access to Bear Cr. trail	Warn motorists to yield to non-motorized traffic	No collisions	No crosswalks to regional trail	Helps calm traffic on Bear Cr Pkwy benefits peds & bikes	$30,000	0	16,200 / 1,900	16	9	25	23	
8	Bear Creek Parkway at 168th Avenue NE	Install crosswalk on west leg, providing access to Bear Cr. trail	Warn motorists to yield to non-motorized traffic	1 collision	No crosswalks to regional trail	Helps calm traffic on Bear Cr Pkwy benefits peds & bikes	$30,000	0	14,300	16	9	25	24	
9	Einstein Elementary School	Install flashing beacon on NE 116th St at school crossing	Request from a citizen for beacon; recently installed school zone camera	None in last 3 years	Existing crosswalk; elementary school nearby; bike lanes	New subdivision activity in vicinity	$25,000	0	8,300	16	9	25	25	
12	NE 80th Street at 165th Avenue NE	Install pedestrian crossing on east side with sidewalk "bulb-out" into street	Request from United Methodist Church to serve parishoners trying to cross	1 approach turn collision in 3 years	No existing sidewalks on 165th	Between two higher volume intersections; wellhead protection limits infiltration	$50,000	0	5,200	16	9	25	26	
10	E Lake Sammamish Pkwy at 187th Avenue NE	Add left-turn lane for SB traffic on E Lk Sam Pkwy to EB 187th; widen to maintain bike lanes through intersection; peds to use undercrossing to parallel regional trail	Widening would add center LTL; maintain striped bike lanes in both directions; no crosswalk assumed. Cost assumes ROW is adequate for widening.	5 in 3 years; 2 right angle, 1 sideswipe, 2 rear	Box culvert exists under the ELSP providing grade separated access to regional trail; bike lanes on ELSP	187 Ave provides access to signal at Redmond Way/188; need wayfinding to undercrossing	$270,000	0	14,000 / 1,600	20	3	23	27	
4	Avondale Road at NE 95th Street	Intersection re-alignment reduces skew, adds a north leg crosswalk, eliminates split-phasing and provides for north to south U-turns.	Realignment eliminates need for split-phasing of traffic signal, providing reduced delay. High end of estimate includes new signal poles, moved out of the median.	18 collisions, 15 rear end, 2 fixed object, 1 approach turn	Bike lanes on Avondale Road; NE 95th is unimproved and needs sidewalks to serve increased demand in area; 95th serves Park to east	Project benefits safety, congestion/traffic flow, pedestrian accessibility and access to bus stops.	$400,000-$800,000	0	39,100 / 2,200	20	3	23	28	
14	NE 116th Street at 162nd Avenue NE	Construct roundabout & fill in missing sidewalks	Higher cost, longer lead time project. Assumes dedication of needed right-of-way	One fixed object & 1 rear-end in three years	No crosswalk, no sidewalks, existing bike lanes	Increasing residential development, church/school/daycare, and nearby elementary school	$1,000,000	0	8,500/ 1,800	20	3	23	29	LEVERAGING potential with 116th improvement project
25	151st Avenue NE at NE 90th Street	Install traffic signal and provide for pedestrian crossings with bump-outs. Rapid Ride route and stop will be served.	Serve truck traffic and school district bus movements in commercial area	Four collisions, 2 right angle, 2 rear end	No crosswalks; existing bike lanes	Recent sidwalk and landscaping improvements along NE 90th St in vicinity	$300,000	0	13,900 / 5,000	20	3	23	30	
24	150th Avenue NE, NE40th to NE 51st Street	Correct curve radius to permit truck movements in Nintendo campus, maintain bike lanes through intersection	New construction has raised safety concerns and complaints	Complaints	Sidewalk on west side, bike lanes shift to sharrows in constricted area	Basketball courts on both sides of street at area of curve; utilities may need to be adjusted/relocated	$150,000	0	5,000	16	6	22	31	
29	166th Avenue NE (85th to 100th)	Reduce existing four travel lanes to three lanes with bike lanes in each direction	City will not pursue this project in 2011 as it requires further engineering analysis and community engagement. With improvements on parallel 164th Ave, it may serve some of the travel demand. Cost range begins with re-striping, high end includes landscaping	21 collisions in 3 years, 8 right angle, 6 rear end, 3 sideswipe, 3 fixed object, 2 pedestrian	Existing section does not serve cyclists or pedestrians well	Project would address safety while improving corridor for bikes and pedestrians	$250,000-750,000	0	13,900	30	6	36	32	POSTPONED to 2012 to accommodate engineering work and community engagement

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