School Zone Ped-Bike
Road Safety Assessment

CONTENTS

EXECUTIVE SUMMARY 1

INTRODUCTION 2

DATA AND METHODOLOGY 5

SYSTEMIC RECOMMENDATIONS 7

ROAD SAFETY AUDITS 8

RSA 1 8

RSA 2 12

RSA 3 18

CONCLUSION 22

Cover Photo: Students from Sammamish High School attending the community walking audit for RSA 3.

HOW TO USE THIS REPORT

PUBLIC

Can use this report to understand the conditions at their neighborhood and to become familiar with the ways that the City is working to make walking and biking safer and easier.

CITY STAFF

Can use this report to identify issues and opportunities related to walking and biking and to prioritize potential short-term and intermediate opportunities while considering the funding and political opportunities that may help to facilitate implementation of the long-term improvements.

THANK YOU

Thank you to the Washington Traffic Safety Commission for the grant funding as part of the School Zone Safety Account Projects and the following people from the Bellevue School District:

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- Aaron Miller, Principal of Odle Middle School
- Mike Schiehser, Assistant Principal of Interlake High School
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Figure 1: Students on RSA 3 Community Walking Audit at Bel-Red Rd and 140th Ave NE.

EXECUTIVE SUMMARY

The City of Bellevue's Vision Zero initiative aims to eliminate traffic deaths and serious-injury crashes on city streets by 2030. In Bellevue, 83% of all fatal and serious injury crashes in Bellevue occur on 8% of the city's total street network (as measured by length). These street segments make up what is now called Bellevue's High Injury Network (HIN). Comprised of a team of City staff and consultants, the City of Bellevue conducted a series of Road Safety Assessments (RSAs) to identify safety improvements for people walking and biking. Examples of recently completed Road Safety Assessments include Northeast Eighth Street near Stevenson Elementary School and Odle Middle School and Factoria Boulevard Southeast near Newport High School.

Three RSAs were conducted as part of this assessment:

RSA 1 spans 164th Avenue NE from NE 26th Street to NE 19th Street and NE 24th Street from 161st Avenue NE to 167th Avenue NE. Sherwood Forest Elementary School and Interlake High School are located within RSA 1.

RSA 2 spans NE 20th Street from 140th Ave NE to NE 162nd Ave NE, Bel-Red Road from 140th Avenue NE to NE 20th Street, and 148th Avenue NE from NE 20th Street to NE 8th Street. Highland Middle School is located within RSA 2.

RSA 3 spans 140th Avenue NE from Bel-Red Road to SE 8th Street, Main Street from 140th Avenue NE to 148th Avenue NE, and 148th Avenue NE from NE 8th Street to SE 8th Street. Sammamish High School, Stevenson Elementary School, and Odle Middle School are located within RSA 3.

PROCESS AND GOALS

Each RSA process began with outreach to Bellevue School District parents, students, and staff, as well as neighborhood residents and other community partners. Two walking audits were conducted near each school with community members. The project team, comprised of City staff and consultants, then performed a field review to evaluate the corridor for safety with a particular focus on walking and biking facilities. After each field review, the team participated in a virtual workshop using MURAL digital visual collaboration tool to facilitate conversation and brainstorm possible safety improvements.

In addition to soliciting community feedback, the team took a data-driven approach and reviewed video analytics, crash data, signal timing, vehicular speed data, and traffic volumes.

OVERALL OBSERVATIONS

Based on WSDOT Public Disclosure Request Center database data from 2015-2020, 13 fatal and serious injury crashes occurred within the three total RSA areas and six of those crashes involved people walking and biking. People walking and biking are more vulnerable compared to other modes, especially based on the following conditions observed during this study:

- Wide travel lanes that encourage speeding
- Short pedestrian crossing times
- Wide intersections with permitted turn lanes resulting in more potential conflicts between modes
- Insufficient facilities for people walking and biking

RECOMMENDATIONS

The team identified numerous safety improvements through the RSA process. Recommendations are broken into three categories:

- Systemic improvements that apply to all three RSAs
- Corridor improvements that apply to individual RSAs
- Policy recommendations to existing City of Bellevue policies


Figure 2: Students on RSA 1 Community Walking Audit on 164th Ave NE.

INTRODUCTION

PROJECT CONTEXT

Figure 3: Annual action plans build on the Safe System Approach and a yearly recommitment to address systemic traffic safety challenges wholistically through Bellevue's interdepartmental "One City" collaboration.
(Source: Vision Zero Strategic Plan)

THE SAFE SYSTEM APPROACH

The four pillars of Bellevue's Safe System Approach include: Safe People, Safe Streets, Safe Speeds, Safe Vehicles. These pillars, as well as the supporting elements of leadership, culture, partnerships and data, all help contribute to reducing the frequency and severity of crashes. Applying the Safe System Approach involves anticipating mistakes by designing and managing road infrastructure to eliminate the risk of death and serious injury. And if a crash does occur, ensuring that the kinetic energy forces and the impact a human body can withstand is considered in the design of Bellevue's transportation system. Road design and management that encourage safe speeds and manipulate crash angles can reduce injury severity by reducing kinetic energy forces.

VISION ZERO AND LOCAL ROAD SAFETY PLAN

City of Bellevue approved the Vision Zero Strategic Plan (VZ Plan) in December 2020. The VZ Plan lays out how the City will apply the Safe System Approach to eliminate traffic fatalities and serious injuries by 2030 and provides a coordinated approach across City departments, ensuring that transportation engineers, first responders, and other key staff work together.

> The purpose of the Vision Zero Strategic Plan is to coordinate existing efforts and new ideas, evaluate crash data, consider public concerns, and identify strategies that will reduce traffic fatalities and serious injuries to zero by 2030.
>
> *Vision Zero Strategic Plan, pg. 8*

ANNUAL ACTION PLANS

Annual Vision Zero Action Plans reflect Bellevue's commitment to address systemic traffic safety challenges holistically. The Action Plans are updated annually as new data becomes available and as new Vision Zero actions prove to be successful in making Bellevue's streets safer. Action Plans for 2021 and 2022 are available on the City's website. Action two of the 2022 Action Plan includes conducting RSAs along the High Injury Network (HIN) streets near Bellevue schools as a priority action item.

RSA PURPOSE

ROAD SAFETY ASSESSMENTS

A Road Safety Assessment (RSA) is the formal safety examination of a road or intersection by a multidisciplinary team that reports on potential road safety issues and identifies opportunities for improvements in safety for all road users.[1] The multidisciplinary team included City of Bellevue staff and consultants. RSAs can be focused on specific streets or around a certain land use. In this case, the RSAs focused on the safety of people walking and biking along HIN streets near schools.

SCHOOL ZONE PED-BIKE ROAD SAFETY ASSESSMENT

As Bellevue envisions a transportation system that can be safely navigated by all road users, it is essential to center the experiences of those most vulnerable to risk of fatal and serious injury. Most importantly people walking and biking who are not protected by a metal box around them. People walking and biking in Bellevue are especially vulnerable along the HIN of roads with the highest crash risk, shown in Figure 4. Road segments on the HIN near schools were prioritized for assessment.

The purpose of the assessments were to provide an in-depth understanding of existing conditions that increase safety risk and crash causation to inform safety countermeasure selection for three areas prior to design or construction of safety improvements. The assessments were done through the lens of the Safe System Approach and with particular focus on increasing the safety of people walking and biking.

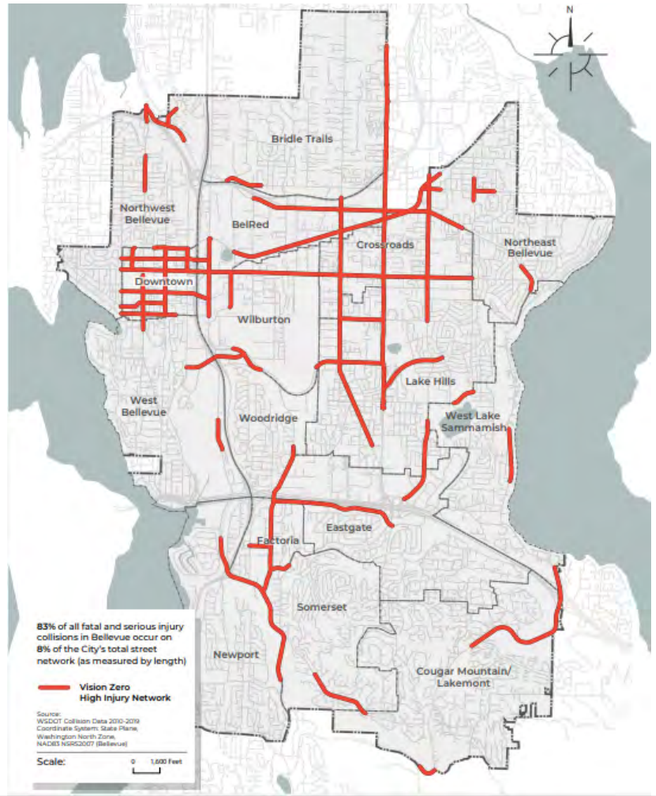


Figure 4: Bellevue's High Injury Network from the VZ Plan.
(Source: Vision Zero Strategic Plan)

1 https://safety.fhwa.dot.gov/rsa/

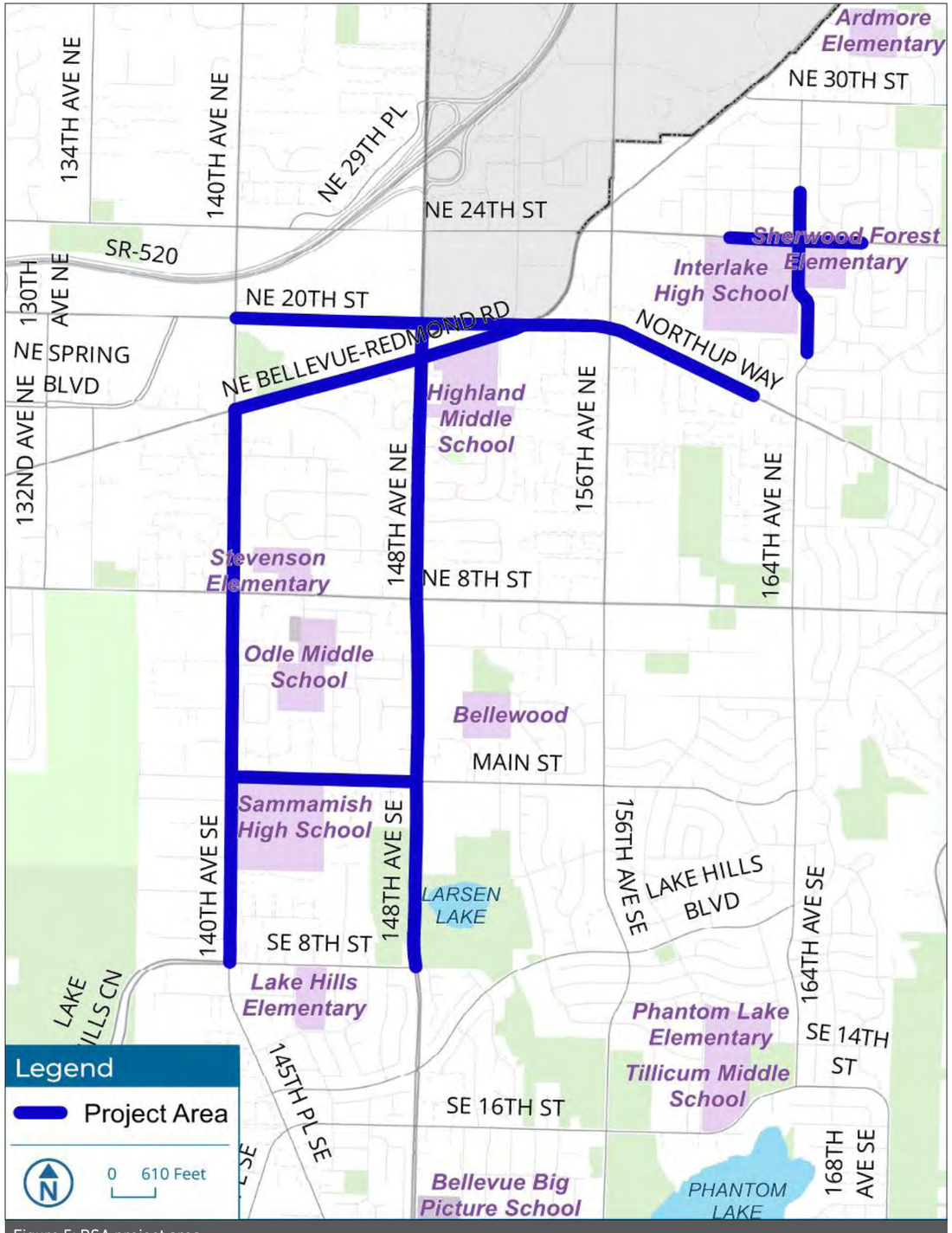


Figure 5: RSA project area.

PROJECT BACKGROUND

This assessment documents conditions for people who walk, bike, drive, or take transit at the three RSA areas near schools. The team reviewed the roadway and key land use contexts that affect the ability of and desire for people to walk, bike, drive, or take transit to school.

The RSAs resulted in a series of recommendations for transportation infrastructure and policy improvements to increase safety for all modes. Each RSA has its own section documenting key features along the corridor and specific recommendations that are further broken down by approximate timeframe, cost, crash modification factor (CMF), and responsible groups. Figure 5 on this page and Table 1 on page 5 summarize the limits of the three RSAs.

COMMUNITY PARTICIPATION

OUTREACH

The community participation for each RSA played a key role in providing context to the team. Below is a list of community involvement that helped inform the recommendations in this report:

- **Community Walking Audits** — The team conducted two community walking audits per RSA. An extensive public outreach plan was developed by the team and implemented to promote the walking audits to local residents and nearby schools. During the community walking audits, the team was able to collect valuable insights, stories, concerns, and ideas from local community members regarding each RSA area.
- **Engaging Bellevue** — The City of Bellevue launched a website to provide the public with information about the project. The website also included a form to sign up for community walking audits, an online questionnaire, and an interactive map.

Students' Visions for Safety

Students attending school in the RSA study areas shared their vision for safety.

Ethan Lee, a Highland Middle School student, said "I would like to have all bikers and pedestrians feel safer when using the sidewalks and streets in Bellevue."

William Bancroft, a Sammamish High School student, said "Vision Zero means changing our city, roads, and overall environment to eliminate vehicle-related accidents. Road safety means building and modifying our roads such that all people are safe. A few things that I think can improve safety for people walking or using bikes is to improve visibility, to expand bicycle infrastructure so they don't have to be as close to motor vehicles. Another thing is to slow down vehicles in areas where people are frequently crossing."

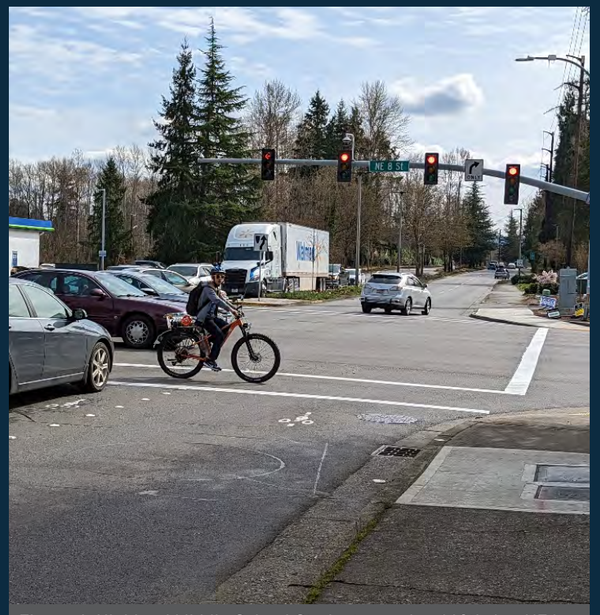


Figure 6: Highland Middle School Student crossing 148th Ave NE by bike.

ENGAGEMENT STRATEGIES

The public outreach and engagement evolved over the course of conducting the three RSAs. To involve the community and receive feedback, the team employed a variety of strategies that included:

- Coordination with all public school principals to distribute information to parents and students.
- Coordination with the high school principals to provide community service credits to students attending the community walking audits.
- Coordination with public school principals who identified students who shared their experience walking and/or biking to school.
- Flyer distribution to parents and students during pick-up and drop-off at public schools within the RSA areas.
- Posting signs that promoted community walking audits and online questionnaire at key intersections within the RSA boundaries.
- Social media outreach via Twitter, Next Door, Facebook, Neighborhood News, and It's Your City.
- Direct outreach to private schools, affordable housing complexes, multi-family complexes, churches, retirement centers, and other community amenities requesting the staff to distribute flyers about the community walking audits to their communities.

MOVING TOWARD RECOMMENDATIONS

The field visits of the project team focused on the technical design of the streets within each RSA study area, such as the design of pedestrian and bicycling facilities, adherence to Americans with Disabilities Act (ADA compliance), and signal timing. After collecting and reviewing data and conducting field visits, the consultant team hosted a one-day virtual workshop for each RSA. The workshop was done using MURAL digital visual collaboration tool, which provides the opportunity for collaboration and concurrent input from all participants. The facilitator led a verbal discussion to supplement the written inputs. This collaboration of the project team through field visits and virtual workshops was fundamental to develop recommendations to improve safety for people walking and biking in each RSA study area.

Figure 7: Team for the RSA 2 city field visit, on Bel-Red Rd and NE 20th Street, northeast of Highland Middle School.

DATA AND METHODOLOGY

DATA DRIVEN APPROACH

The team utilized a data driven approach to inform recommendations for the RSAs. Data from the following inputs was used to understand the existing conditions and identify safety improvements.

- **Signal Timing** — Signal timing for all intersections in the RSA were reviewed prior to and during the City field visits.
- **Transoft Data Analytics** — Transoft Solutions conducted a citywide analysis of traffic camera video in Bellevue in 2019-2020 with the goal of improving road safety for all modes by analyzing conflicts (near-miss crashes) between road users. Transoft used data from Bellevue's network of existing traffic cameras then processed, analyzed, and diagnosed problematic intersections. Four intersections had Transoft data: Main Street and 148th Ave NE, 148th Ave NE and Bel-Red Road, 156th Avenue NE and Northup Way, and 164th Ave NE and NE 24th Street.
- **Crash Data** — Crash data was evaluated for incidents occurring within the RSAs during the most recent six years of available data. The team acquired crash data from the WSDOT Public Disclosure Request Center database from 2015 to 2020.
- **Vehicular Speed Data** — Posted speed limits, 50th percentile, 85th percentile, 95th percentile, and average vehicular speeds were reviewed for all roads within the RSAs.
- **Mobileye Data** — Historical traffic volumes for all roads within the RSAs were identified using Mobileye data.

Table 1: RSA Study Area Segments

RSA Area	Segment Limits	WSDOT Functional Classification[1]	Bellevue Arterial Classification[2]	Length	Speed Limit	Annual Average Weekday Traffic (AAWT)[3]
RSA 1	**164th Avenue NE,** from NE 26th Street to NE 19th Street.	Major Collector	Collector Arterial	0.45 miles	25 mph[4]	6,600 (2017)
	NE 24th Street, from 161st Avenue NE to 167th Avenue NE.	Minor Arterial	Minor Arterial	0.35 miles	30 mph[4]	8,000 (2017)
RSA 2	**NE 20th Street,** from 140th Ave NE to NE 162nd Ave NE	Minor Arterial	Minor Arterial	1.42 miles	35 mph[4]	17,100 (2017)
	Bel-Red Rd, from 140th Avenue NE to NE 20th Street	Other Principal Arterial	Major Arterial	0.81 miles	35 mph[4]	19,200 (2017)
	148th Avenue NE, from NE 20th Street to NE 8th Street	Other Principal Arterial	Major Arterial	0.80 miles	35 mph	36,300 (2017)
RSA 3	**140th Avenue NE,** from Bel-Red Road to SE 8th Street	Minor Arterial (north of NE 8th Street) Major Collector (south of NE 8th Street)	Minor Arterial (north of NE 8th Street) Collector Arterial (south of NE 8th Street)	1.50 miles	30 mph	17,500 (2015)
	Main Street, from 140th Avenue NE to 148th Avenue NE	Major Collector	Collector Arterial	0.85 miles	25 mph	7,489 (2018)
	148th Avenue NE, from NE 8th Street to SE 8th Street	Other Principal Arterial	Major Arterial	1.0 miles	35 mph	33,800 (2018)

[1]WSDOT Functional Classification Map: https://www.wsdot.wa.gov/data/tools/geoportal/?config=FunctionalClass
[2]Bellevue Arterial Classifications Map: http://apps.bellevuewa.gov/gisdownload/PDF/Transportation/arterials_11x17.pdf
[3]Traffic counts collected by IDAX. 164th Ave NE counts were collected between 2/12/2017 - 2/18/2017. NE 24th Street counts were collected between 11/1/2016 to 11/7/2016.
[4]20mph school zone speed limit at Sherwood Elementary, Interlake High School, and Highland Middle School

CRASH INFORMATION

Safe mobility for people walking and biking is the City of Bellevue's highest priority. While people walking and biking only account for 5% of all crashes in Bellevue, they are 49% of fatal and serious injury crashes.[1] This over-representation of vulnerable road users fatal and serious injury crashes can be addressed by designing streets around increasing safety of those walking and biking as the top priority.

There were 1,213 total reported crashes within all 3 RSA areas between 2015 to 2020. There were a total of 19 bicyclist involved crahes and 39 pedestrian involved crashes in the three RSA areas in that same time period.[2]

Similar to citywide trends, while people walking and biking are involved in a small proportion of all crashes in the RSA areas (5%), they represent 6 of 13 (46%) of the fatal and serious injury crashes.

In the three RSA areas, there were two pedestrians killed, three pedestrians seriously injured, and one bicyclist seriously injured. There were also three motor vehicle fatalities and four motor vehicle serious injuries in the three RSA areas. The City of Bellevue strives to eliminate fatal and serious injury crashes by 2030 through safety improvements.

Below is additional crash information on each of the three RSA areas. These factors should be considered when making safety improvement.

Table 2: Fatal and Suspected Serious Injury Crashes by Mode

Crash Severity	Ped Involved	Bike Involved	Motor Vehicle	Total
Fatal	2	0	3	5
Suspected Serious Injury	3	1	4	8
Total	**5**	**1**	**7**	**13**

FATAL AND SUSPECTED SERIOUS INJURY CRASHES

PEDESTRIAN AND BICYCLE

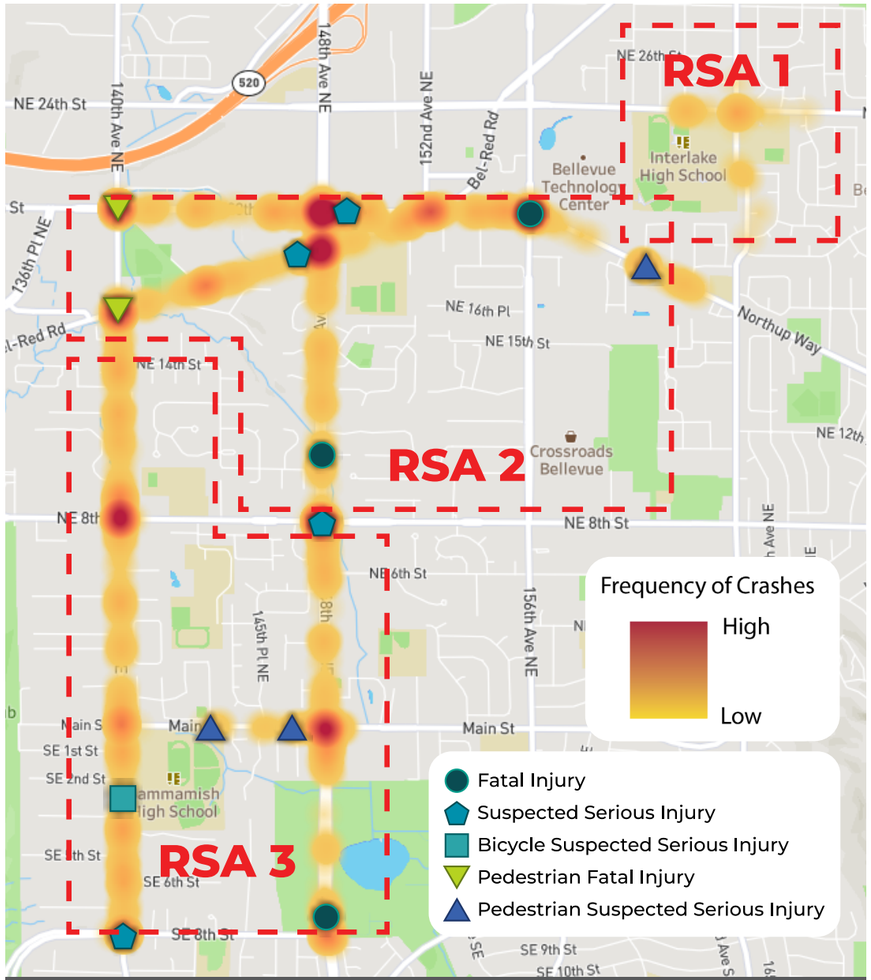


Figure 8: RSA Project Areas with Crash Severity Heat Map showing Fatal and Suspected Serious Injury Callouts.

RSA 1
- 30 TOTAL CRASHES
- NO BIKE CRASHES
- 2 PEDESTRIAN CRASHES OCCURRED AT 24TH ST/ 164TH INTERSECTION
- 5 SPEEDING RELATED CRASHES
- 28 CRASHES OCCURRED DURING DARK/ DUSK/DAWN CONDITIONS
- 9 CRASHES ON WET ROAD CONDITIONS

RSA 2
- 738 TOTAL CRASHES
- 13 BIKE CRASHES
- 20 PEDESTRIAN CRASHES
- 77 SPEEDING RELATED CRASHES
- 185 CRASHES OCCURRED DURING DARK/DUSK/DAWN CONDITIONS
- 191 CRASHES ON WET ROAD CONDITIONS

RSA 3
- 445 CRASHES
- 6 BIKE CRASHES
- 17 PEDESTRIAN CRASHES
- 75 SPEEDING RELATED CRASHES
- 90 CRASHES OCCURRED DURING DARK/ DUSK/DAWN CONDITIONS
- 87 CRASHES DURING RAIN WEATHER

1 City of Bellevue Vision Zero Strategic Plan, 2020, Figure 12
2 WSDOT Public Disclosure Request Center database

SYSTEMIC RECOMMENDATIONS

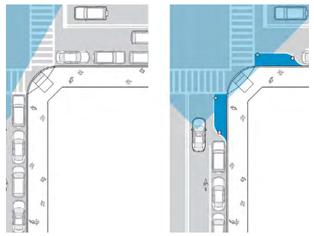
The following recommendations were identified across all RSAs and are therefore recommended as systemic safety improvements in all school zones on roadways with similar contexts across Bellevue. Recommendations generally fall into four improvement categories:

- Sight distance
- Pedestrian facility
- Bicycle facility
- Signalized intersection

SIGHT DISTANCE

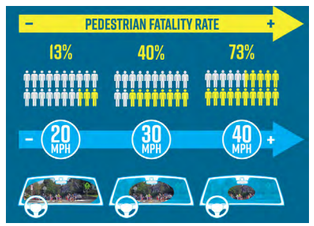
Sight Distance

Trim vegetation for sight distance triangles at intersections, median islands, and signs. This provides additional visibility for motorists, and helps pedestrians be more visible near intersections and crossings.



Reduced Speed Limit

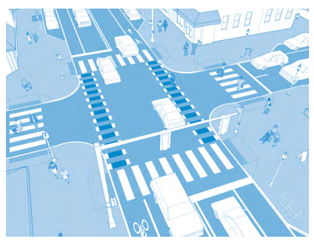
Assess citywide speed limits using the new City of Bellevue Speed Limit Standard Operating Procedure. Reduce speed limits at all possible locations to reduce kinetic energy forces between motorists and other modes.[1]



PEDESTRIAN FACILITY

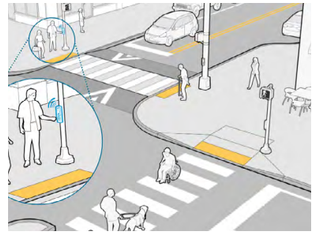
Pedestrian Crossings

Replace all two-line transverse markings with high visibility continental crosswalk markings. Add retroreflective post sleeves to each pedestrian crossing or school crossing warning sign. Install advance warning signs at all crosswalks. Install bulb-outs or curb extensions to reduce pedestrian crossing distance and provide greater visibility of pedestrians.



Accessible Design

Upgrade all pedestrian facilities to comply with the Americans with Disabilities Act (ADA compliance). For example: install or update curb ramps, accessible pedestrian push buttons, and audible pedestrian signals (APS).



Buffered & Separated Sidewalks

Install wider sidewalks that have a landscape buffer between the sidewalk and travel lane where possible. Install separated sidewalks at driveways so that the sidewalk level is continuous (i.e., driveway apron does not cut into the sidewalk). This is particularly beneficial for pedestrians with limited mobility.

BICYCLE FACILITY

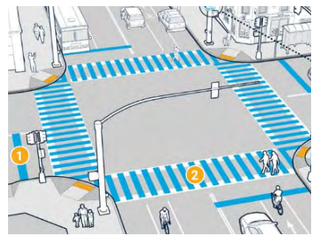
Bicycle Facilities

Install protected or separated bicycle lanes where possible. Determine how these facilities connect beyond the extent of the RSA. Determine if these facilities should be part of priority bicycle corridors in an update to the 2009 City of Bellevue Pedestrian and Bicycle Transportation Plan.

SIGNALIZED INTERSECTION

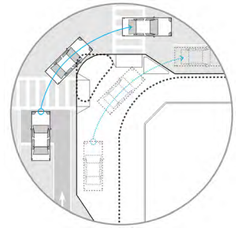
Stop Bars

Install and maintain stop bars at stop signs and traffic signals in advance of all pedestrian crossings.



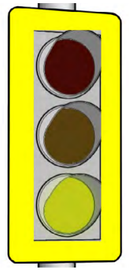
Curb Radius

Reduce curb radii (and provide truck aprons where needed) at intersections to slow vehicle turning speeds.



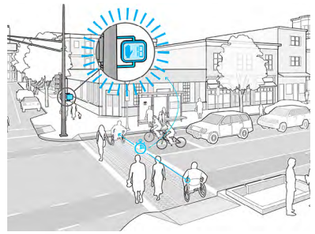
Retroreflective Back Plates

Install retroreflective back plates on all signal heads to increase visibility where possible.



Pedestrian Signal Operations

Review pedestrian signal timing at all crossings to ensure the crossing time meet latest guidelines and accommodate all ages and abilities. Provide additional crossing time and leading pedestrian intervals where possible.



1 Tefft, B.C. (2011). Impact Speed and a Pedestrian's Risk of Severe Injury or Death (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

RSA 1

1. STUDY LOCATION

The study area for this RSA includes two segments along 164th Avenue NE and NE 24th Street, as shown in Figure 13, on the next page. The study area is primarily residential, with both schools surrounded by single and multi-family housing. Based on the land use designations in the Bellevue Comprehensive Plan, the area west of 164th Avenue NE is designated as single-family medium-density residential and the area east of the 164th Avenue is designated as single-family high-density residential. Two schools are located within RSA 1 are described below:

	Interlake High School	Sherwood Forest Elementary
Address:	16245 NE 24th St, Bellevue, WA 98008	16411 NE 24th St, Bellevue, WA 98008
Grades:	9-12	1-6
Number of Students:	1720	423
Arrival:	7:00 AM	9:00 AM
Dismissal:	3:00 PM	3:00 PM

2. PROCESS

On January 22 and January 25, 2022, the team conducted community walking audits to gather feedback from the public. An extensive public outreach plan was developed and implemented to promote the walking events to the school communities and local residents. During the community walking audits, the team was able to collect valuable insights, stories, concerns, and ideas from twelve community members.

On January 31, 2022, the team conducted a city field visit, which focused on technical insights. On February 14, 2022 workshop, the team used the MURAL digital visual collaboration tool to collaborate on synthesizing notes from the community walking audit and city field visit. The facilitator led a verbal discussion in addition to the team's written input

3. RECOMMENDED IMPROVEMENTS

The recommended improvements table on the next page provides recommended safety improvements specific to RSA 1, including infrastructure design and policy improvements. These recommendations are based on observations made during the community walking audits, city field visit, and team workshop, as well as the comments submitted on the Engaging Bellevue website. The table is separated by location, and includes the recommended treatment, timeframe, cost range, CMF,[1] and improvement lead. Recommendations require further engineering analysis of feasibility and design prior to implementation.

Figure 9: Bus stop #68372 eastbound bus stop across 166th Ave NE with a 10% grade ramp.

Figure 10: Students walking across 164th Ave NE at NE 21st Pl at unmarked crossing after school dismissal.

Figure 11: Eastbound queue entering Elementary School is blocking the bike lane and transit stop on the south side of NE 24th St.

Figure 12: Westside sidewalk facing northbound showing mailboxes in the pedestrian pathway adjacent to the narrow bike lane.

1 *CMFs are sourced from the CMF Clearinghouse. The FHWA CMFs are approximate for the general countermeasure. A specific CMF should be determined for each unique scenario. For selection of CMFs for specific locations in Bellevue, explore the CMF Clearinghouse and apply all relevant factors. All CMFs reported in this report have a 3 star rating or higher and are from US & Canada studies.

Table 3: Recommended Improvements for RSA 1

LOCATION CODE	RECOMMENDED IMPROVEMENTS	TIME FRAME			COST	CMF	IMPROVEMENT LEAD
		NEAR	INT.	LONG			
N1	Add crosswalks across NE 26th St at 164th Ave NE, as this is a location used for student drop-off	✓			$	0.6	CoB
	Update non-standard curb ramp to ADA standard at NE 26th St		✓		$$		CoB
N2	Upgrade existing speed hump to the current City standard for speed cushion 125 ft north of NE 25th St along 164th Ave NE	✓			$	0.6	CoB
N3	Install crosswalks at NE 25th St and 164th Ave NE		✓		$$		CoB
	Update non-standard curb ramp to ADA standard at NE 25th St and 164th Ave NE	✓			$	0.5	CoB
N4	Trim vegetation infringing on west-side sidewalk ~100 ft north of NE 24th St along 164th Ave NE	✓			$		CoB
	Review and improve existing narrow bicycle lane along 164th Ave NE			✓	$$$	0.649	CoB
	Add sidewalk on the east side of 164th Ave NE			✓	$$	0.41	CoB
E All	Modify pavement marking to either add or move bicycle lane to EB and WB or WB (uphill) only along NE 24th St from 164th Ave NE to 167th Ave NE			✓	$$$		CoB
	Alternatively, widen WB shared-use path to provide space for both pedestrians and bicyclists along NE 24th St		✓		$$		CoB
	Intall speed feedback signs along NE 24th St		✓		$-$$		CoB
	Install automated photo enforcement of the school zone speed limit along NE 24th St			✓	$$	0.76	CoB
E1	To address student school pickup and drop-off, consider shortening the WB left turn lane at the signal and making eastbound 2 lanes, dropping to an EB left-turn lane at 166th Ave NE (This may necessitate turning movement restrictions at the school entrance (e.g., NB left, WB left))	✓			$		CoB
E2	Conduct a queue observation at the school driveway to support potential turning movement restrictions or other mitigation strategies at Sherwood Forest Elementary School Driveway	✓			$		CoB
	Consider disallow NB left turns out of the school parking lot through pavement marking, signing, and curbing	✓			$		BSD/CoB
	Support school-sponsored on-premise changes to pick-up and drop-off at Sherwood Elementary School	✓			$		BSD/CoB
	Improve efficiency by increasing the amount of pickup/drop-off space with paved sidewalk along the east side of the parking lot		✓		$$$-$$$$	0.41	BSD/CoB
E3	Extend the westbound bicycle lane from 166th Ave NE to 164th Ave NE	✓			$		CoB
	Consider converting to a 4-leg intersection (All-way Stop or Signalized) by adding a driveway into school parking lot on south side of intersection to allow for better traffic flow, such as Enter Only and Exit Only driveways for school traffic at 166th Ave NE			✓	$$$		BSD/CoB

Key	
Blue	Northern Area, N#
Green	Western Area, W#
Yellow	Southern Area, S#
Purple	Eastern Area, E#

#: Location code for recommended improvement

Time Frame Key	
Near-term (Near)	≤ 2 years
Intermediate (Int.)	2 - 5 years
Long-term (Long)	≥ 5 years

Improvement Lead	
KCM	King County Metro
CoB	City of Bellevue
BSD	Bellevue School District
CoR	City of Redmond
PPO	Private Property Owner

Cost Key	
$	≤ $75k
$$	$75k-$150k
$$$	$150k-300k
$$$$	≥ $300k

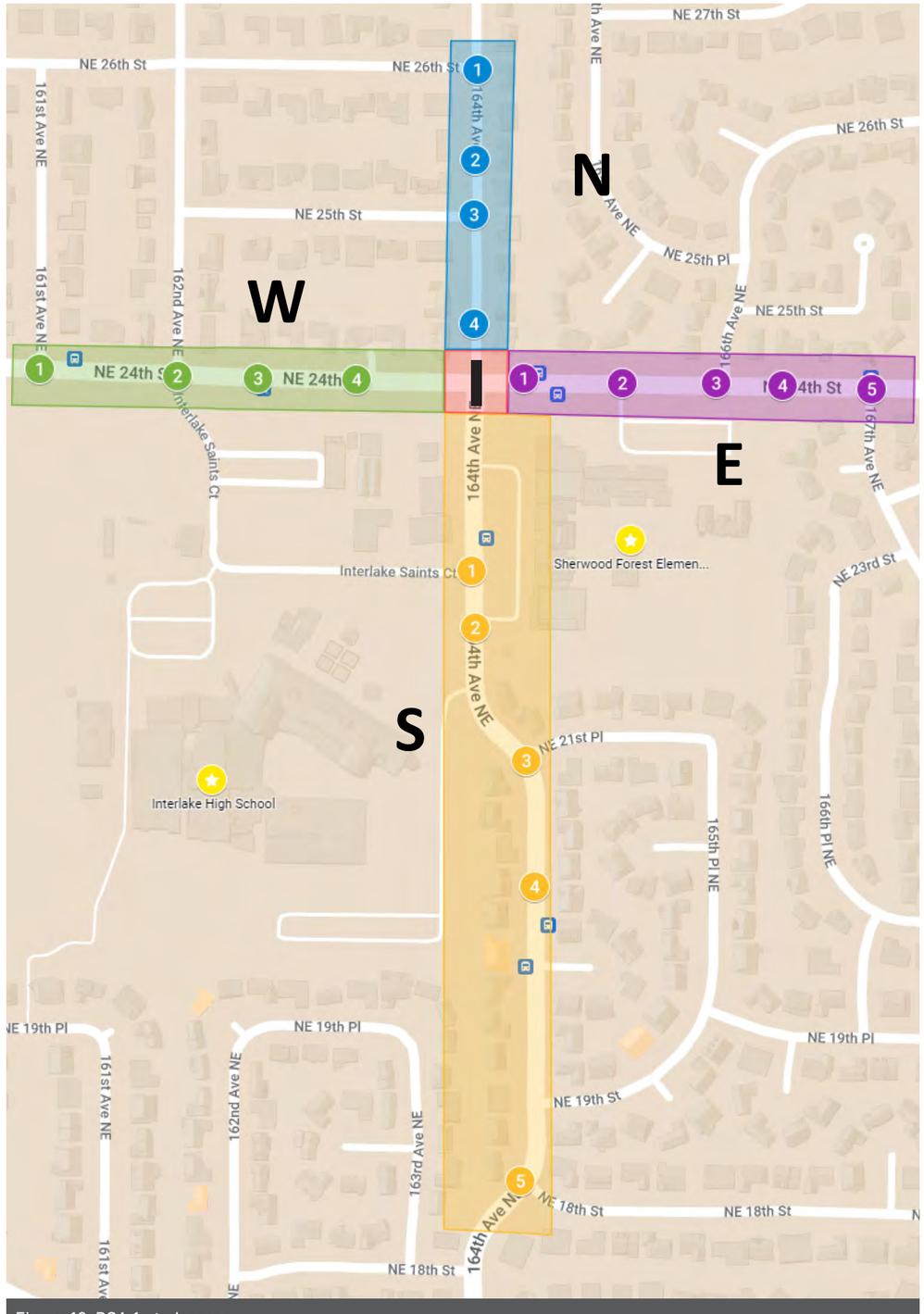


Figure 13: RSA 1 study area

LOCATION CODE	RECOMMENDED IMPROVEMENTS	TIME FRAME			COST	CMF	IMPROVEMENT LEAD
		NEAR	INT.	LONG			
E4	Improve the eastbound bus stop #71390 platform for ADA accessibility		✓		$		BSD/KCM
	Install traffic calming devices to encourage slower speeds along NE 24th St		✓		$-$$		CoB
	On the northside, there is a desirable gravel pathway with good vegetation along NE 24th St			✓	$$-$$$	0.41	CoB
E5	Install traffic calming devices to encourage slower speeds along NE 24th St at 167th Ave NE		✓		$-$$		CoB
	Extend the school zone speed limit (20 mph) further to the east on NE 24th St	✓			$		CoB
	Provide a standard-width sidewalk along the west side of 167th Ave NE, at NE 24th St, to support pedestrian travel to and from school			✓	$$	0.41	CoB
S1	Trim vegetation along sidewalk and near the overhead street lights along 164th Ave NE at Interlake Saints Ct	✓			$		CoB
	Coordinate with King County Metro to study transit needs at this stop #67320 and evaluate whether some of the current curbside can be converted to a parking or loading zone for school drop-off and pickup			✓	$		KCM/CoB
	At the pedestrian refuge island crossing, remove non-traffic signs to reduce driver distraction, across 164th Ave NE between the school driveways	✓			$		CoB
	Install raised crosswalk across 164th Ave NE between the school driveways, to increase visibility of pedestrians and reduce vehicle speeds		✓		$-$$	0.685	CoB
	Add pedestrian-level illumination at the pedestrian refuge island crossing across 164th Ave NE between the school driveways	✓			$$		CoB
S2	Provide on-premise sidewalk at Sherwood Forest Elementary School entrance along 164th Ave NE for current and future Sherwood Elementary School staff and faculty who may arrive by foot	✓			$$		BSD
	Update the reverse curve sign to reverse turn per the MUTCD, on 164th Ave NE north of NE 21st Pl	✓			$		CoB
S3	Trim vegetation that is blocking street lights at NE 21st Pl and 164th Ave NE	✓			$		CoB
	Trim vegetation for eastbound drivers leaving the student parking lot - in particular, vegetation south of the driveway along the reverse turn	✓			$		CoB
	Add new marked pedestrian crossing across 164th Ave NE at NE 21st Pl, include treatments listed in the global recommendations, and consider a raised crosswalk to reduce approach vehicle speeds		✓		$-$$	0.685	CoB
S4	Trim vegetation (eastside hedge) to provide proper sidewalk width ~180 ft north of NE 20th St along 164th Ave NE	✓			$		CoB
	Revisit City policy regarding trash and recycle bin proper placement to disallow trash, compost, and recycle bin from blocking sidewalk or bike lane	✓			$		CoB
	Rechannelize to provide minimum 5' bike lane along 164th Ave NE			✓	$$$$	0.649	CoB
S5	Evaluate extending school speed zone (20 mph) to south of NE 18th St along 164th Ave NE	✓			$		CoB
W ALL	Remove or move chain link fence to provide a wider sidewalk or multiuse path along the high school frontage along NE 24th to ~161st Ave NE		✓		$		CoB
	Consider multi-use path on the north side of NE 24th St			✓	$$-$$$$		CoB
W1	Trim vegetation on the northeast corner to clear sight distance at 161st Ave NE and NE 24th St	✓			$		CoB
	Trim vegetation eastbound (west of the NE 24th St and 161st Ave NE intersection) the school crossing advance warning signs are partially covered	✓			$		CoB
	Trim down the vegetation in pedestrian crossing median near the NE 24th St and 161st Ave NE intersection to improve visibility of pedestrians	✓			$		CoB
	Evaulate adding sidewalks on 161st Ave NE at NE 24th St to provide separation between pedestrian and vehicles			✓	$$$	0.41	CoB
	Consider bulb-outs to reduce east-west crossing distance across 161st Ave NE at NE 24th St		✓		$$		CoB
	Install object markers on the utility poles close to the travel way at the NE 24th St and 161st Ave NE intersection	✓			$		CoB

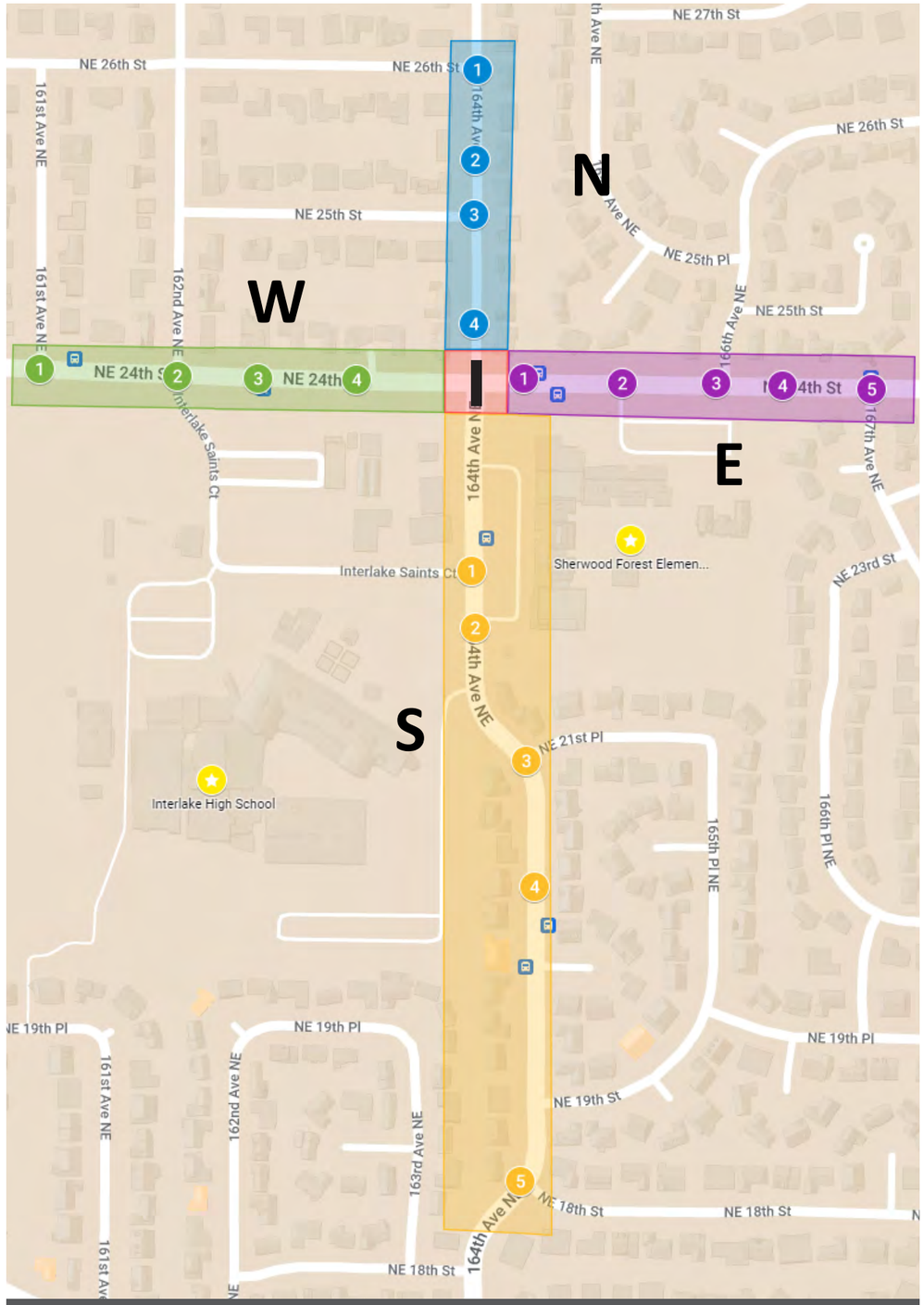


Figure 13: RSA 1 study area

LOCATION CODE	RECOMMENDED IMPROVEMENTS	TIME FRAME			COST	CMF	IMPROVEMENT LEAD
		NEAR	INT.	LONG			
W2	Provide a high visibility, marked crosswalk at NE 24th St and 162nd Ave NE/ Interlake Saints Ct per the global recommendations	✓			$	0.6	CoB
	Analyze pedestrian desire paths to determine if the existing RRFB location is the most appropriate, or if it should be moved to 162nd Ave NE at NE 24th St		✓		$$		CoB
	Consider bike lanes through and west of the 162nd Ave NE and NE 24th St intersection		✓		$$	0.649	CoB
	Consider radius reductions or curb bulb-outs across Interlake Saints Ct to reduce the east-west pedestrian crossing distance at the high school driveway		✓		$$	0.558	CoB
W3	Consider reconfiguring use of the south side so the planter strip is nearest the general purpose travel lane, then a bicycle lane, and then the sidewalk (or a multi-use path as introduced above) along NE 24th St			✓	$$$-$$$$		CoB
W4	Consider reconfiguring use of the south side so the planter strip is nearest the general purpose travel lane, then a bicycle lane, and then the sidewalk (or a shared-use path as introduced above) along NE 24th St			✓	$$$-$$$$		CoB
	Install speed feedback signs along NE 24th St		✓		$-$$		CoB
	Install automated photo enforcement of the school zone speed limit along NE 24th St			✓	$$	0.76	CoB
I	Upgrade crosswalks to high visibility markings with a stop bar. Consider impacts to signal timing (e.g., all-red interval to accommodate vehicles clearing the intersection) and modify timing accordingly at intersection of 164th Ave NE and NE 24th St	✓			$	0.6	CoB
	Evaluate wind load restrictions, and if feasible, add reflectorized backplates to all signal heads at the intersection of 164th Ave NE and NE 24th St						CoB
	Add leading pedestrian intervals to all pedestrian movements and audible pedestrian signals where signal equipment or upgrades allow at the intersection of 164th Ave NE and NE 24th St	✓			$	0.81	CoB
	Add pedestrian recall (i.e., the WALK phase comes up every cycle, even without the button being pushed) during before-school and after-school time periods at the intersection of 164th Ave NE and NE 24th St. These could be coordinated with the school zone speed limit times	✓			$		CoB
	Extend the FLASHING DON'T WALK phase during before-school and after-school to accommodate elementary school students and their families at the intersection of 164th Ave NE and NE 24th St	✓			$		CoB
	Consider changing to protected-only phasing (no permissive phase) at the intersection of 164th Ave NE and NE 24th St	✓			$		CoB
	Disallow walk indication with adjacent permissive left turns phase if permissive phase is kept at the intersection of 164th Ave NE and NE 24th St	✓			$		CoB
	Upon completion of these changes, evaluate drivers' use of Right Turn on Red (RTOR) and their potential encroachment into the crosswalk during this movement at the intersection of 164th Ave NE and NE 24th St. Use engineering judgment to determine if RTOR should be disallowed.			✓	$		CoB

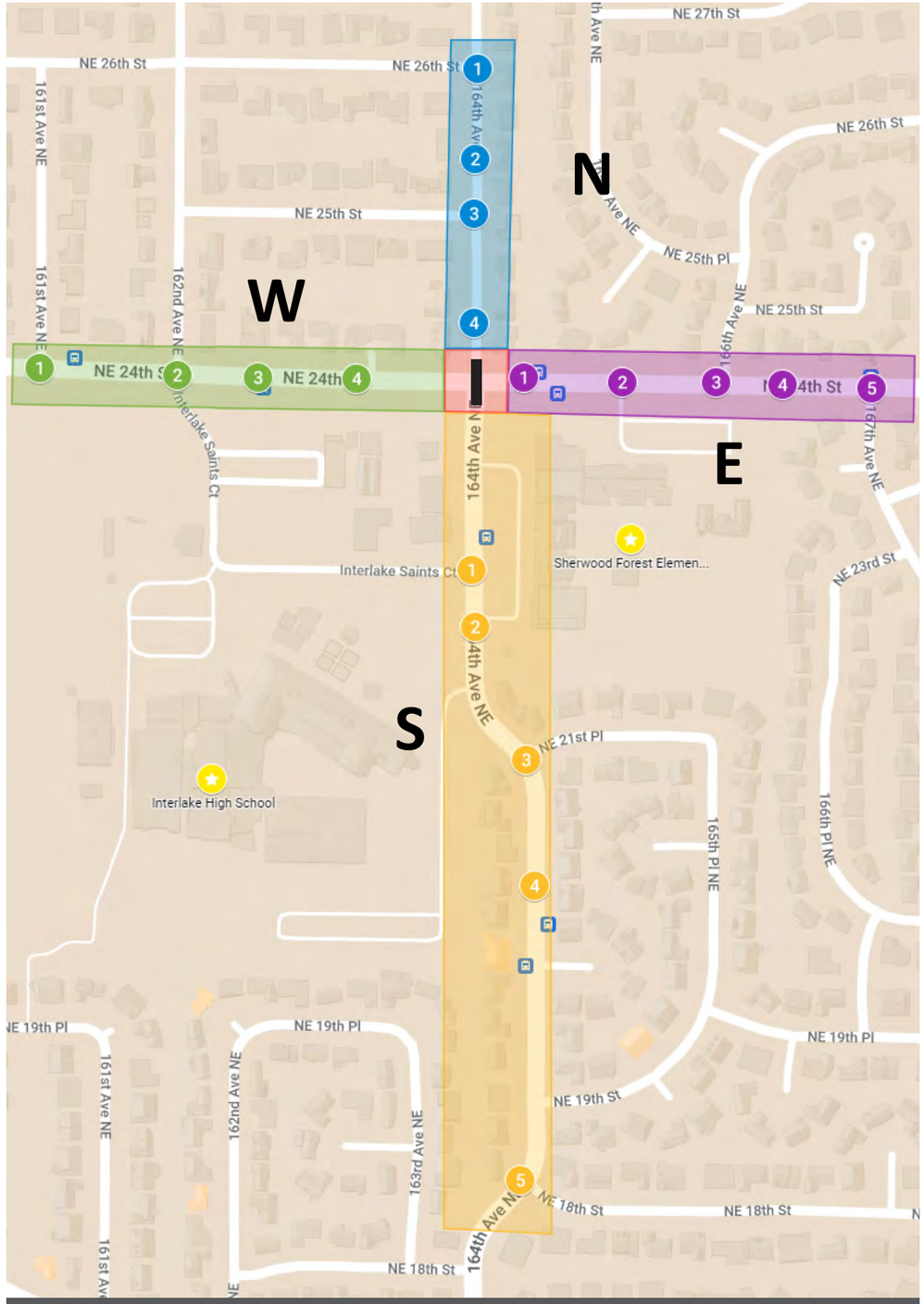


Figure 13: RSA 1 study area

RSA 2

1. STUDY LOCATION

The study area for this RSA includes five segments along NE 20th Street, Northup Way, Bel-Red Road, and 148th Avenue NE as shown in Figure 18, on page 14. A portion of NE 20th Street near the intersection with Bel-Red Road is a shared jurisdiction between the City of Bellevue and the City of Redmond. The study area is a mix of residential and commercial with an increase in new development due to the light rail station that will open nearby in 2023. There is one school located within RSA 2, as described below:

	Highland Middle School
Address:	15027 Bel-Red Rd, Bellevue, WA 98007
Grades:	6-8
Number of Students:	576
Arrival:	7:45 AM
Dismissal:	2:35 PM

2. PROCESS

On April 24 and April 30, 2022, the team conducted community walking audits to gather feedback from the public. An extensive public outreach plan was developed and implemented to promote the walking events to the school community and local residents. During the community walking audits, the team was able to collect valuable insights, stories, concerns, and ideas. 12 senior residents of Silver Glen provided valuable insight into accessible design.

On April 27, 2022, the team conducted a city field visit, which focused on technical insights. On June 6, 2022, the team used the MURAL digital visual collaboration tool to collaborate on synthesizing notes from the community walking audit and city field visit. The facilitator led a verbal discussion in addition to the team's written input.

Figure 14: Community Walking Audit with Silver Glen community.

Figure 15: Example of signs and parked vehicles encroaching onto sidewalk along NE 20th St.

Figure 16: Northeast corner facing westbound at the intersection of NE 20th St and 148th Ave NE with fire hydrant in the middle of sidewalk.

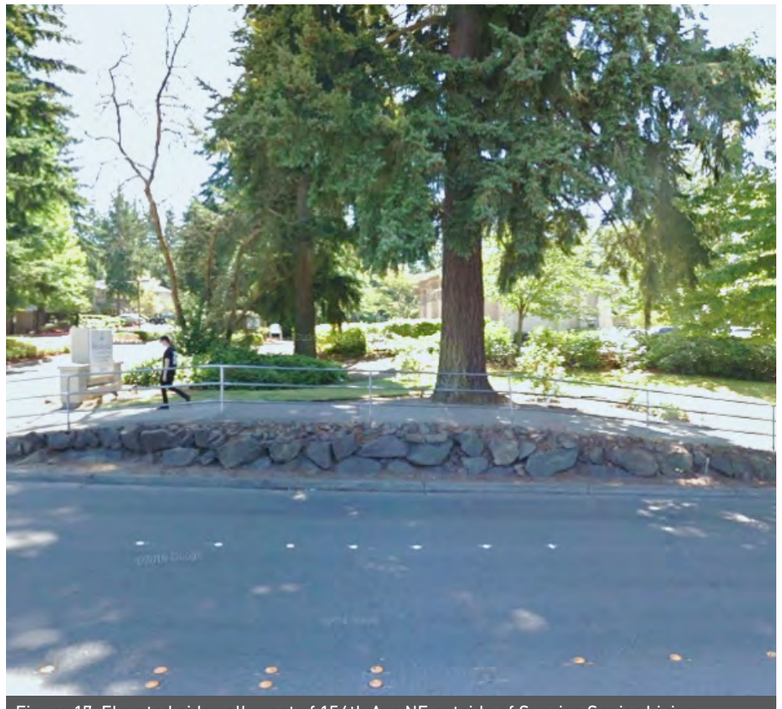


Figure 17: Elevated sidewalk west of 154th Ave NE outside of Sunrise Senior Living residence. The steep slope is not ADA compliant.

3. RECOMMENDED IMPROVEMENTS

The recommended improvements table on the next page provides recommended safety improvements specific to RSA 2, including infrastructure design and policy improvements. These recommendations are based on observations made during the community walking audits, city field visit, and team workshop, as well as the comments submitted on the Engaging Bellevue website. The recommendations matrix is separated by location, and includes the recommended treatment, timeframe, cost range, CMF,[1] and improvement lead. Recommendations require further engineering analysis of feasibility and design prior to determining if they should be implemented.

4. PLANNED IMPROVEMENTS

There are two planned capital improvement projects within RSA 2:

- BelRed Corridor Local Street Network Project (CIP # R-193) will evaluate the feasibility of relocating the signal from the 14300 Block intersection to the new intersection (NE 20th Street and 143rd Ave NE) that will be created through the Bel-Red Corridor Local Street Network Project. The configuration of the intersection and design details have not yet been determined.
- Evergreen Transition New Home development proposed by the Bellevue School District will provide a loop area on the west side of 152nd Ave NE that will be utilized as a turnaround area for the street, resulting in better sidewalk connections without the need to make a left turn.

Figure 18: Team for the RSA 2 city field visit, walking along NE 20th St, northeast of Highland Middle School

1 CMFs are sourced from the CMF Clearinghouse. The FHWA CMFs are approximate for the general countermeasure. A specific CMF should be determined for each unique scenario. For selection of CMFs for specific locations in Bellevue, explore the CMF Clearinghouse and apply all relevant factors. All CMFs reported in this report have a 3 star rating or higher and are from US & Canada studies.

Table 4: Recommended Improvements for RSA 2

LOCATION CODE	RECOMMENDED IMPROVEMENTS	TIME FRAME			COST	CMF	IMPROVEMENT LEAD
		NEAR	INT.	LONG			
NW1	At the intersection of 140th Ave NE and NE 20th St, consider upgrading to ADA compliant ramps at 140th Ave NE intersection		✓		$$		CoB
NW2	Along NE 20th St, between 140th Ave NE and 14300 Blk signal, consider access management to reduce the number of driveways to the north commercial strip area with redevelopment. Follow up with upcoming development			✓	$$$$		PPO/CoB
NW3	Upgrade to ADA compliant ramps on all corners at 14300 Blk and NE 20th St signal		✓		$$		CoB
	Consider adding leading pedestrian intervals for the north and south pedestrian movements at the 14300 Blk and NE 20th St signal	✓			$	0.81	CoB
NW4	Evaluate the need for a mid-block crossing along NE 20th St between 14300 Blk and 148th Ave NE		✓		$$-$$$	0.6	CoB
NW5	Upgrade the northeast corner ramp and relocate the fire hydrant located on the curb ramp landing at 148th Ave NE and NE 20th St	✓			$$		CoB
	Consider reduced curb radii and truck aprons to reduce vehicle turning speeds at the 148th Ave NE and NE 20th St intersection			✓	$$$	0.558	CoB
N1	On the north side of NE 20th St, between 152nd Ave NE and 148th Ave NE, consider upgrading the sidewalk, where appropriate, to be more even and wider		✓		$$	1.12	CoB
	Along NE 20th St, consider a mid-block pedestrian crossing to accommodate north-south pedestrians and bicyclists between 148th Ave NE and 152nd Ave NE		✓		$$-$$$	0.6	CoB

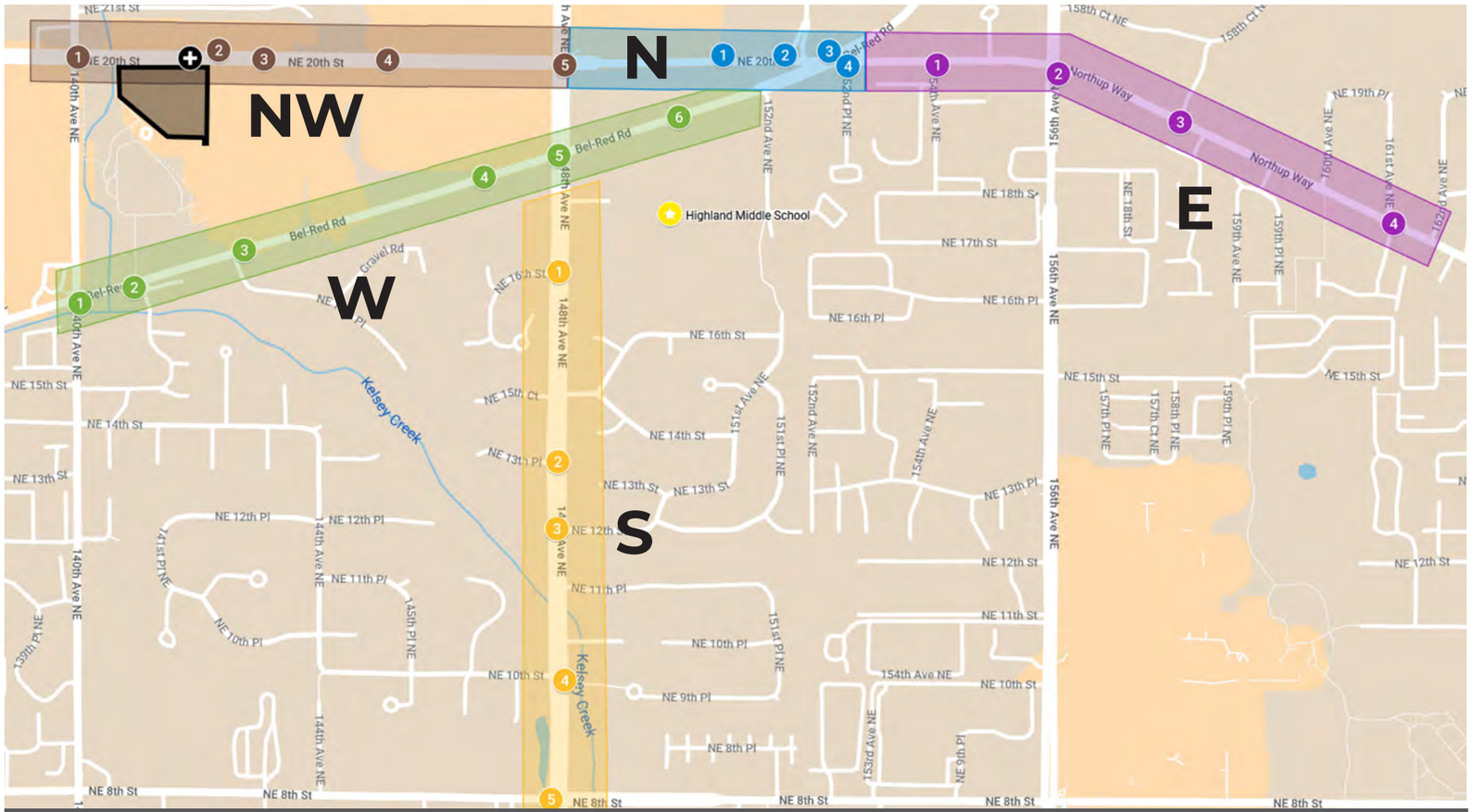


Figure 19: RSA 2 study area

Key	
Black	Evergreen Transition Program New Home development
+	BelRed Corridor Local Street Network Project
Blue	Northern Area (shared jurisdiction with City of Redmond), N#
Brown	Northwestern area, NW#
Green	Western area, W#
Yellow	Southern area, S#
Purple	Eastern area, E#

#: Location code for recommended improvement

Time Frame Key	
Near-term (Near)	≤ 2 years
Intermediate (Int.)	2 - 5 years
Long-term (Long)	≥ 5 years

Cost Key	
$	≤ $75k
$$	$75k-$150k
$$$	$150k-300k
$$$$	≥ $300k

Improvement Lead	
KCM	King County Metro
CoB	City of Bellevue
BSD	Bellevue School District
CoR	City of Redmond
PPO	Privvate Property Owner

LOCATION CODE	RECOMMENDED IMPROVEMENTS	TIME FRAME			COST	CMF	IMPROVEMENT LEAD
		NEAR	INT.	LONG			
N2	Consider adding high visibility pedestrian crossings across 152nd Ave NE	✓			$	0.6	CoB
	Consider intersection re-alignment of 152nd Ave NE with Bel-Red Road			✓	$$$-$$$$		CoB
N3	Work with the City of Redmond and the auto dealership to relocate the signs and parked cars outside of the walking path north of the Bel-Red Rd and NE 20th St intersection. (Signs and vehicles currently encroach on the sidewalk)	✓			$		PPO/CoB/CoR
N4	Consider no right turns on red for all approaches at Bel-Red Rd and NE 20th St intersection	✓			$		CoB
	Add pedestrian countdown timers and audible pedestrian signals for all crossings at Bel-Red Rd and NE 20th St intersection		✓		$		CoB
	Consider increasing crossing time for pedestrians crossing northeast or southwest at the Bel-Red Rd and NE 20th St intersection		✓		$		CoB
	Evaluate lagging pedestrian interval or other signal phasing changes to reduce conflicts with northeast-bound Bel-Red Rd vehicles turning onto Bel-Red Rd at Bel-Red Rd and NE 20th St intersection		✓		$		CoB
	Evaluate pedestrian scramble or other accommodations to reduce overall pedestrian crossing time at the Bel-Red Rd and NE 20th St intersection		✓		$		CoB
	Rechannelize the intersection to clarify allowed movements for northeast-bound Bel-Red Rd vehicles by lane			✓	$$$		CoB
	Long term considerations to review the Bel-Red Rd and NE 20th St intersection geometry and realignment with 152nd Ave NE			✓	$$$		CoB
E1	Evaluate adding a mid-block crossing across NE 20th St, near 154th Avenue NE		✓		$$-$$$	0.6	CoB
	Evaluate treatments for the steep sidewalk slope near the Sunrise Senior Living complex (south side of NE 20th St)			✓	$$-$$$		CoB
E2	Prioritize high visibility crosswalk markings at NE 20th St and 156th Ave NE intersection	✓			$	0.6	CoB
	Prioritize the NE 20th St and 156th Ave NE intersection for vegetation trimming to improve visibility of all road users, especially pedestrians	✓			$		CoB
	Consider tighter curb radii and truck aprons			✓	$$$	0.558	CoB
	Evaluate the capacity need for permissive left turn phasing at the NE 20th St and 156th Ave NE intersection. Consider protected-only (all day or by time of day)	✓			$	F(x)	CoB
	Consider RTOR restriction for pedestrian safety (conflicts experienced during field reviews) and vehicle safety (conflicts identified by video analytics) at Bel-Red Rd and NE 20th St intersection		✓		$		CoB
	Trim tree overhanging to improve lighting visibility on the northeast corner at the NE 20th St and 156th Ave NE intersection	✓			$		CoB

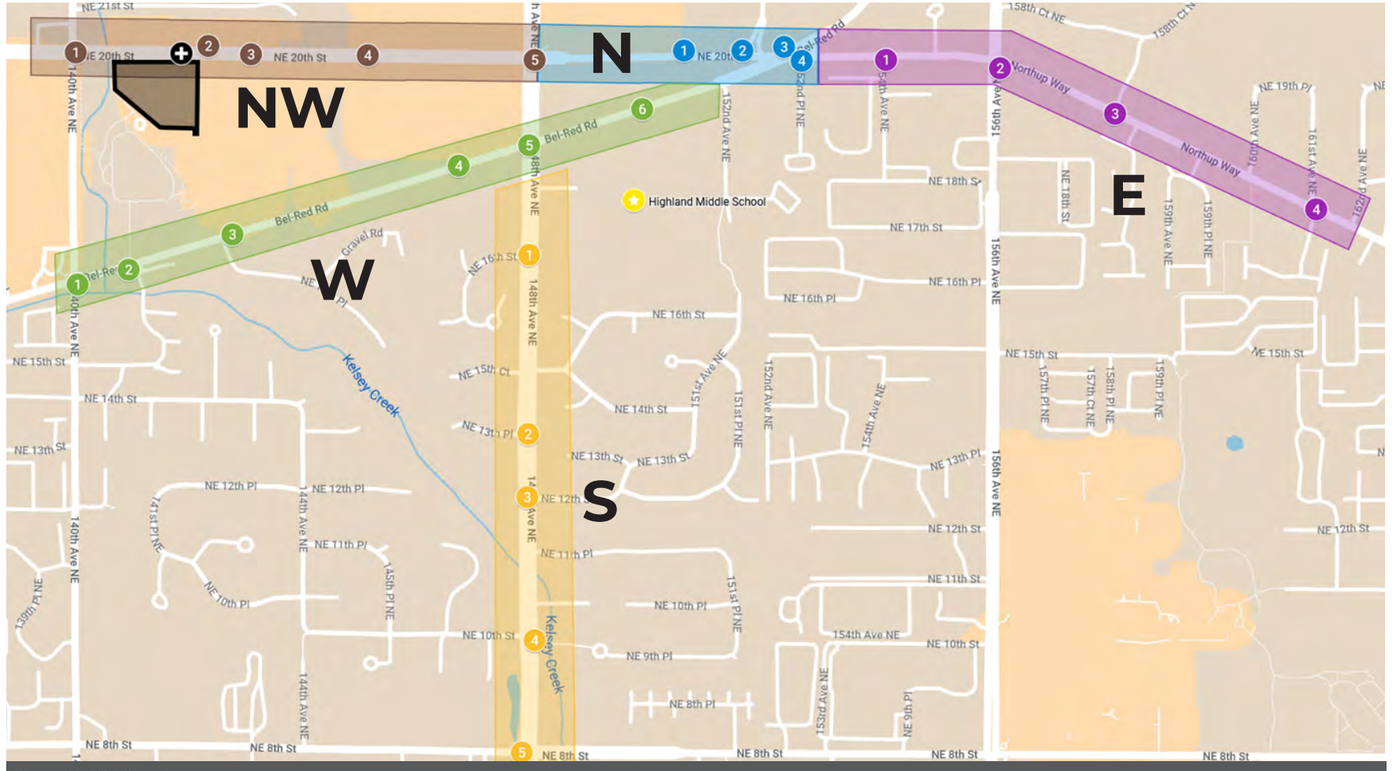


Figure 19: RSA 2 study area

LOCATION CODE	RECOMMENDED IMPROVEMENTS	TIME FRAME			COST	CMF	IMPROVEMENT LEAD
		NEAR	INT.	LONG			
E3	Evaluate adding a mid-block crossing across NE 20th Street between 156th Ave NE and 160th Ave NE and consider traffic calming measures along this section		✓		$$-$$$		CoB
E4	At Northup Way and 161st Ave NE, evaluate the stop sign for replacement	✓			$		CoB
	At the intersection of 161st Ave NE and Northup Way, upgrade curbs to be ADA compliant		✓		$$		CoB
W ALL	Evaluate pedestrian lighting along this corridor of Bel-Red Rd			✓	$$$		CoB
	Consider narrowing the lanes on Bel-Red Rd to allow for more sidewalk width, and/or a vegetative buffer from traffic			✓	$$$$		CoB
	Consider bike lanes or a shared use path along Bel-Red Rd			✓	$$$$	0.649	CoB
W1	Update the 4-section left-turn heads to 3-section heads to match current operation at Bel-Red Rd and 140th Ave NE Signal		✓		$		CoB
	Install green pavement markings to define the bike lane within the Bel-Red Rd and 140th Ave NE intersection		✓		$		CoB
W2	Work with King County Metro to evaluate improve the eastbound bus stop #68068 to allow for more boarding area space. Perhaps provide a hard surface where there is currently a large grass buffer		✓		$$		KCM/CoB
W3	Work with King County Metro to evaluate moving the westbound bus stop #84822 closer to the pedestrian crossing to improve convenience for pedestrians			✓	$$		KCM/CoB
	At the signalized pedestrian crossing across Bel-Red Rd near NE 16th Pl, consider additional pedestrian crossing signs or advanced warning signs at ground level. (The current signing is only overhead)			✓	$	0.41	CoB
W4	Consider adding a pedestrian path from the westbound bus stop #84825, through the forested area, to the commercial area to reduce the number of pedestrians walking up a driveway with no sidewalk			✓	$$	0.41	PPO/CoB
	Study the intersection of 152nd Ave NE/Bel-Red Rd further to determine whether a crosswalk is warranted	✓			$		CoB
	Move the bus stop west of 148th Ave NE on Bel-Red Rd closer to the Highland Middle School crossing and install a physical barrier to prevent illegal crossing			✓	$$$		KCM/CoB

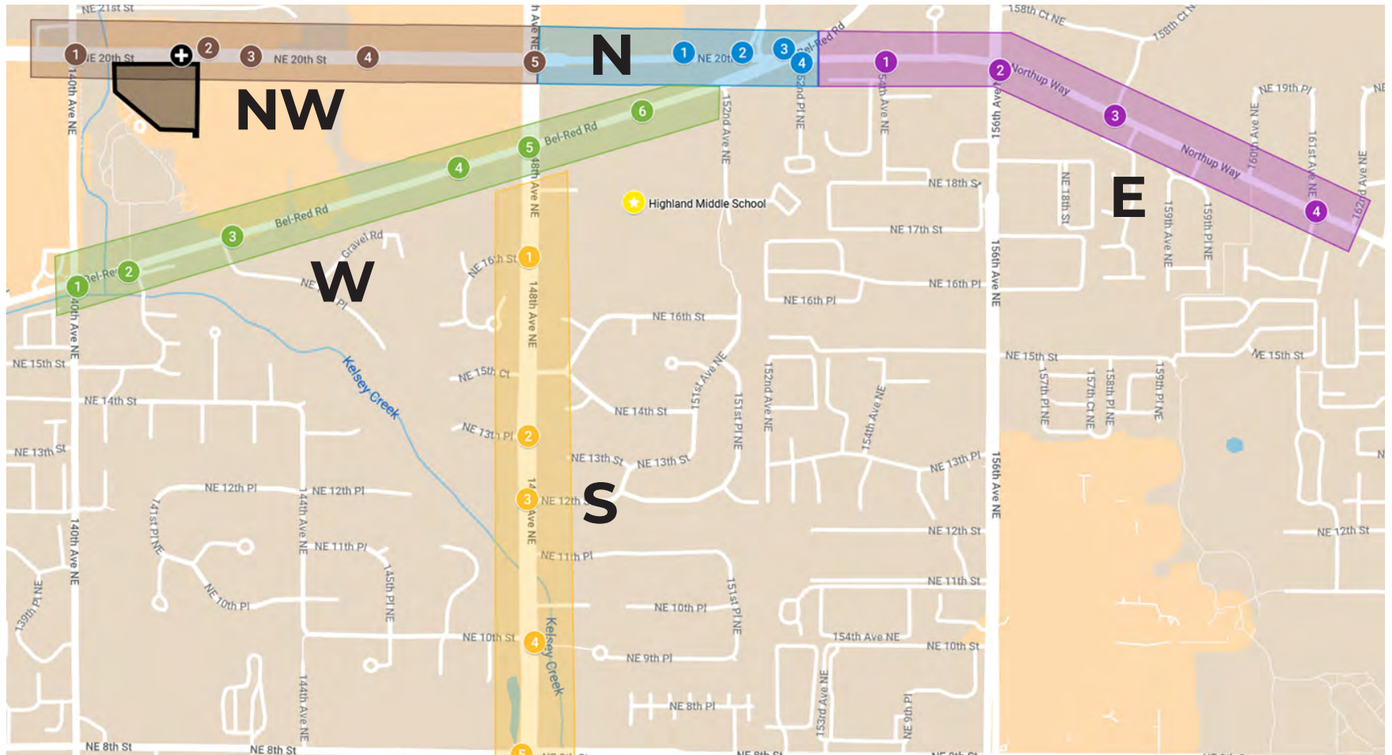


Figure 19: RSA 2 study area

LOCATION CODE	RECOMMENDED IMPROVEMENTS	TIME FRAME			COST	CMF	IMPROVEMENT LEAD
		NEAR	INT.	LONG			
W5	Add stop bars behind the crosswalks to discourage encroachment onto the crosswalk at Bel-Red Rd and 148th Ave NE intersection	✓			$		CoB
	Install pedestrian countdown timers at the intersection of Bel-Red Rd and 148th Ave NE		✓		$	F(x)	CoB
W6	To mitigate red light running, consider decreasing cycle length to allow for efficient signal operation whenever possible at Highland Middle School main driveway	✓			$		CoB
	Consider automated red-light-running enforcement at the Bel-Red Rd and Highland Middle School driveway intersection, due to the observed violation of the signal indication			✓	$$		CoB
W7	Install crosswalk at the intersection of 152nd Ave NE/Bel-Red Rd		✓		$		CoB
S ALL	Evaluate the driveway curb radii and consider curb radius reduction on side street entrances off of 148th Ave NE			✓	$$$	0.558	CoB
S1	Evaluate treatments for the steep sidewalk slope north of NE 16th St on the west side of 148th Ave NE. Consider adding a handrail (or similar) as a short-term treatment	✓			$		CoB
S2	Consider speaking to the neighborhood residents about the concrete wall at the entrance of NE 13th Pl along 148th Ave NE and either removing or replacing with a different treatment	✓			$		PPO/CoB
S3	Evaluate potential for mid-block crossing across 148th Ave NE between NE 13th Pl and NE 10th St		✓		$$-$$$	0.6	CoB
S4	There is an informal path access to this neighborhood on the east side of 148th Ave NE near NE 10th St. Consider adding wayfinding signage and/or pedestrian lighting to encourage use	✓			$		CoB
S5	Trim tree foliage on the northwestern corner of the intersection at NE 8th St and 148th Ave NE	✓			$		CoB

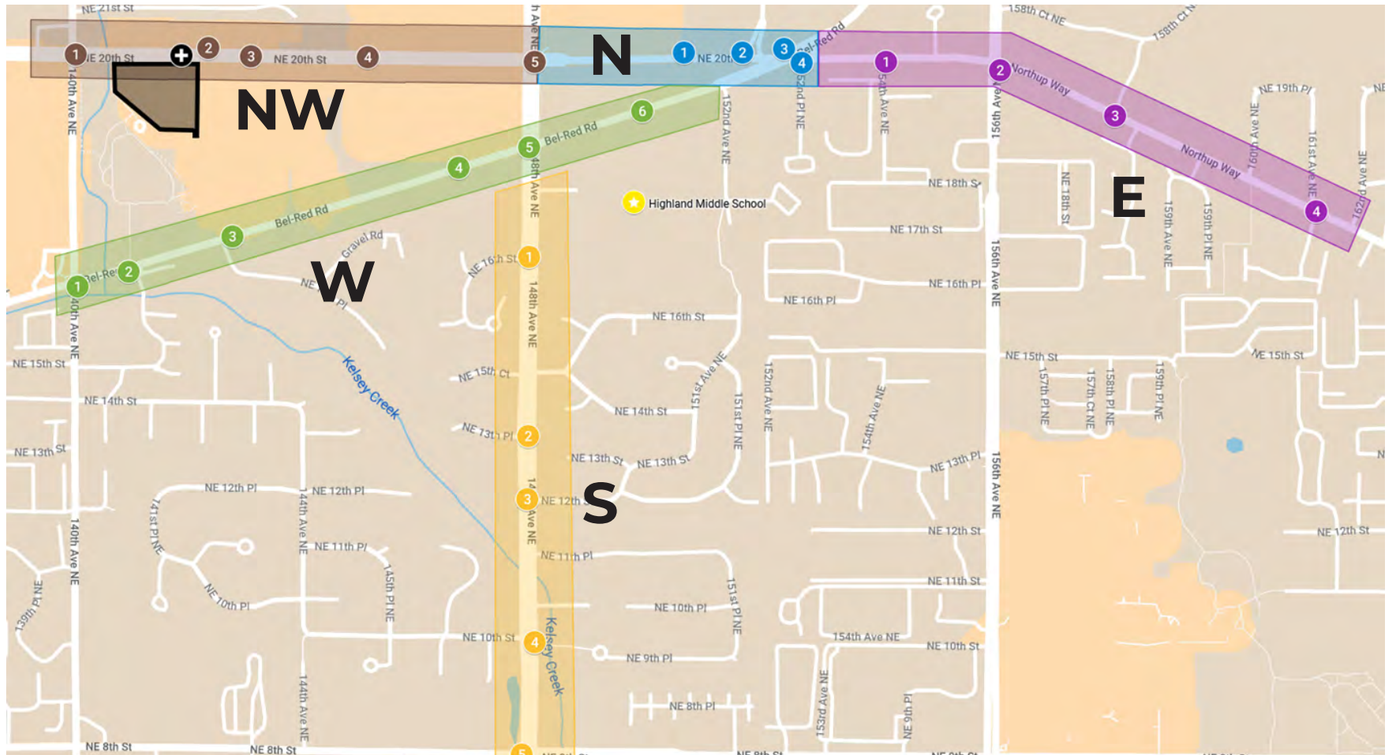


Figure 19: RSA 2 study area

RSA 3

1. STUDY LOCATION

The study area for this RSA includes three segments along 140th Avenue NE, Main Street, and 148th Avenue NE as shown in Figure 27, on page 18. The study area is primarily residential, with both schools surrounded by single and multi-family housing. There are three schools located within RSA 3, described below:

	Sammamish Middle School	Stevenson Elementary School	Odle Middle School
Address:	100 140th Ave SE, Bellevue, WA 98005	14220 NE 8th St, Bellevue, WA 98007	14220 NE 8th St, Bellevue, WA 98007
Grades:	9-12	1-5	6-8
Number of Students:	1172	538	980
Arrival:	8:00 AM	8:00 AM	8:30 AM
Dismissal:	3:00 PM	12:15 PM	2:10 PM

2. PROCESS

On May 15 and May 21, 2022, the team conducted community walking audits to gather feedback from the public. An extensive public outreach plan was developed and implemented to promote the walking events to local residents. During the community walking audits, the team was able to collect valuable insights, stories, concerns, and ideas, from the 15 Sammamish High School students who participated in the audit.

On April 28, 2022, the team conducted a field visit, which focused on technical insights. On June 15, 2022, the team used the MURAL digital visual collaboration tool to collaborate on synthesizing notes from the community walking audit and city field visit. The facilitator led a verbal discussion in addition to the team's written input.

Figure 20: Students from Sammamish High School attending the community walking audit.

Figure 21: Facing eastbound at the intersection of SE 6th St and 140th Ave SE. Wide intersection with no marked crossing and large turning radius are typical within this RSA area.

Figure 22: "Water over roadway" sign on the west side of 148th Ave NE, south of Main St. This area has common flooding issues and maintenance vehicles have been known to park on the shared use path.

Figure 23: There are limited opportunities to cross 148th Ave NE except at signalized intersections due to high vehicle volumes.

3. RECOMMENDED IMPROVEMENTS

The recommended improvements table on the next page provides recommended safety improvements specific to RSA 3, including infrastructure design and policy improvements. These recommendations are based on observations made during the community walking audits, city field visit, and team workshop, as well as the comments submitted on the Engaging Bellevue website. The recommendations matrix is separated by location, and includes the recommended treatment, timeframe, cost range, CMF,[1] and responsible groups. Recommendations require further engineering analysis of feasibility and design prior to implementation.

4. PLANNED IMPROVEMENTS

Asphalt overlay projects are planned along 140th Avenue NE, between SE 8th Street to NE 8th Street and along Main Street, between 140th Avenue NE to 148th Avenue NE within the next few years. Figures 23 and 24 show an excerpt from the design plans with some safety improvements included, such as the improved pedestrian crossings. The asphalt overlay projects will also involve upgrading crosswalk pavement markings and curb ramps.

Additionally, two proposed developments are planned near the northeast corner of 148th Avenue NE and Main Street. At 110 148th Avenue NE, a proposed residential development will be required to add a new curb and gutter, 5 ft planter, 8 ft sidewalk , and street lights along the entire 675 ft property frontage. East of that property, a new elementary school is currently under construction. While it does not have frontage on 148th Avenue NE, when the school is completed and open to students, new traffic patterns (including pedestrian and bicyclist trips) will emerge.

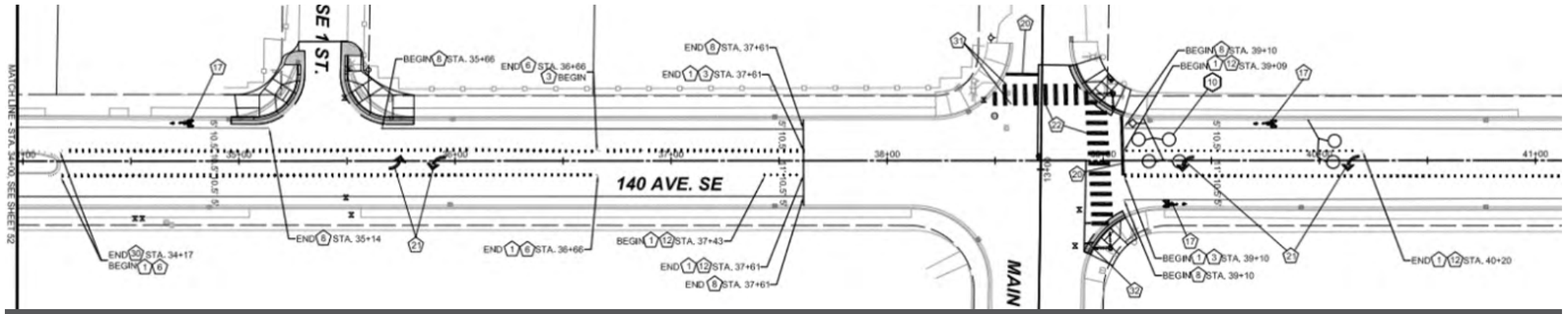


Figure 24: Overlay projects are planned along 140th Avenue

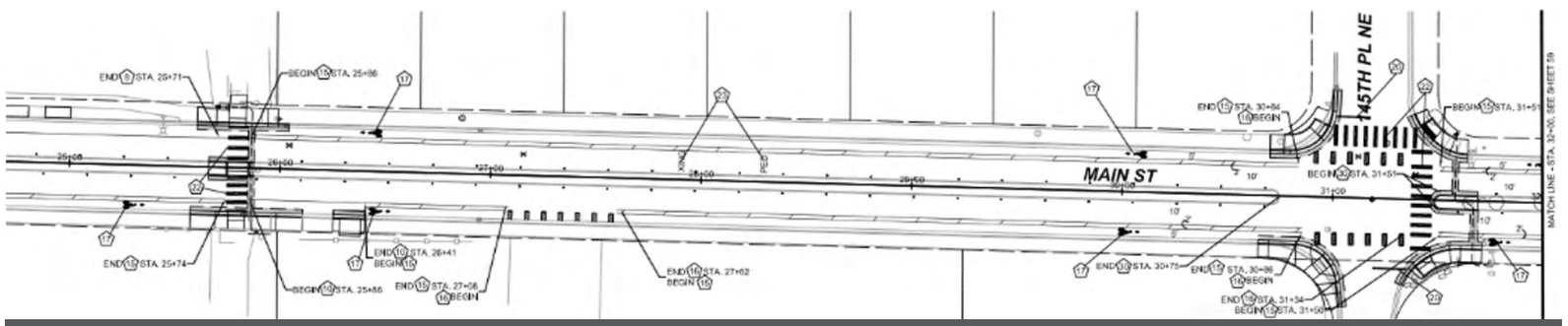


Figure 25: Overlay projects are planned along Main Street

Figure 26: Person riding a scooter in the bike lane on Main Street, north of Sammamish High School.

1 CMFs are sourced from the CMF Clearinghouse. The FHWA CMFs are approximate for the general countermeasure. A specific CMF should be determined for each unique scenario. For selection of CMFs for specific locations in Bellevue, explore the CMF Clearinghouse and apply all relevant factors. All CMFs reported in this report have a 3 star rating or higher and are from US & Canada studies.

Table 5: Recommended Improvements for RSA 3

LOCATION CODE	RECOMMENDED IMPROVEMENTS	TIMEFRAME			COST	CMF	IMPROVEMENT LEAD
		NEAR	INT.	LONG			
W1	Refer to Table 4 for potential list of treatments at 140th Ave NE and Bel-Red Rd						
W2	NE 14th St has a westbound left-turn lane. Review the operations at this intersection to consider removing the westbound left turn lane to reduce pedestrian crossing distance		✓		$$	F(x)	CoB
W3	Maintain vegetation and removed unauthorized signing at the RRFB median, located south of NE 13th St, to ensure that the plants are trimmed to 35 feet height and unwanted advertising signage does not distract drivers	✓			$		CoB
W4	Consider adding lighting to the east side of the road for the RRFB located south of 9th Pl NE		✓		$		CoB
	Maintain vegetation and remove unauthorized signing at the RRFB median, located south of 9th Pl NE, to ensure that the plants are trimmed to 35 feet height and unwanted advertising signage does not distract drivers	✓			$		CoB
W5	At the intersection of NE 8th St and 140th Ave NE, evaluate the bike pavement markings on 140th Ave NE and consider extending the bike lanes to the intersection and adding green pavement markings through the intersection. There are no bike sharrows or green pavement markings within the intersection. The northbound bike lane on the east side of 140th Ave NE abruptly ends ~190 feet before intersection and then continues past the intersection		✓		$$	0.649	CoB
W6	The RRFB, located south of NE 5th St, connects a trail on the east side of 140th Ave NE. Consider improving wayfinding signage for this trailhead and the associated trail networks		✓		$		CoB
W7	Evaluate the signal timing at the intersection of Main St and 140th Ave NE, as it feels like there is a long wait time for pedestrians to receive the pedestrian phase after pushing the button on the east/west legs	✓			$		CoB
W8	At the entrance of the Sammamish High School, across SE 3rd Pl, evaluate the design of the northbound bike lane / shared right-turn lane into the school parking lot			✓	$$-$$$		CoB
W9	At the intersection of 140th Ave SE and SE 8th St, evaluate the pedestrian facilities. The push button height on the north-west corner appears to be at a lower height than current standard. The sidewalk along SE 8th St abruptly ends on the northeast corner; consider sidewalk in-fill. Consider installing pedestrian countdown timers to provide crossing pedestrians additional information			✓	$$		CoB
M1	At the intersection of Main St and 145th Pl NE, consider extending the median to the crosswalk to provide a pedestrian refuge at the middle of the RRFB crossing on the west side	✓			$	0.86	CoB
M2	Evaluate the westbound and eastbound bus stop locations that are west of 148th Ave NE for ADA requirements. There may not be enough boarding zone area for transit riders in wheelchairs to access the facility		✓		$$		KCM/CoB
M3	Maintain vegetation on Main Street from 145th Pl SE to 148th Ave SE to clear the sidewalk area for pedestrians	✓			$		CoB
	Evaluate the sidewalk condition, on Main St from 145th Pl SE to 148th Ave SE, on the southside for potential future resurfacing			✓	$$$		CoB
M4	At the intersection of 148th Ave NE and Main St, evaluate the signal timing to consider including a leading pedestrian interval and/or passive pedestrian detection to improve pedestrian timing. Evaluate the feasibility of a pedestrian refuge island across 148th Ave NE with regard to signal timing implications and required hardware	✓			$-$$$	0.81	CoB
E1	Consider restriping the crosswalk markings along 148th Ave SE at NE 6th St to improve visibility	✓			$	0.6	CoB

Key	
Green	Western Area, W#
Blue	Middle Area, M#
Purple	Eastern Area, E#
Black	Residential development and new elementary school

#: Location code for recommended improvement

Improvement Lead	
KCM	King County Metro
CoB	City of Bellevue
BSD	Bellevue School District
CoR	City of Redmond
PPO	Private Property Owner

Cost Key	
$	≤ $75k
$$	$75k-$150k
$$$	$150k-300k
$$$$	≥ $300k

Time Frame Key	
Near-term (Near)	≤ 2 years
Intermediate (Int.)	2 - 5 years
Long-term (Long)	≥ 5 years

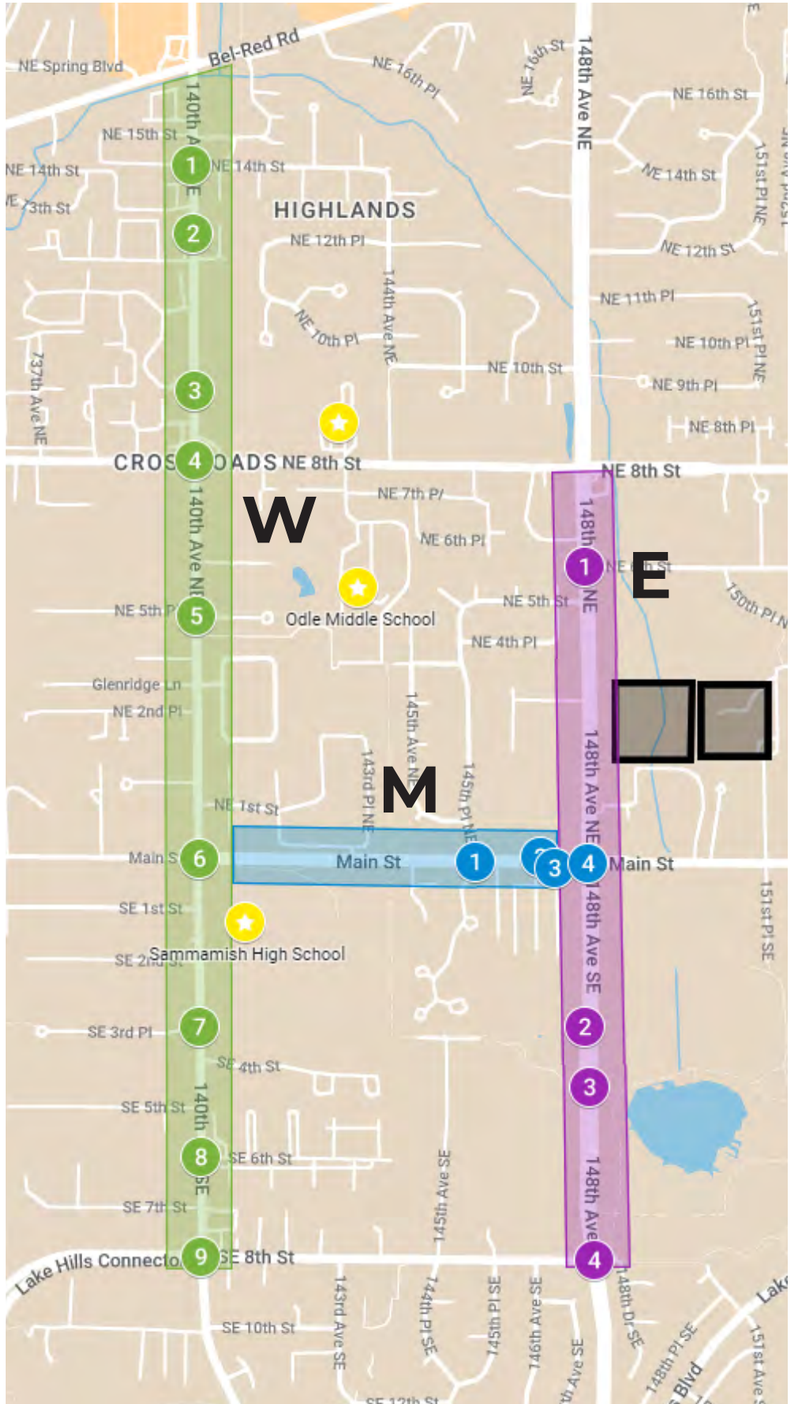


Figure 27: RSA 3 study area

LOCATION CODE	RECOMMENDED IMPROVEMENTS	TIMEFRAME			COST	CMF	IMPROVEMENT LEAD
		NEAR	INT.	LONG			
E2	Along the west side of 148th Ave SE, approximately 1,100 feet south of Main St intersection, consider providing a maintenance vehicle pull-out to prevent vehicles parking on the pathway			✓	$$		CoB
	Flooding is common in the area along 148th Ave SE, between Main St and SE 8th St. Consider road weather information systems or other strategies to monitor local roadway and weather conditions to alert the traveling public about inclement weather conditions			✓	$$$		CoB
E3	At the pedestrian crossing along 148th Ave NE, north of SE 8th St, consider updating the wooden bollards in the median to current standard (with reflectors)	✓			$		CoB
	At the pedestrian crossing along 148th Ave NE, north of SE 8th St, consider adding additional pedestrian warning signs (in advance and at the crossing) and high visibility crossing markings		✓		$	0.6	CoB
E4	There is a popular bike trail (shared-use path) east of the SE 8th St and 148th Ave NE intersection. Consider adding bike lanes along SE 8th St to provide connectivity to the trail			✓	$$$$	0.649	CoB

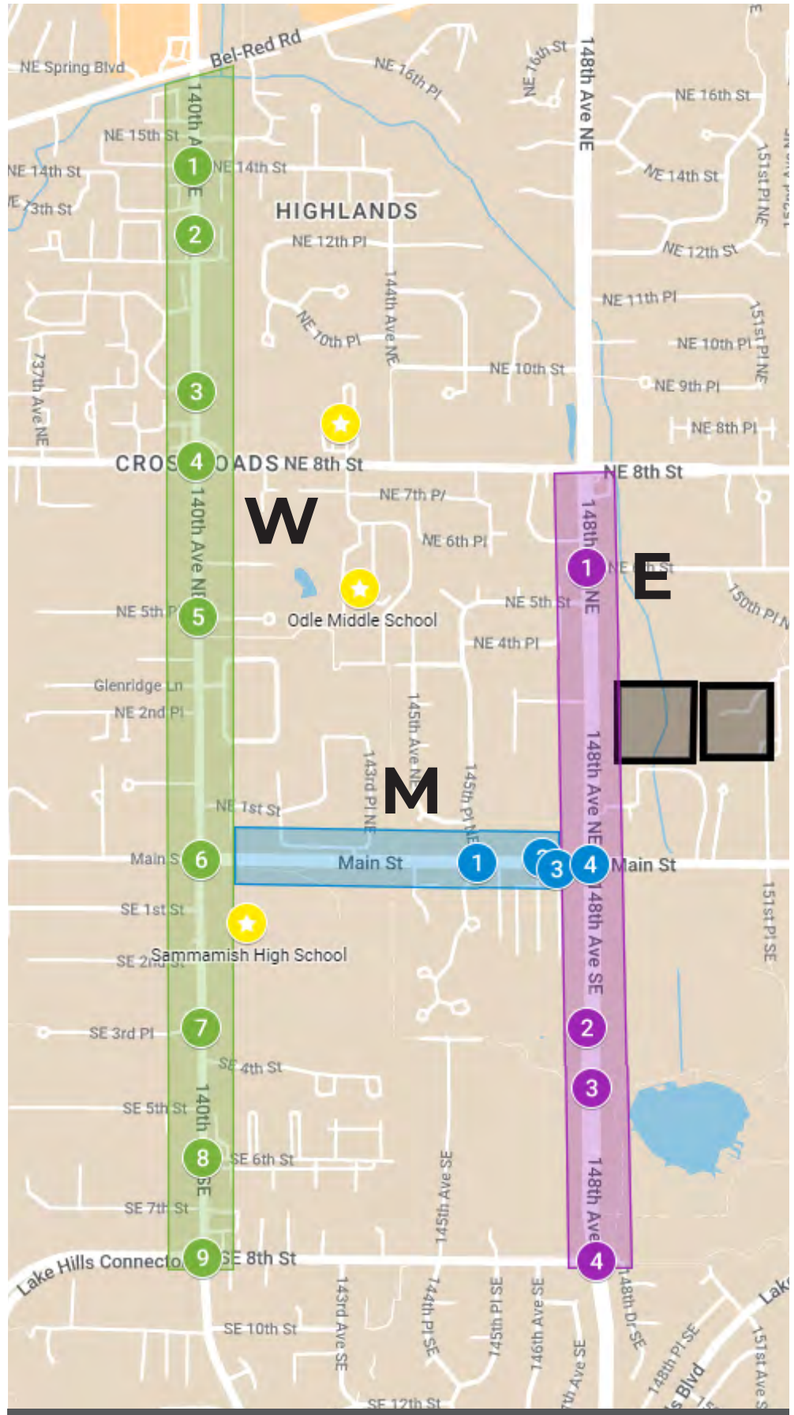


Figure 27: RSA 3 study area

CONCLUSION

RECOMMENDED POLICY CHANGES

Following discussions during the workshops, the following policy changes to City code are recommended to provide a more consistent application of safety treatments:

- Modify City code 11.32 in order to reduce minimum speed limits on residential streets to 20mph and arterials to 30mph.
- Provide additional design guidance on access management to ensure adequate sight distance from driveways and limit conflicts and exposures, especially for people walking and biking.
- Evaluate RTOR restriction on streets with high pedestrian crossing, intersection with high conflicts, or locations with children crossing for pedestrian safety. If prohibiting right turns on red is not possible, evaluate part-time RTOR.
- Evaluate pedestrian exposure time at all signalized intersections and update crosswalk timing design guidance to ensure adequate crossing time, and develop guidance for implementation of LPIs and other safety features near school zones and locations with high pedestrian volumes.
- Revisit Bellevue Municipal Code 9.11.100 regarding trash and recycle bin proper placement to ensure it is not in pedestrians walk path.

LESSONS LEARNED

Based on the success and lessons learned of this project, the following activities are recommended for future RSA projects:

- Incorporate previous technology-based studies (e.g., Transoft Solutions video analytics).
- Include community walking audits as part of the inputs for the RSA workshop.
- Use MURAL digital visual collaboration tool for the virtual RSA workshop to encourage parallel inputs by all participants.
- Coordinate with principals to distribute information on the RSAs to parents and students through flyers, announcements, websites, e-newsletters and text messages.
- Coordinate with school principals to provide community service credits to high school students who attend the community walking audits.
- Post informational Engaging Bellevue signage at intersections within the RSA area.
- Conduct social media outreach via Twitter, Nextdoor, and Facebook.
- Distribute information about the community walk audits to private schools, residential complexes, churches, retirement centers, and other community amenities.
- Develop a multi-language project website that hosts a questionnaire and an interactive comment map to gather public feedback in Spanish, Cantonese, Mandarin, Korean, Punjabi, Russian, and Vietnamese.
- Develop an online crash dashboard to easily select, filter and download WSDOT crash data for each RSA.
- Hold community walking audits on the weekends.

NEXT STEPS

The RSA findings should be revisited annually, and the City may consider conducting a follow-up RSA every 5 years, or on a schedule determined by the City during development of a citywide RSA program. Measuring the effectiveness of each improvement implemented is key to the success of eliminating fatal and serious injury crashes in these areas. The City should identify which improvements are working in order to apply them across Bellevue in similar contexts.

The City should move forward on near-term safety treatments deemed feasible, track the effectiveness of those treatments, and replicate those that provide the most benefit. For intermediate and long-term safety recommendations, City staff should begin the process of evaluating feasibility and begin identifying funding. This could include Federal and State funding.

Three more School Zone Bike-Ped RSAs will take place in 2023:

- Lake Hills Elementary School, Big Picture School, Phantom Lake Elementary School and Tillicum Middle School
- International High School
- Newport High School

Figure 28: RSA 2 City Field Audit near Highland Middle School.

Figure 29: Highland Middle School Student, Ethan Lee.

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