

Pavement Management: Accounting for Bicycle and Pedestrian Communities

Ian Macek , State Bicycle & Pedestrian Coordinator
Highways & Local Programs

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OVERVIEW

- WSDOT Highways and Local Programs
- Why plan for pedestrians and bicyclists?
- The Planning Process
- Bicycle and Pedestrian Design
- Questions



Highways & Local Programs

We provide educational, technical, and financial support with federal oversight to local customers to help them achieve their transportation goals...

- We are stewards of federal transportation funding
- We provide technical expertise and services related to federal and state requirements.
- We promote cooperative planning and partnerships.



Highways & Local Programs

- Pavement Services
- Traffic Services
- Bridge Technical Services
- **Community Design Assistance**
- Environmental Services
- Training



From Designing & Developing Streets for Everyone



Courtesy Benjamin Lee, FAIA

To Re-Designing and Re-Developing Streets



WHY PLAN FOR PEDESTRIANS & BICYCLISTS?



Protect Vulnerable Users

- Growing at-risk groups
 - Young
 - Aging
 - Disabled
- 85% of pedestrian and bicycle fatalities occur in urban areas- primarily on arterials
- More than 35% of pedestrian deaths occur at unmarked crossings



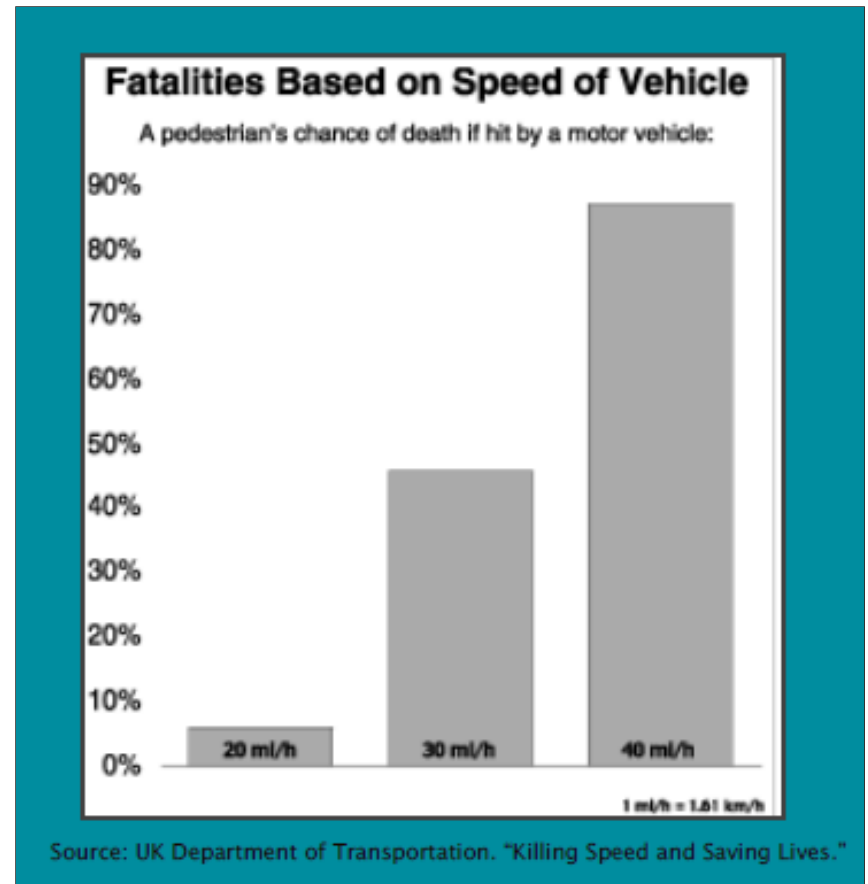
Protect Vulnerable Users

- About 15% of population has impairments which reduce and limit their mobility.
- Another 20% of the population has temporary mobility challenges at any given time.



Protect Vulnerable Users

- A one mile reduction in speed can reduce the frequency of traffic collisions by 5%
- Slower traffic also means fewer pedestrian fatalities from collisions that do occur



Provide Mobility Options

In Washington...

- More people bicycle and walk (13%) than take transit (5%)
- Bicycle commuting up 116% in WA over last 10 years
- 10% of all miles traveled are on foot or by bicycle



www.pedbikeimages.org / Dan Burden / Bellingham, WA

Create Healthy, Livable Communities

Of all trips:

- 50% are under 3 miles
- 28% are one mile or less
- 72% of trips one mile or less are driven



www.pedbikeimages.org / Jennifer Campos / Vancouver, WA

A group of cyclists is riding down a residential street. The cyclists are wearing bright yellow and red jackets, and some have backpacks. The street is lined with houses and trees. The sky is overcast. The text "PLANNING PROCESS" is overlaid on the image in large white letters.

PLANNING PROCESS

Public Outreach

Data Collection

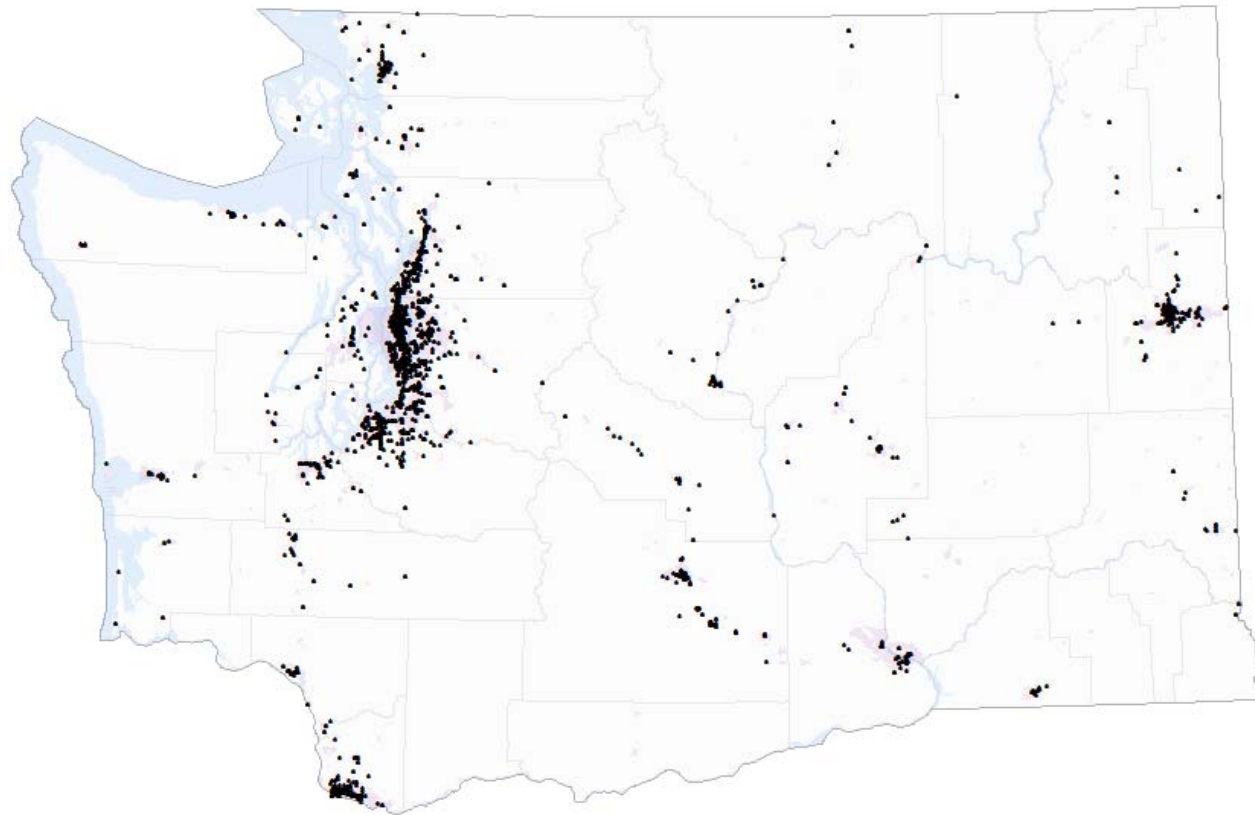
Walk/Bike Audits

Public Outreach

- Invite stakeholders to walk audits
- Conduct interviews
- Hold public meetings
- Survey citizens
- Use informational webpages

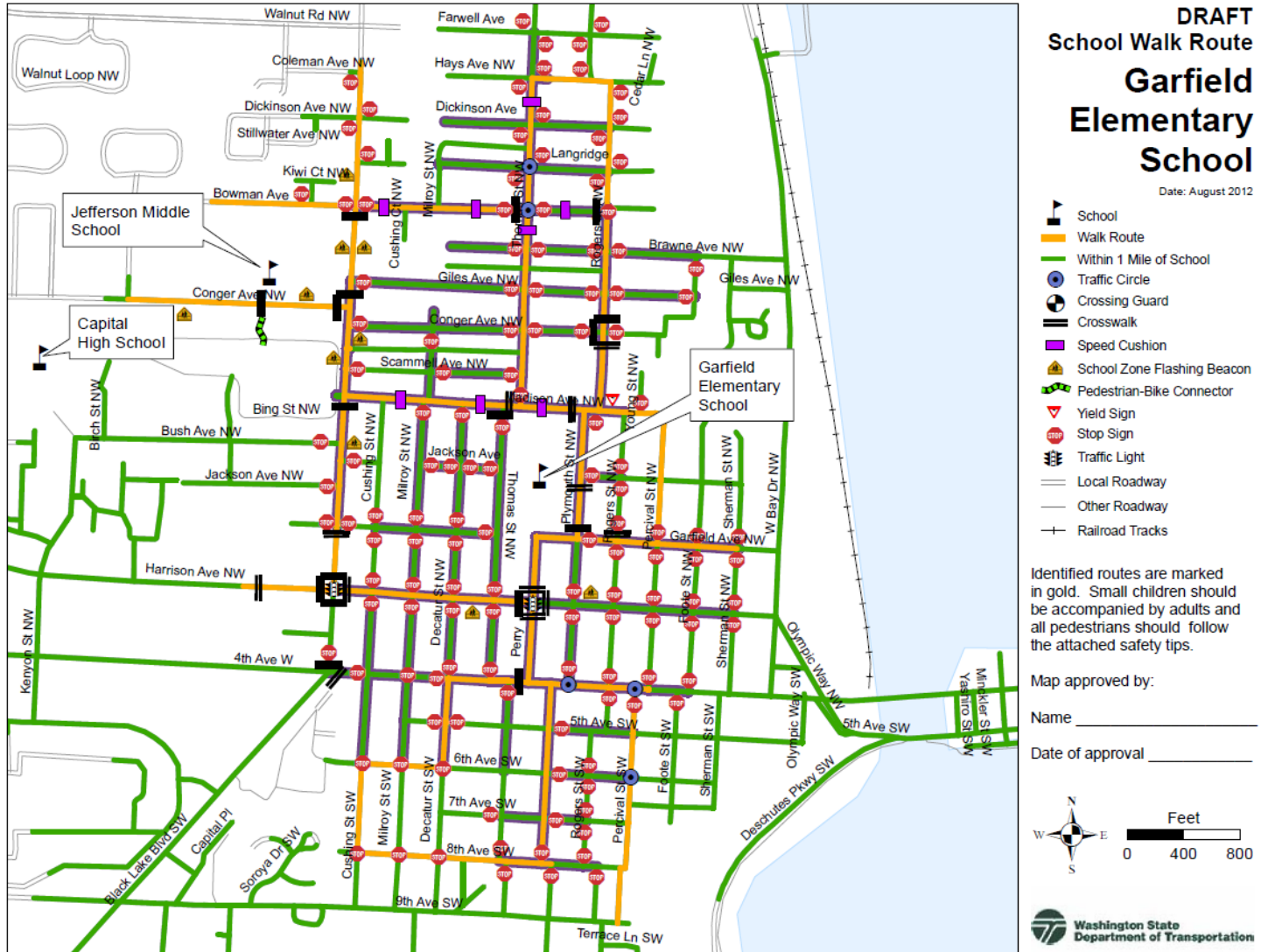


Data Collection: Collisions



◆ Crash
Location

Data Collection: Existing Conditions



Data Collection: Counts

Safe Routes to School Students Arrival and Departure Tally Sheet

+ CAPITAL LETTERS ONLY – BLUE OR BLACK INK ONLY +

School Name: _____ Teacher's First Name: _____ Teacher's Last Name: _____

Grade: (PK,K,1,2,3,...) _____ Monday's Date (Week count was conducted) _____ Number of Students Enrolled in Class: _____

0 2 M M D D Y Y Y Y 1 5

• Please conduct these counts on two of the following three days Tuesday, Wednesday, or Thursday. (Three days would provide better data if counted)
 • Please do not conduct these counts on Mondays or Fridays.
 • Before asking your students to raise their hands, please read through all possible answer choices so they will know their choices. Each Student may only answer once.
 • Ask your students as a group the question "How did you arrive at school today?"
 • Then, reread each answer choice and record the number of students that raised their hands for each. Place just one character or number in each box.
 • Follow the same procedure for the question "How do you plan to leave for home after school?"
 • You can conduct the counts once per day but during the count please ask students both the school arrival and departure questions.
 • Please conduct this count regardless of weather conditions (i.e., ask these questions on rainy days, too).

Step 1. Fill in the weather conditions and number of students in each class
Step 2. AM – "How did you arrive at school today?" Record the number of hands for each answer.
 PM – "How do you plan to leave for home after school?" Record the number of hands for each answer.

Key	Weather		Student Tally	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
	S= sunny	R= rainy	Number in class when count made	-	-	-	Only with Children from your family	Riding with children from other families	City bus, subway, etc.	Skate-board, scooter, etc.
Sample AM	S	R	2 0	2	3	8	3		3	1
Sample PM		R	1 9	3	3	8	1	2	2	
Tues. AM										
Tues. PM										
Wed. AM										
Wed. PM										
Thurs. AM										
Thurs. PM										

Please list any disruptions to these counts or any unusual travel conditions to/from the school on the days of the tally.

+ _____ +



Walking and Biking Audits



Bikeability Checklist

How bikeable is your community?

Riding a bike is fun!

Bicycling is a great way to get around and to get your daily dose of physical activity. It's good for the environment, and it can save you money. No wonder many communities are encouraging people to ride their bikes more often!



Can you get to where you want to go by bike?

Some communities are more bikeable than others: how does yours rate? Read over the questions in this checklist and then take a ride in your community, perhaps to the local shops, to visit a friend, or even to work. See if you can get where you want to go by bicycle, even if you are just riding around the neighborhood to get some exercise.



At the end of your ride, answer each question and, based on your opinion, circle an overall rating for each question. You can also note any problems you encountered by checking the appropriate box(es). Be sure to make a careful note of any specific locations that need improvement.

Add up the numbers to see how you rated your ride. Then, turn to the pages that show you how to begin to improve those areas where you gave your community a low score. Before you ride, make sure your bike is in good working order, put on a helmet, and be sure you can manage the ride



BICYCLE AND PEDESTRIAN DESIGN

Sidewalks and Accessibility

- Obstacles
- Driveways
- Running & Cross Slope
- Gaps and Openings
- Surfaces



Sidewalks and Accessibility



Sidewalks and Accessibility

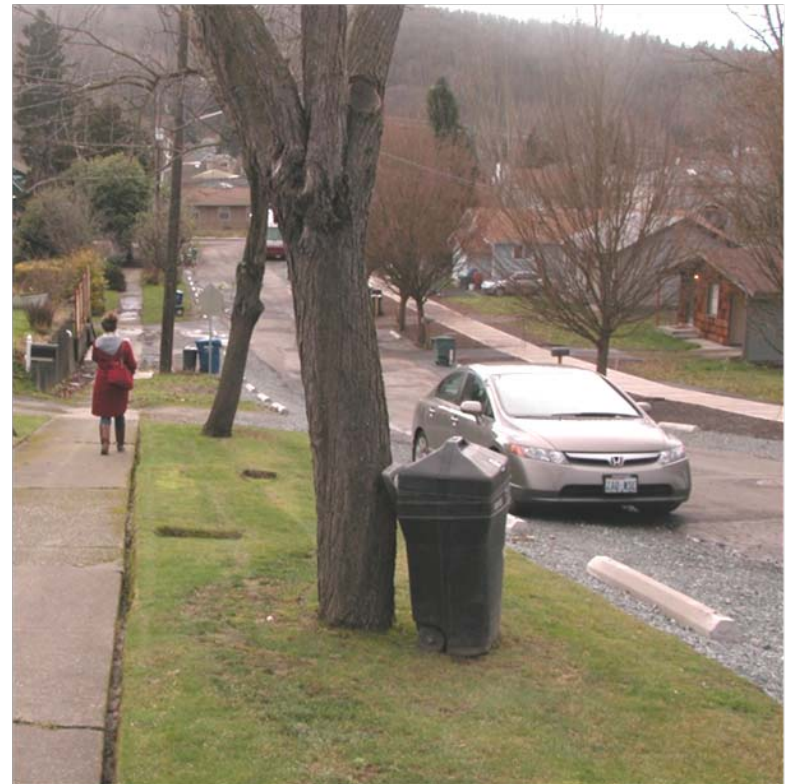


Sidewalks and Accessibility

Sidewalk adjacent to curb with bike lane



Sidewalk with buffer



Crossing Treatments

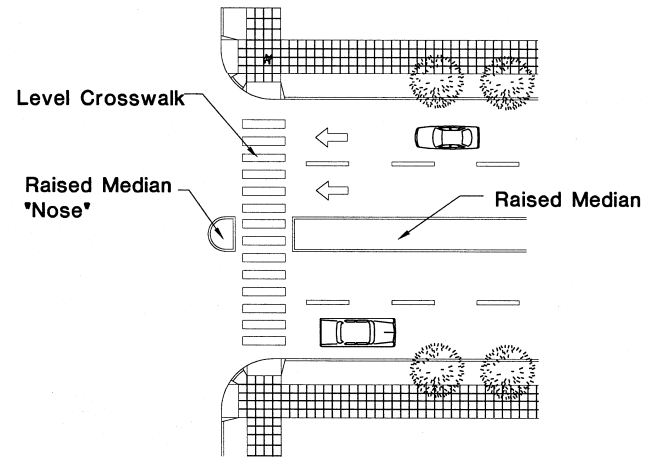
Consider the following:

- Who is crossing?
- Are there enough opportunities to cross?
- Are the crossings safe?
- Are there crossings for transit stops?



Crossing Treatments

Raised Medians vs. Two Way Left Turn Lanes



Crossing Treatments

Pedestrian Refuge Islands

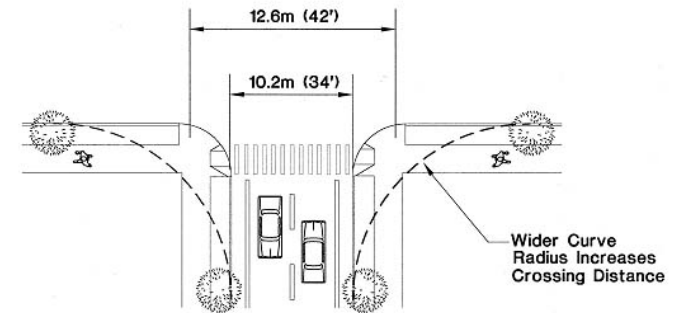
- 200'+ from intersection
- Good lighting
- Delineation and signs
- 45 angled degree cut



Crossing Treatments

Curb Radii

- Tightening curb radii
- Include curb extensions
- Restricting right-turn-on-red by cars



Crossing Treatments

Raised Crossings



Marked Crosswalk



Spokane County

Crossing Treatments

Rectangular Rapid Flashing Beacon



Interim approval for the use of RRFB's in WA

Overhead Flashing Beacon



Crossing Treatments

Hybrid Beacon



<http://www.pedbikeimages.org> Mike Cynecki

Crossing Treatments

Bicycle Signal





Pedestrian-Scale Lighting

Sidewalk Illumination



Crosswalk Illumination



Safe routes to transit

Transit stop with curb extension



Transit stop with accessible sidewalk and pedestrian lighting



Roundabouts



Bicycle Roundabout



Signage, striping, markings

Shared Lane Markings



In Street Signs



Wayfinding



Shared-Use Paths – Side Path

Before



After



Moses Lake – Longview Elementary

Shared-Use Paths – Side Path



Shared-Use Paths – Crossings



Cycle Tracks & Greenways



Cycle Tracks & Greenways



Cycle Tracks & Greenways

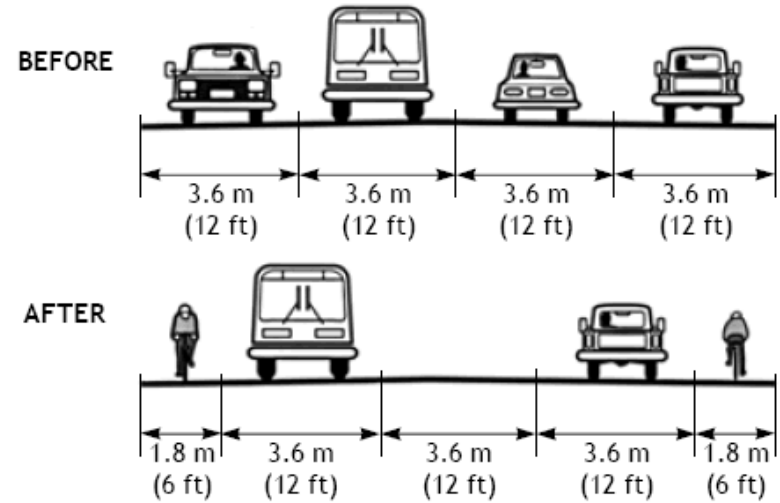


Bicycle Boulevard Intersection Treatment

Cycle Tracks & Greenways



Road Diets



Bike Lane Treatments

Bike Lane



www.pedbikeimages.org /Jennifer Campos

Contraflow Bike Lane



www.pedbikeimages.org /Dan Burden

Bike Lane Treatments



Transition from shoulder to bike lane at dedicated right turn lane

SR 305, Bainbridge Island, WA

Bike Lane Treatments

Buffered Bicycle Lanes



Bike Boxes and Green Colored Pavement



Interim approval for the use of green colored pavement in WA

Bicycle Parking

Curb extension bicycle racks



On street bicycle racks



Green Colored Pavement



- Conflict areas between bicyclists and motorists



Rumble Strips



- Not installing rumble strips on designated bicycle routes and other roads where bicycling is expected
- Providing minimum shoulder width
- Adjusting placement of the rumble strips
- Providing gaps in regular intervals
- Adjusting rumble strips dimensions
 - Width: 5 inches
 - Depth: 0.375 inches, and
 - Spacing: 11 or 12 inches

Chip Sealing



- Use a fine mix chip seal 3/8 in. (10mm) or finer
- Omit shoulders and/or bike lanes if in good repair
- If shoulder and/or bike lanes are included use 3/8 in. or finer for first pass and 1/4 in. for second
- Sweep shoulder following chip seal operations



QUESTIONS?

Resources...

WSDOT's Community Design and Other Websites

<http://www.wsdot.wa.gov/LocalPrograms/Planning/ada.htm>

<http://www.wsdot.wa.gov/LocalPrograms/ProgramMgmt/funding.htm>

<http://www.wsdot.wa.gov/LocalPrograms/Training/default.htm>

<http://www.wsdot.wa.gov/Walk>

<http://www.wsdot.wa.gov/Bike>

Contact WSDOT Community Design Assistance:

Paula Reeves

Manager, Community Design Assistance

Reevesp@WSDOT.WA.GOV

360-705-7258

Charlotte Claybrooke

Safe Routes to Schools Coordinator

ClaybrC@WSDOT.WA.GOV

360-705-7302

Ian Macek

Bicycle and Pedestrian Coordinator

Maceki@WSDOT.WA.GOV

360-705-7596

Ed Spilker

GIS and Local Planning Coordinator

Spilker@WSDOT.WA.GOV

360-705-7387

