

Urban Traffic Engineers Council (UTEC) / Institute of Transportation Engineers Washington State Section

Fall Meeting  
9/24/14

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**Good morning**

- Please take this time to network with each other from 8:30-9:00 a.m.
- Our meeting and webinar begin at 9:00 a.m.



Pumpkin carving near Washougal, WA  
Photo from flowerswashougal.com



Sunrise behind Mount Rainier  
Photo from Alanbauerphoto.blogspot.com



Fall wheat harvest near Steptoe, WA  
Photo from Wikipedia.org

Hello and welcome to:

# UTEC / ITE-WA

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Webinar attendees **and** In person attendees





**Instructions for webinar attendees**

- Press the orange arrow toggle button to show and hide the GoToWebinar screen.
- You are in listen-only mode but please still ask questions and make comments. Type them in the "Questions" box. We will read your question to the speaker for an answer.
- Please take breaks when needed.
- Have fun connecting across the state!



Photo courtesy of Pacific Technologies, Inc.

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**Instructions for in person attendees**

- Turn wireless devices to silent mode.
- Please move side conversations out of the room so that the webinar attendees and in-person attendees can hear better.
- Please speak loudly and clearly into the hand held microphone. We will try to repeat all questions.
- Feel free to move around the room and take breaks when needed.
- Restroom locations.
- Fire exits.
- Have fun connecting across the state!



**Welcome to**



**from:**  
**Cary Roe, City of Kennewick  
Public Works Director**

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**Introductions**

Please tell us your:

- Name
- Agency/Business name
- Announcement? (10 sec.)





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## Urban Traffic Engineers Council (UTEC)

- Founded ~1978-1979. We are more than 30 years old.
- Formed by city traffic engineers who met informally for lunch to discuss common issues.
- Group grew as other cities and also counties learned about the group. Consultants and vendors joined next.
- Now = 425 members who are traffic, transportation, and public works engineers, technicians, directors, managers, supervisors, planners, and related professionals.
- Approx. 250 current members (60%) attended a meeting in the past 7 years either in person or by webinar.
- Completed a strategic planning survey in 2013 of all members.



## Overview/Agenda

- The state of transportation issues in the City of Seattle
- Ideas on bicycle infrastructure design from Copenhagen, Denmark; Malmö, Sweden; and Vancouver, British Columbia
- 10 minute break
- Quantifying bicycle exposure: A mapping tool
- Ideas on bicycle infrastructure design from the Netherlands



## Overview/Agenda

- City of Pasco's Americans with Disabilities Act Sidewalk Transition Plan
- 10 minute break
- City of Spokane's photo red in school zones program and using it as a funding source for neighborhood traffic calming programs



- City of Spokane's photo red in school zones program and using it as a funding source for neighborhood traffic calming programs
- Roundabouts – signs, markings, and landscaping: City of Kennewick's experience
- Optional unofficial guided tour of City of Kennewick roundabouts, rectangular rapid flashing beacons, and flashing yellow arrows

## Briefing to UTEC / ITE WA

Downtown Seattle Transportation Issues



Dongho Chang  
City Traffic Engineer  
Sept 24, 2014



## SDOT's mission & vision

Mission: delivering a first-rate transportation system for Seattle.



Vision: a vibrant Seattle with connected people, places, and products.

## SDOT's core principles



## Presentation overview

- State of transportation in Downtown Seattle: Access Seattle
- Program highlights:
  1. Center City Streetcar System
  2. Performance-based Parking Pricing Program
  3. Parklet Program
  4. Bicycle Master Plan Implementation
- Questions/discussion

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## Access Seattle



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## Context

- Unprecedented growth and development
- Progressive policies yield strong housing and job growth in Center City
- Neighborhoods outside of Center City are growing and want to remain vibrant and thriving



Source: Downtown Seattle Association

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## Meeting expectations

- **Multi-modal options are expected**, but narrow streets mean trade-offs to build high quality transit, walking, and biking facilities
- **New technologies** used by peer cities proving successful at managing mobility and sharing information
- **Future vision, plan, operational strategy, and proactive approach** to deliver on these expectations is expected by City leadership and external partners
- **Comprehensive communication plan** is vital to our success

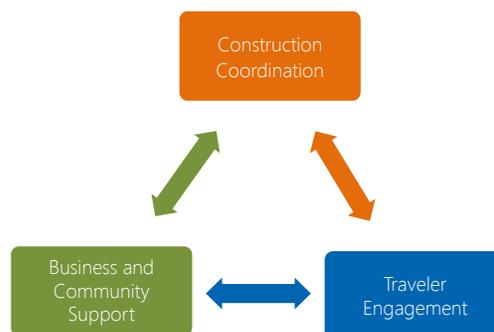
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## The "Run-Up" to Access Seattle 2014

- 2003: Center City Circulation Report – Transportation and Infrastructure
- 2004: Right of Way Management Initiative  
Center City Access Strategy
- 2005: Center City Construction Coordination Program
- 2009: Pedestrian Access around Construction Zones Standards
- 2013: Next Generation Intelligent Transportation System (ITS)  
Development of Construction Hubs  
Downtown Access Strategy
- 2014: "Construction Coordination Assessment Services Report"

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## Three Pillars of Access Seattle



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## 1. Construction coordination

**Mission:** Coordinate construction and all activity that impacts right-of-way mobility

**Target Audience:** Everyone performing work or having events that affect the right of way

**Potential Strategy:** Establish formal Command Center to centralize and improve coordination functions



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**Leveraging opportunities:**  
Construction Hub  
Coordination Program

- Partners and stakeholders:**
- All SDOT Operational Divisions
  - Office of the Waterfront
  - DPD
  - SCL
  - WSDOT
  - KC Metro
  - Parks, SPU and other Operational Departments
  - Port of Seattle



## Construction hub program objectives

- Assess all project schedules together – identify conflicts and minimize mobility and access impacts
- Mapping systems to show planned and active mobility impacts from all hub-area construction, in all phases
- Establish reliable lines of communication with impacted communities
- On-site enforcement to respond to complaints, monitor schedule impacts, resolve conflicts and coordination issues



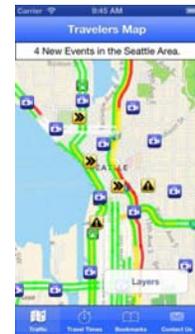
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## 2. Traveler engagement

**Mission:** Engage travelers with real-time, actionable information on travel and transportation options

**Target Audience:** Traveling public

**Potential Strategy:** Develop "One Stop" mobile app and other dynamic tools that provide information on construction activity, parking, and optimal modal choice



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### Next Generation Center City ITS

Will increase our ability to manage mobility for all modes in Center City during particularly heavy periods of construction.



### Examples of system improvements:

- Real-time responsive signal timing
- Adaptive signal control on key corridors feeding into Center City
- Dynamic signs allow SDOT to modify lane assignments and improve traffic flow



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## Examples of communications programs

- Traveler Information Map available as smart phone app that shows:
  - parking availability
  - construction impacts
  - transit info and travel times
  - customized for specific traveler's route
- Sensors that provide travel time information
- Dynamic signs showing travel times on multiple routes
- e-Park expansion into SODO and Seattle Center area
- Automated commercial vehicle load zone occupancy information



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### 3. Business and community support

**Mission:** Support business districts as thriving destinations by ensuring inviting experience and intuitive wayfinding

**Target Audience:** Business owners, residents, and visitors in construction hubs

**Potential Strategies:**

- Designate an SDOT Ombudsman for all construction-related issues, spanning across public and private projects
- Develop a "Construction Hub Toolkit" to soften impacts by providing business assistance, signage and streetscape improvements, etc.



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### Early lessons learned

- One person to plan for and resolve construction related issues with businesses
- Provide marketing and promotional opportunities for businesses most affected by construction
- Develop business assistance fund or leverage existing City-managed business assistance funds
- Tell the story of how each project is meeting our land use and transportation goals
- Treat each builder as a potential partner



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### Early lessons learned

Ensure traffic control and project area does not conflict with promotion and wayfinding

Separate traffic control functions from wayfinding and promotional functions



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### Center City Streetcar System



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### Transit in Seattle-The Role of Streetcars

- Light rail as regional spine
- Streetcar and BRT in city's high capacity corridors
- Buses continue to serve most transit corridors



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### Transit in Seattle-The Role of Streetcars

- Ride quality, accessibility, and intangibles attract new riders
- Placemaking and catalyst for development
- Higher capacity for urban circulator service



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### Center City Connector Project Purpose & Need

**Purpose:**

- Connect the South Lake Union and First Hill streetcars
- Improve north-south transit mobility through downtown

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### Center City Connector Role in Seattle Transit System

- Creates critical transit capacity in constrained Center City
- Center City Streetcar System enables “transit grid”
- Supports expanding regional rail system

Arterial bus routes help form high frequency transit grid.

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### Proposed Alternative

**Alignment**

- 1<sup>st</sup> Ave Pike to Jackson
- East-West options:
  - Stewart – Olive
  - Pike/Pine – 4<sup>th</sup>/5<sup>th</sup>/6<sup>th</sup>

**ROW Treatment**

- Exclusive running
- Center running on 1<sup>st</sup>

**Mode**

- Modern streetcar

**Capital Cost (including fleet)**

- \$110 M

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### Anticipated Operating Plan

“Hub to Hub”

- 5-minute headway between Westlake and International District hubs
- Weekday operations from 5 a.m. to 1 a.m.

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### Performance-Key Benefits

- 23K to 30K estimated weekday daily trips (2018 system )
  - 18K-25K on CCC segment
  - Forecast with FTA STOPS model
- Exclusive transit way provides 35% travel time advantage over mixed traffic
- Enhanced reliability of exclusive transit way (12% variance during peak v. 26% in mixed traffic)

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### Capital Finance – Future Decisions

Capital Costs

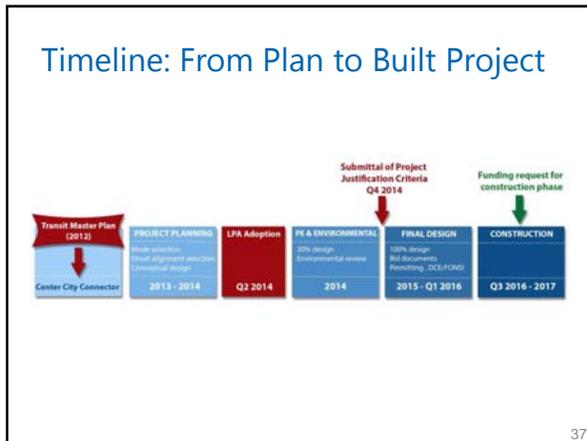
Total Development Cost: **\$110M**

Capital Sources

- FTA Small Starts:
- Broad Range of Potential Sources for Local Share:
  - Voter-Approved
  - LID
  - Street Vacations
  - Bonded General Fund or CPT
  - Etc.

**up to \$75M**

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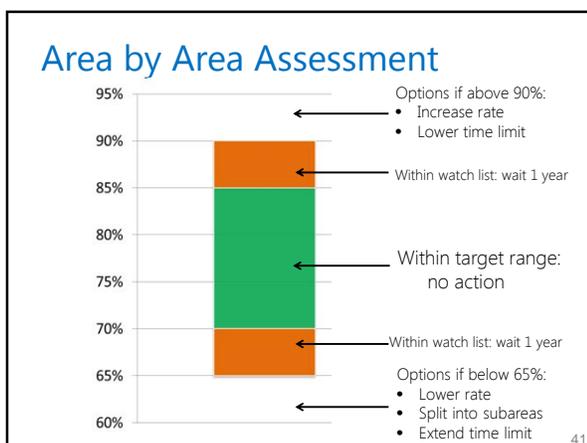


### Data-Driven Policy

- Keep 1 to 2 spaces open per blockface throughout the day
- Collect data in all paid areas annually
- Make annual data-driven rate, hours of operation, and time-limit adjustments to meet City policy

### 2014 Analytical Process

- Use parking data to calculate peak occupancy per area or subarea
- Compare with target occupancy range and watch list
- If above or below target occupancy range and watch list, adjust rates, time limits, hours of operation



### Example: Time of Day Rates

Area	Current Rate	2013 data (target range 70-85%)	Proposal
Pioneer Square Core	\$3.50/ hour	Morning occupancy = 64%; Below target Afternoon occupancy = 95%; Above target	Lower morning to \$3.00/ hour Raise afternoon to \$4.00/ hour
Pioneer Square Periphery	\$3.00/ hour	Morning occupancy = 64%; Below target	Lower morning to \$2.50/ hour



## Seattle's Pilot Parklet Program

### Program goal

Provide additional public open space in Seattle neighborhoods

### Parklets in Seattle are...

- Street activators that create vibrant neighborhoods
- Public; not for use just by customers
- Privately funded & maintained
- Temporary & permitted annually

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## Parklet Example: Chinatown-ID



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## Background

- BMP update launched spring, 2012
- Council direction:
  - Include cycle tracks and neighborhood greenways
  - Incorporate new standards based on NACTO Urban Bikeways Guide
  - Develop clear prioritization framework



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## Implementation approach

- New SDOT implementation actions
  - Prioritization process
  - Bicycle project delivery process
- Coordination with other city departments and partners
- Maintenance of and improvements to bicycle facilities
- Performance measures
- Develop 3-5 year implementation plan



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## Example: Broadway Cycle Track

VISION: Riding a bicycle is a comfortable and integral part of daily life in Seattle for people of all ages and abilities.



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## Questions?



<http://www.seattle.gov/transportation>



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## Lessons from Copenhagen



2014 ITE WA/UTEC Meeting  
Dongho Chang, City Traffic Engineer  
September 24, 2014



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## SDOT's mission & vision

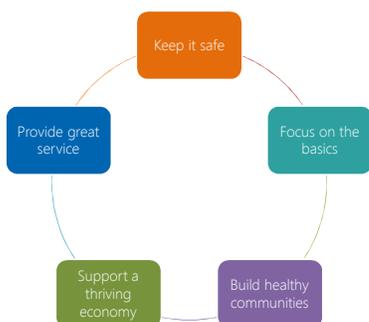
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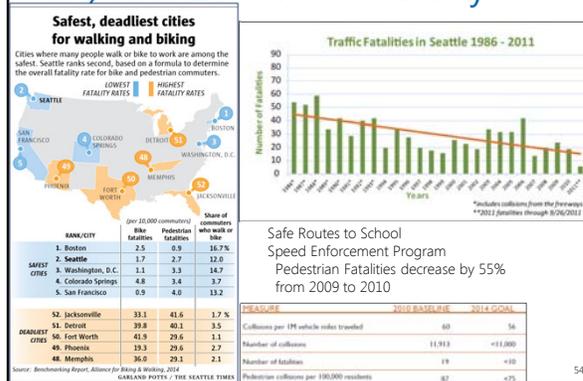
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## SDOT's values

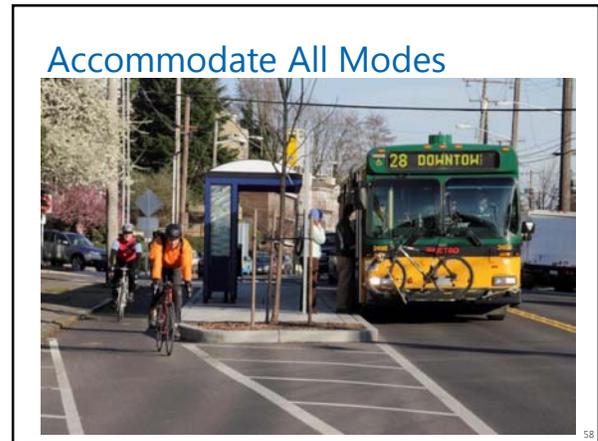


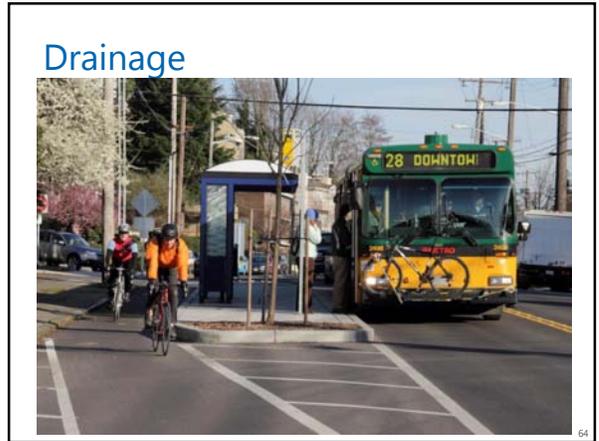
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## City with Zero Traffic Fatality



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### Traffic Calming





## Questions?

Dongho.Chang@seattle.gov | (206) 684-5106  
<http://www.seattle.gov/transportation/bike.htm>

<http://www.seattle.gov/transportation>




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## Quantifying Bicycle Exposure



Seth Cool  
 MS in Bioregional Planning & Community Design,  
 University of Idaho

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### **Project Goal:**

Create a sketch level process to quantify bicycle exposure for scenario analysis.




- BACKGROUND
- METHOD
- RESULTS
- CONCLUSIONS

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## BACKGROUND

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### The Challenge of Bicycle Accident Analysis

1. Lack of Bicycle Volume Data (Liu et al., 2012)
  - Data collection in the field is rare
  - Forecast models have poor accuracy
2. Lack of Bicycle Accident Data (Schimek, 2014)
  - Relatively few accidents occur
  - Many accidents not reported (89%)
  - Police reports not descriptive

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### Citizen Volunteer Counts

National Bicycle and Pedestrian Documentation Project  
 Conducting Counts



Alta Planning + Design  
 National Bicycle and Pedestrian Documentation Project 

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### Dangerous Situations (Situational Antecedents to accidents)

Dangerous Situation	Description	References
Mixed cycling in harsh traffic	Cycling in the vehicle travel lane on a road with high vehicle volume, speed, and/or percent heavy	Mapes, 2009; Teschke, 2012; Harkey and Stewart, 1997; Elvik et al., 2009; Moritz 1997; Timsworth et al., 1994; Allen-Munley et al., 2004; Klop and Khattak, 1999; Vandenbulcke 2013; Schepers et al., 1999
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Dooring and vehicle parking	Availability of doorways and parked vehicles	Mapes, 2009; Teschke, 2012; Harkey and Stewart, 1997; Elvik et al., 2009; Moritz 1997; Timsworth et al., 1994; Allen-Munley et al., 2004; Klop and Khattak, 1999; Vandenbulcke 2013; Schepers et al., 1999
Frequent access points	High frequency of driveways	Allen-Munley et al., 2004; Emery and Crump, 2003

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### Dangerous Situations

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Crossing harsh traffic	Crossing a road with high vehicle volume, speed, and/or percentage heavy vehicle	Summala et al., 1996; CROW, 2007; Schepers et al., 2011
Complicated intersections	Complex intersection geometries	Summala et al., 1996; CROW, 2007; Schepers et al., 2011
Right hook	Cyclist crossing the path of a motor vehicle from the right	Summala et al., 1996; CROW, 2007; Schepers et al., 2011
Left sneak	Cyclist crossing the path of a motor vehicle from the left	Summala et al., 1996; CROW, 2007; Schepers et al., 2011
Thru clip	Cyclist crossing the path of a motor vehicle from the front	Summala et al., 1996; CROW, 2007; Schepers et al., 2011
Gaps in bicycle network	Discontinuities in the bicycle network	Summala et al., 1996; CROW, 2007; Schepers et al., 2011
Wrong-way riding	Cycling the wrong way on a one-way street	Wachtel and Lewiston, 1994; Bishnes and Summala, 1998; Schmek, 2014; Summala et al., 1996; Hunter et al., 1999;
Sidewalk riding	Cyclist utilizing sidewalks	Schmek, 2014; Wachtel and Lewiston 1994;
Infrequent cyclists	Low cyclist volume	Elvik et al., 2009; Jacobsen, 2003; Nordback et al., 2014; Budge and Larsson, 1993; CROW 2007

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## METHOD

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### Method

- Step 1. Spatially Extrapolate Across Network
- Step 2. Temporally Extrapolate 2 Hour to AADB
- Step 3. Define Exposure Metrics
- Step 4. Calculate Exposure

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### Step I. Spatially Extrapolate Across Network

Observed Count Points

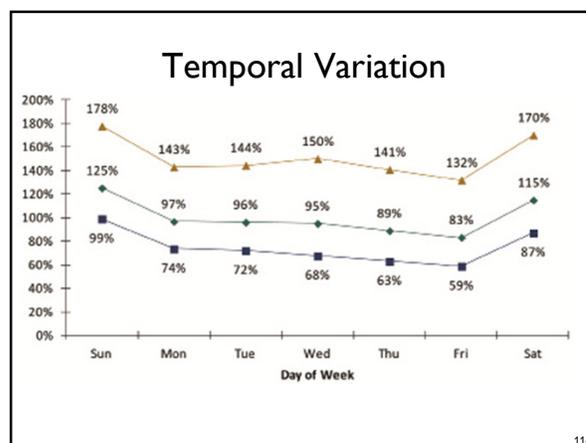
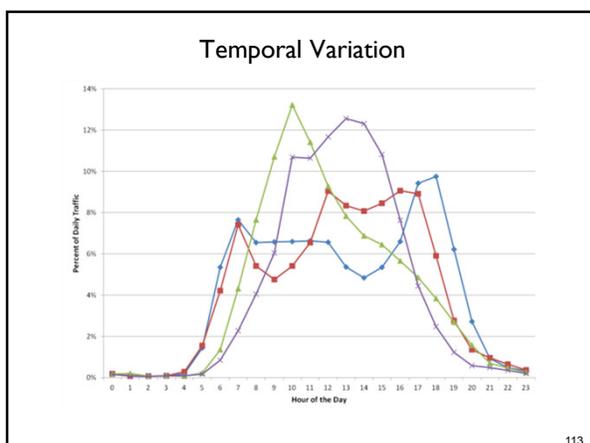
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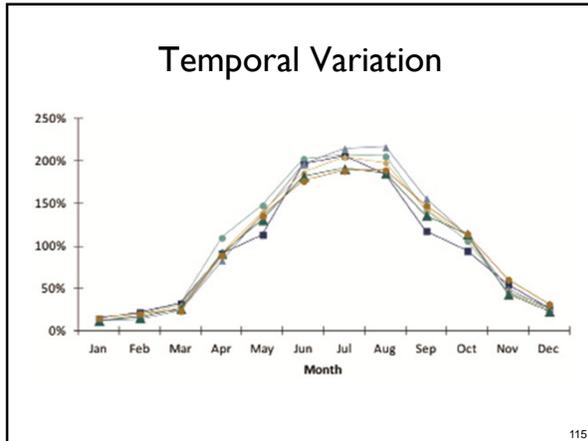
Estimated Bike Volumes

**Observed Count Points**                      **Network-wide 2 Hour Volume**

McDaniel, S. and Lowry, M., and Dixon, M. (2014). "Using Origin-Destination Centrality to Estimate Directional Bicycle Volumes." *Transportation Research Record*.

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### ADJUSTMENT FACTORS

Factor	Path	Street
AM Two Hour	0.11	0.12
PM Two Hour	0.18	0.17
Monday	0.15	0.11
Tuesday	0.16	0.10
Wednesday	0.16	0.11
Thursday	0.15	0.10
Friday	0.14	0.11
Saturday	0.11	0.21
Sunday	0.10	0.21
January	1.43	1.67
February	1.43	1.67
March	1.33	1.54
April	1.11	1.25
May	0.91	1.00
June	0.77	0.77
July	0.67	0.57
August	0.67	0.57
September	0.77	0.71
October	1.00	1.11
November	1.54	1.67
December	1.54	1.67

AADB Adjustment Factors based on:

Nordback, Marshall, and Janson. (2013) *Development of estimation Methodology for Bicycle and Pedestrian Volumes based on Existing Counts.*

Lindsey, G., Chen, J., and Hankey, S. (2013). "Adjustment Factors for Estimating Miles Traveled by Nonmotorized Traffic."

National Bicycle and Pedestrian Documentation Project (NBPDF), Institute of Transportation Engineers and Urban Planning, <http://bikepeddocumentation.org/>

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### Step 2. Temporally Extrapolate 2 Hour to AADB

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### Step 3. Define Exposure Metrics

**Community-specific metrics should be based on:**

- Public involvement
- Local experience
- Latest research

Dangerous Situation	Metric
Separated cycling in harsh traffic	Bike lane Vehicle volume > 8,000 AADT
Mixed cycling in harsh traffic	No bike lane Vehicle volume > 3,000 AADT
Cramped space	Vehicle lane width < 12 ft Vehicle volume > 1,000 AADT Vehicle speed limit > 20 mph
Parking maneuvers and dooring	Parking turnover > 4 maneuvers per hr
Frequent access points	Access points > 30 per mile
Steep grade	Grade > 4%
Wrong-way riding	Wrong-way riding occurrence
Unexpected cyclists	Cyclist volume < 50 AADB

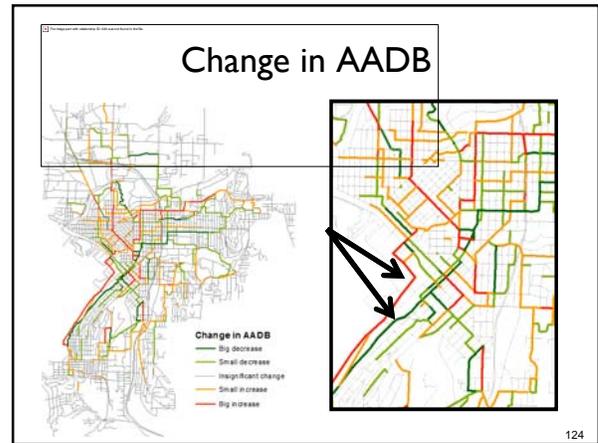
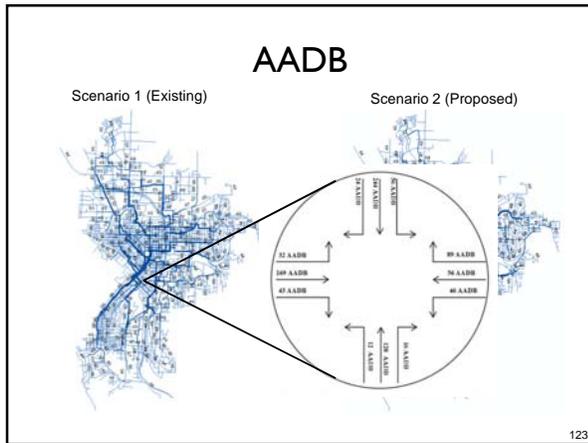
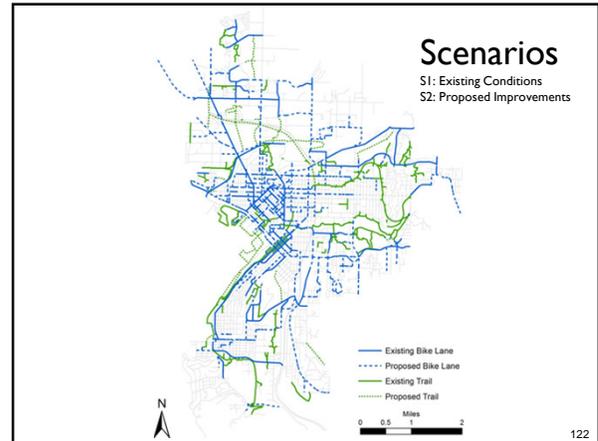
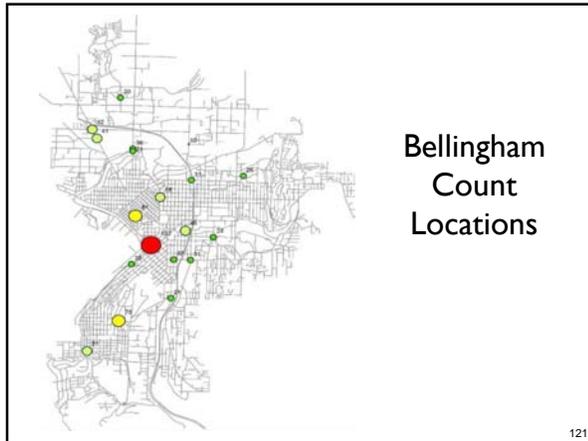
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### Step 4. Calculate Exposure

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## RESULTS

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**Bicycle Miles Travelled by Facility**

Facility	Scenario 1:		Change
	Existing Conditions	w/Proposed Improvements	
Trail	15%	20%	6
Local			
standard	46%	33%	-14
bike boulevard	0%	12%	11
Collector			
no bike lane	8%	6%	-3
bike lane	2%	4%	2
Minor Arterial			
no bike lane	12%	5%	-7
bike lane	5%	12%	7
Arterial			
no bike lane	9%	4%	-5
bike lane	2%	4%	2
<b>Total</b>	<b>100%</b>	<b>100%</b>	

125

**Exposure Along Street Segments**

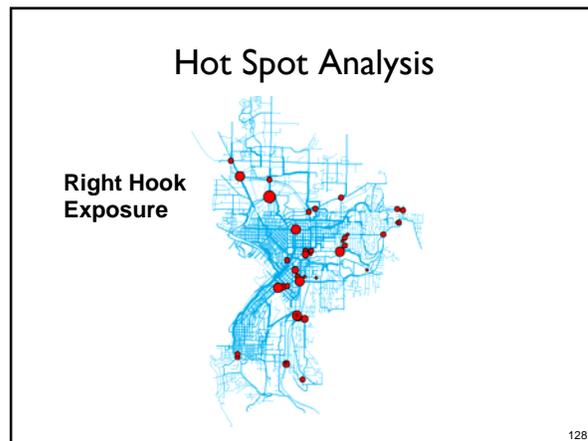
Dangerous Situation	Metric Conditions	Scenario 1: Existing Conditions (Annual BMT)	Scenario 2: w/Proposed Improvements (Annual BMT)	Change (Annual BMT)	Percent Change
Mixed cycling in harsh traffic	No bike lane				
	Vehicle volume > 3,000 AADT	666,000	272,000	-394,000	-59%
Dedicated ROW in harsh traffic	Bike lane				
	Vehicle volume > 8,000 AADT	97,000	250,000	153,000	158%
Cramped space	Veh. lane width < 12 ft				
	Vehicle volume > 1,000 AADT	307,000	180,000	-127,000	-41%
	Vehicle speed limit > 20 mph				
Dooring and vehicle parking	Vehicle parking				
	turnover > 4 per hr	2,646,000	2,746,000	100,000	4%
Frequent access points	Access points				
	> 30 per mile	3,923,000	3,847,000	-76,000	-2%
Steep grade	Grade > 4%	197,000	197,000	0	0%
Wrong-way riding	Wrong-way riding occurrence	134,000	145,000	11,000	8%
Infrequent cyclists	Cyclist volume < 15 AADB	1,151,000	1,096,000	-55,000	-5%

126

### Exposure at Intersections

Dangerous Situation	Metric Conditions	Scenario 1: Existing Conditions (Annual Bicyclists)	Scenario 2: w/Proposed Improvements (Annual Bicyclists)	Change (Annual Bicyclists)	Percent Change
Crossing harsh intersections	Cross street vehicle volume > 2,000 AADT	7,114,000	6,647,000	-467,000	-7%
Right hook	Vehicle right turns > 1,000 AADT	605,000	577,000	-28,000	-5%
Left sneak	Oncoming thru vehicle volume > 2,000 AADT	7,516,000	7,523,000	7,000	0%
Thru clip	Oncoming left-turn vehicle volume > 1,000 AADT	615,000	613,000	-2,000	0%

127



### Conclusions

The GIS tools are operational, easy to use, and require commonly available data.

Interesting dynamics in dangerous turn movements

- 5% decrease in right hook exposure
- 7% reduction in harsh intersection crossings

129

### Future Work

1. Improved Data Collection
2. Safety Performance Functions (SPFs) to estimate expected accident frequency.
3. Crash Modification Factors (CMFs) to estimate expected reduction from proposed improvements.

---

Condition: Collector and Arterial Intersection  
 SPF: expected right hook accidents =  $\beta_0 + \beta_1(\text{right hook exposure})$   
 CMF: green painted conflict zone = 12% reduction

130

Thank you...

...Questions?

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 360-220-2477

132

### Ideas on Bicycle Design from The Netherlands

Presented by:  
 Seth Cool, MS in Bioregional Planning & Community Design

132

### Dutch Street Types

Infrastructure design informs driver of the speed limit

30km/h (19 mph) "Woonerf"	50km (31 mph) Urban thru street
60 km/h (37 mph) Rural local road	70+ km/h (44+) Fast traffic road

133

### Woonerf: "Living Area"

Urban local street 30km (19 mph)

134

### Woonerf: "Living Area"

Urban local street 30km (19 mph)

- Mixed traffic
- Local access only
- Frequent turns, cul-de-sacs, dead ends
- Brick pavement, skinny width
- Speed tables
- Signage

135

### Woonerf

136

### Woonerf

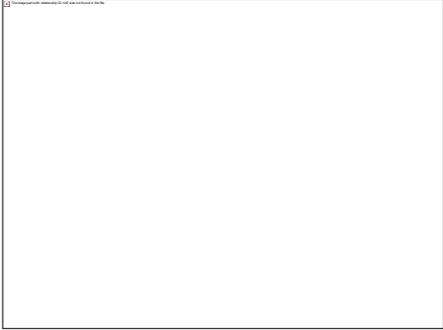
137

### Woonerf Speed Tables

138

### Woonerf

Speed Tables at a bicycle path crossing

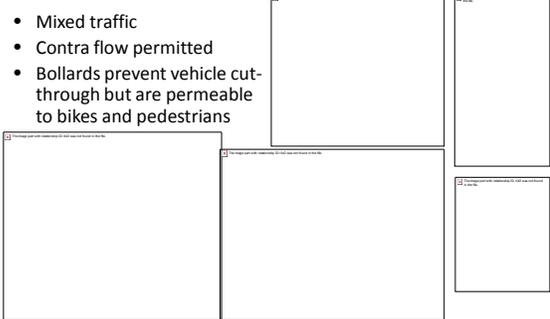


139

### Woonerf

Integral part of bicycle network

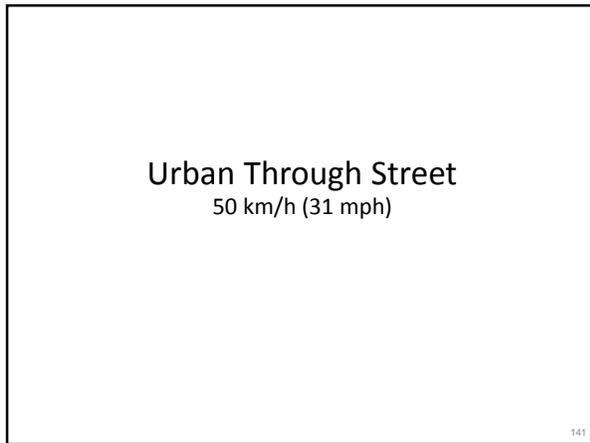
- Mixed traffic
- Contra flow permitted
- Bollards prevent vehicle cut-through but are permeable to bikes and pedestrians



140

### Urban Through Street

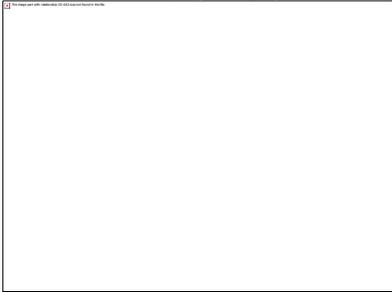
50 km/h (31 mph)



141

### Urban Through Street

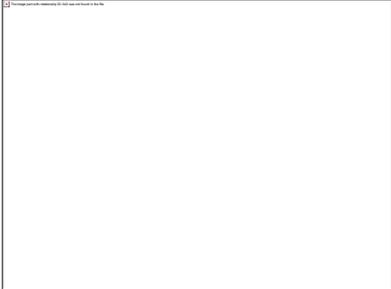
50 km/h (31 mph)



- Asphalt pavement
- Bike lane or cycle track

142

### Urban Through Street

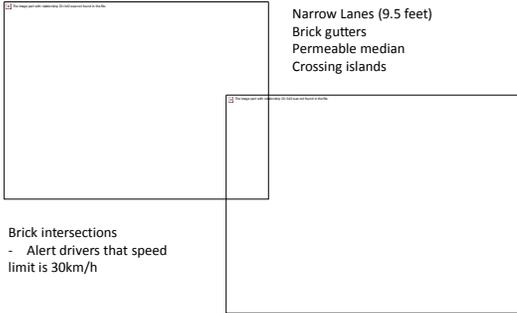


143

### Urban Through Street

Traffic Calming Concepts

- Narrow Lanes (9.5 feet)
- Brick gutters
- Permeable median
- Crossing islands



- Brick intersections
- Alert drivers that speed limit is 30km/h

144

**Rural Local Road**  
60 km/h (37 mph)

145

**Rural Local Road**  
60 km/h (37 mph)

Advisory Bike Lane  
OR  
Bike Lane  
OR  
Cycle Track

No centerline: Encourages vehicle drivers to provide space for cyclists & reduce speed due to oncoming vehicles in shared lane

146

**Fast Traffic Road**  
70+ km/hr (44+ mph)

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**Fast Traffic Road**  
70+ km/hr (44+ mph)

Separate conflicting modes

- No bike lanes
- Separated cycle track only
- No pedestrians
- No on-street parking
- Concentrated bicycle and pedestrian crossings
- Tunneling if possible

148

**Bicycle and Pedestrian Crossings**

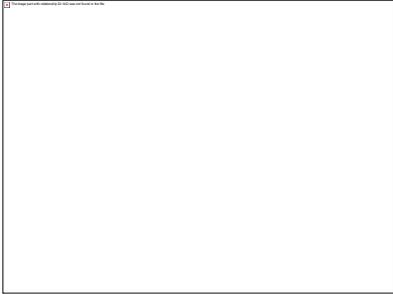
149

**Roundabout Design**

- Single lane for bicycle and pedestrian safety
- Separated cycle tracks are safer than bike lanes through roundabouts
- Pedestrian safety islands
- Painted markings
- Colored pavement
- Space for cars to wait for cycles and pedestrians to cross
- Crossing distances are minimized

150

### Cycle Track Crossing Design



- Cycle track jogs at intersection to alert cyclists & provide space for vehicles to yield
- Minimal crossing distances
- Safety islands
- Faux speed hump paint
- Paint markings clearly indicate priority
- Signage
- Brick pavement at intersection

151

### Cycle Track Crossing Design

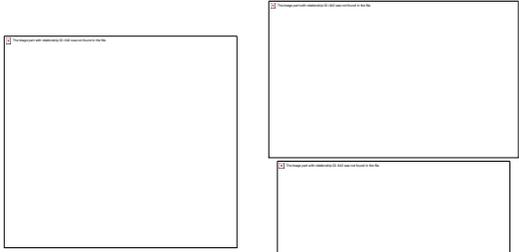
Raised crossing through intersection slows vehicles to safe speeds



152

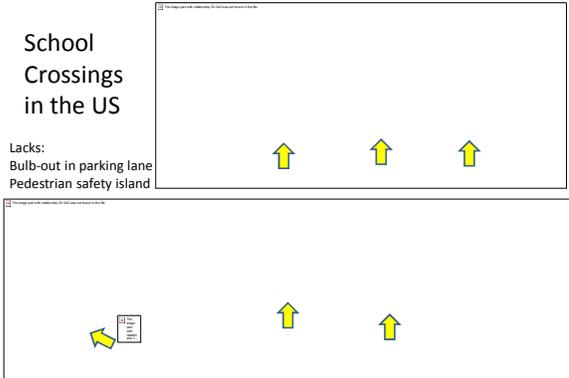
### Fast Traffic Road

“Safety in Numbers” - Concentrated crossings



153

### School Crossings in the US



Lacks:  
Bulb-out in parking lane  
Pedestrian safety island

Concerns: It is difficult to see pedestrians obscured by parked cars.  
Crossing distance is long which increases vehicle delay.

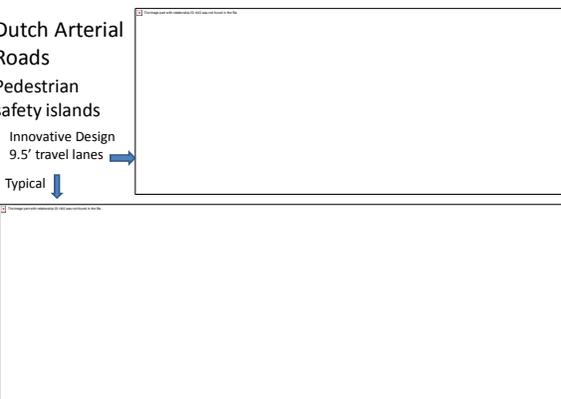
154

### Dutch Arterial Roads

Pedestrian safety islands

Innovative Design  
9.5' travel lanes →

Typical ↓

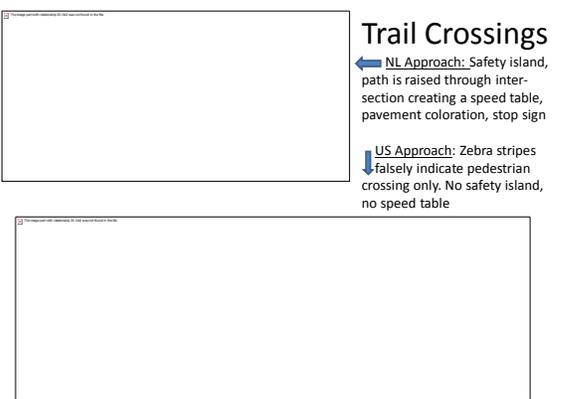


155

### Trail Crossings

← NL Approach: Safety island, path is raised through intersection creating a speed table, pavement coloration, stop sign

↓ US Approach: Zebra stripes falsely indicate pedestrian crossing only. No safety island, no speed table



156

### Other Innovations that Increase Safety

**Narrow 9.5' Wide Lanes**



**Reduced Number of Lanes**



Replace signals with Roundabouts



**Strategy**

- Road design encourages drivers to reduce speeds
- Improved intersections decrease overall travel times

157

## Thank you

## Questions?

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360-220-2477

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## Break time 5 minutes

159



### The City of Pasco Americans with Disability Act Sidewalk Transition Plan

## Urban Traffic Engineers Council (UTEC)

### September 24, 2014

Ahmad Qayoumi, PE  
Public Works Director

160



### Why prepare a sidewalk transition plan?



- ADA is a civil rights statute that prohibits discrimination against people who have disabilities.
- Inaccessible sidewalks constitutes discrimination.
- Cities are required to prepare an "ADA Transition Plan".
- Proactive planning results in better streets and minimizes risk of costly lawsuits

161



### Why prepare a sidewalk transition plan?

- We Are in Public Services to Provide Mobility Facilities for All
- It Is A Moral Responsibility
- We Will Reach Age You & Family Friends will need it
- It Is The Right Thing To Do!!




162

**What is a Sidewalk Transition Plan?**

A Sidewalk Transition Plan should include:

- A list of barriers that need to be removed
- A plan to remove the barriers
- A schedule to remove the barriers
- A responsible official to implement the plan
- A grievance process that assures follow-through

163

**Important Details**



Accessible sidewalks benefit more just the disabled  
 Citizen input is important, especially from the disabled  
 Policies and procedures were reviewed  
 A formal "request" procedure has been prepared

164

**Curb Ramps & Complete Streets**



165

**Citizen Involvement is key!**



Include input from the disabled community  
 This plan included:

- 3 Citizen Resource Team meetings, including press releases
- A kick of meeting with other agencies
- A wheelchair tour of downtown ramps

166

**What is in the Sidewalk Transition Plan?**

Recommended policies and procedures

- Comprehensive Plan - *Recommend policy update*
- Streets and Sidewalk - *Recommend policy update*
- Citizen requests - *Recommended new process*
- Pavement overlay - *Example policy from Vancouver WA*
- Ramp replacement - *Recommended policy*

167

**Ramp Replacement Policy**



- All new ramps will be built to ADA standards
- Policy has been reviewed by Citizen Resource Team
- Policy should be re-assessed in 3-5 years
- ADA allows for standards that provide "equivalent access"

168

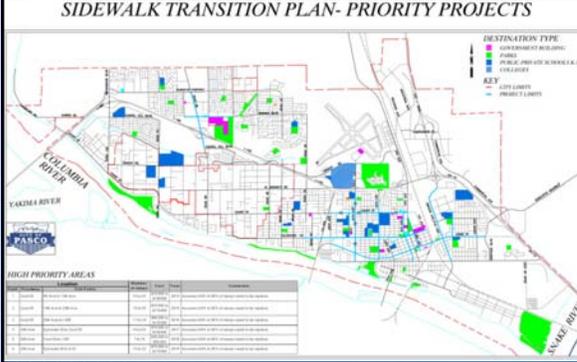
### What is in the Sidewalk Transition Plan?



- A five year plan to improve high priority locations
- A “living document” refined to best meet the needs of the community
- After 5 years, updated with new project list.

169

### SIDEWALK TRANSITION PLAN- PRIORITY PROJECTS



170

### The risk of non-compliance

Bend Oregon’s story

- After ignoring ADA access requests from the disabled community a complaint was lodged with the Department of Justice
- The settlement required upgrade of thousands of ramps over ten years
- Access to bus stops a major issue
- The Department of Justice’s investigation was expanded to include many other ADA access issues such as buildings, communication and employment practices.

171

### Project ADA Compliance Triggers

The following roadway treatments shall be considered an *alteration*:

- Open-graded Surface Course
- Cape Seals
- Mill & Fill / Mill & Overlay
- Hot In-Place Recycling
- Microsurfacing / Thin Lift Overlay
- Addition of New Layer of Asphalt
- Asphalt and Concrete Rehabilitation and Reconstruction
- New Construction

172

### Activities W/out ADA Trigger

Treatments that serve solely to seal and protect the road surface, improve friction, and control splash and spray shall be considered *maintenance* because they do not significantly affect the public’s access to or usability of the road. The following types of treatments shall be considered *maintenance*:

- Crack Filling and Sealing
- Surface Sealing
- Chip Seals
- Slurry Seals

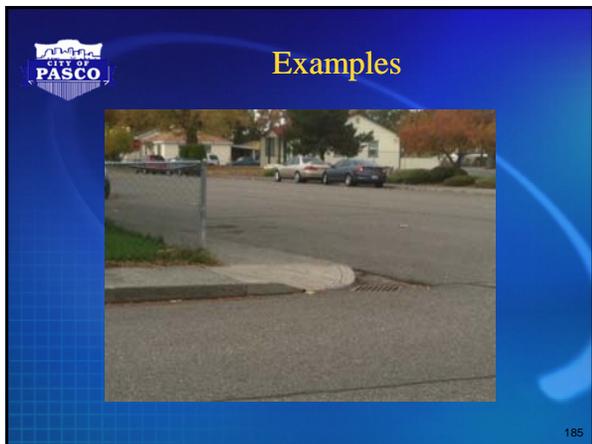
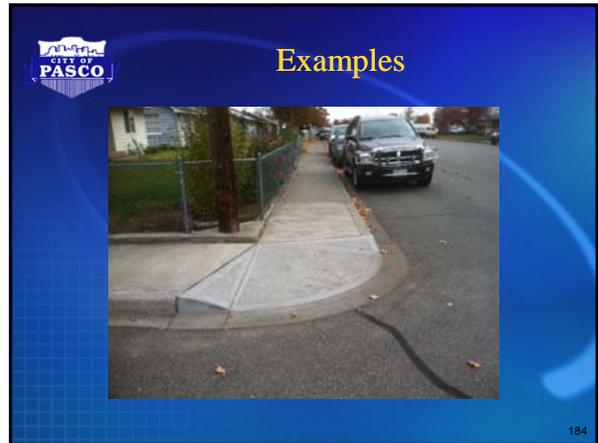
173

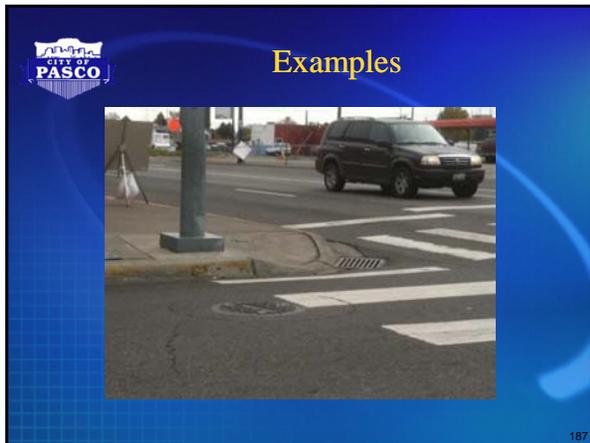
### City Wide Ramp Inventory

- City Completed City Wide Inventory & Evaluation
- More than 50% Ramps Did Not Meet Standards
- Explored Ways to Fund & Plan outline
- Prioritize

174







**City-Wide Sidewalk Repair Program**

- Completed City-Wide survey, approximately repair 700 locations
- 4-Year Program to complete repairs at identified locations

190

**City-Wide Sidewalk Implementation Program**

- Divided into 4 zones
- Criteria based on safety and walking surface
- Most repairs in older part of city

191



### City-Wide Sidewalk Repair Program

**Challenges:**

- Tree roots
- Utilities
- Monolithic pours

193

### City-Wide Sidewalk

**Trees:**

- Identify ownership; city or property owner?
- Work with Code Enforcement to notify property owner
- Will need more funding for tree removal

194

### 2014 Phase I High Priority Locations

195

### 2014 Phase I High Priority Locations

- Address 3" plus areas without trees
- Staff is developing plans to address process & logistics for damaged sidewalks by trees

196

### City-Wide Sidewalk 2014 Downtown Sidewalks

**Downtown Area:**

- Perform temporary repairs
- Remove concrete and patch with asphalt to assure safe walking path
- End of 2014 develop sidewalk mitigation plans
- Lewis & Clark couplet design recommendations

197

### City-Wide Sidewalk Repair Program

198



## Spokane Neighborhood Traffic Calming Program

Presented by Bob Turner  
Traffic Operations Engineer  
City of Spokane

Urban Traffic Engineers Council Meeting  
Kennewick, WA  
September 24, 2014

200

## BACKGROUND

- 10 intersections with Red Light Cameras.
- All revenue beyond program costs goes to the Neighborhood Traffic Calming projects.
- The Traffic Calming program originally adopted in 2004, amended by the Community Assembly in Nov. 2011.

201

## NUMBERS TO DATE

- Net revenue \$1,931,875.
- 49,562 tickets issued since the start of the program - Nov. 1<sup>st</sup>, 2008.
- Number of tickets has increased every year since implementation.
- Red light violations have decreased by 32% since the program inception.
- \$1,059,996 has been spent on Neighborhood Traffic Calming Projects.

202

## FUNDING

- Funding is accomplished through Spokane Municipal Code, Section 07.08.148.
- The fund was created to manage income from the automated traffic safety camera infractions.
- The fund is used to pay for traffic calming projects.

203

## OBJECTIVES OF TRAFFIC CALMING

- Slow travel speeds.
- Reduce frequency & severity of collisions.
- Reduce the need for police enforcement.
- Reduce cut through traffic patterns.
- Increase safety for non-motorized street users.
- Increase access for all modes.
- Enhance the street environment.

204

### WHAT THE PROGRAM FUNDS

- Installation of:
  - Traffic Control devices
  - Pedestrian & bicycle improvements
  - Physical roadway features
- Transportation studies

205

### PROGRAM ELEMENTS

- Education
  - Hold Traffic Calming Orientation.
- Application
  - Accept Applications from Neighborhood Councils.
- Traffic Assessments
  - Collect pedestrian, traffic volumes and speed, transit boarding, location assessment.
- Decision Making
  - Work with City Council to choose projects.
- Implementation
  - Work with Neighborhood Council and effected property owners for best design.

206

### EDUCATION

- Hold Traffic Calming Orientation:
  - Presentation
  - Application
  - Toolbox of Traffic Calming Measures  
*(Available on the City Web Page)*
- Question & Answer with Traffic Operations

207

### APPLICATION

- Two types of applications:
  - Residential
  - Arterial
- Treatments are different for the two applications.
- Neighborhood Councils are limited to only 2 projects per neighborhood.
- One year application cycle.
- Two year implementation cycle.

208

### REQUIREMENT OF APPLICANT

- Applicants must bring the application to the Neighborhood Council for review and approval.
- If the neighborhood is applying for two projects they must rank them by priority.
- Residential projects require the applicant to gather signatures from 50%+1 of all affected properties within a 400 ft. buffer.

209

### TRAFFIC ASSESSMENT

Includes:

- The detailed traffic calming request.
- The device or treatment requested.
- Site description (with map).
- Data summary:
  - Traffic Volume statistics
  - Traffic Speed Statistics
  - Collision Statistics
  - Transit Data
  - Pedestrian Crossing Statistics
- Recommendations.

210

### TRAFFIC ASSESSMENT



211

### TRAFFIC ASSESSMENT



212

### DECISION MAKING PROCESS

- Traffic Assessment is presented to the City Council.
- City Council base decision on:
  - Available funding for the year per district set at around \$120,000-\$140,000.
  - A cap of \$40,000 per neighborhood.
  - Neighborhoods seek out other leverage funds for larger projects.
  - Traffic Assessment and Need.

213

### DESIGN

- Chosen projects begin the design phase.
- Design details are worked out between the City and the neighborhood council.
- MOU's for perpetual maintenance are created if needed for landscaping and lighting.
- Final Designs are reviewed by the neighborhood to ensure it meets the intent of the application.

214

### CONTINUING WORK

- Continue to work with Neighborhood Councils.
- Continue to work on the Policy with the Pedestrian , Transportation & Transit (PeTT) Committee.
- Ongoing learning experience.
- Work collaboratively and continually with other City Departments to create the best program.

215

### PROJECTS



Intersection Bumpouts

216

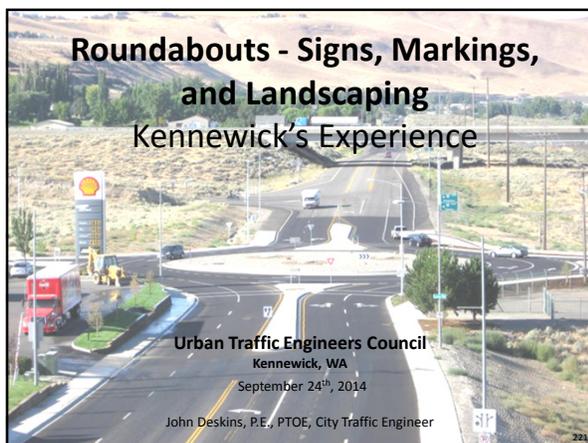


**THANK YOU**

Bob Turner  
Traffic Operations Engineer  
City of Spokane

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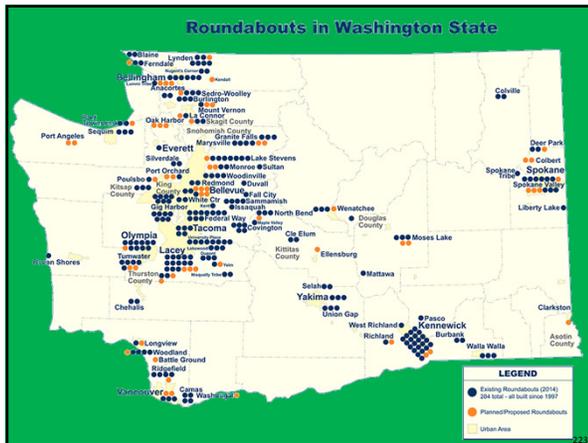
220



**Disclaimer**

- This presentation represents my own opinions and observations about:
  - Sign clutter and maintenance needs,
  - Evaluation of MUTCD Optional signs and markings
  - Does Less = More?
- You are the one that has to answer to your boss or the jury.
- Read the MUTCD and make your own interpretation.

222



### The Many Advantages of Roundabouts

- Increased Safety
  - Fewer Conflict Points
  - Fewer Crashes
  - Crashes are less severe
- Environment
  - Air Quality is better
  - Less Noise
  - Less Fuel Cost
- Cost
  - Similar or higher initial cost
  - Maintenance – Landscaping and sign replacement vs. equipment replacement, routine maintenance, detection & communications problems, and signal timing.

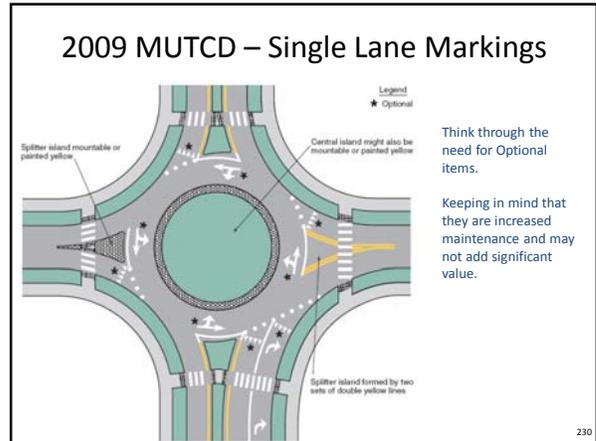
### The Early Days (in Kennewick)

### Why all the suspicion of Roundabouts

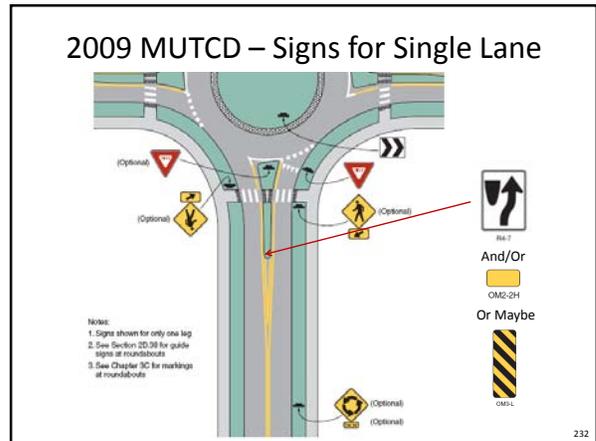
- *Traffic* by Tom Vanderbilt
- In an article posted on Slate in 2009 Tom asks why Americans are so suspicious of roundabouts
  - Tom likens Traffic Signals to “...binary, on-off traffic control” and,
  - roundabouts to traffic control governed by “fuzzy logic” that requires drivers to make decisions and pay attention

### Single Lane Roundabouts - Markings

- Yield Line
- Arrow(s)
- Crosswalks



- ### Single Lane Roundabouts - Signing
- Advance Warning Signs
  - Object Markers and Keep Right Signs
  - Pedestrian or School Crossing Signs
  - Yield Signs
  - Chevrons
  - Street Name Signs
- 231



### Advance Warning Signs – Other Ideas




W2-6

ROUNDABOUT OR TRAFFIC CIRCLE

W16-17P (optional) W16-12P (optional)



Front Ave

235

### Advance Warning Signs – Flashing Beacons

In some instances we have added beacons on long tangent sections. Downhill grade here has been an issue. Consider developing guidelines for placement so it is defensible where they are placed and provides reason for rejecting requests.



236

### Object Markers & Keep Right





RA-7

And/Or



OM2-2H

Or Maybe



OM1-1

237

### Pedestrian or School Crossing Signs




238

- Different colors & Different Sizes
  - Now using standard yellow for non-school signs
  - Using smaller signs on multilane approaches where signs are doubled up

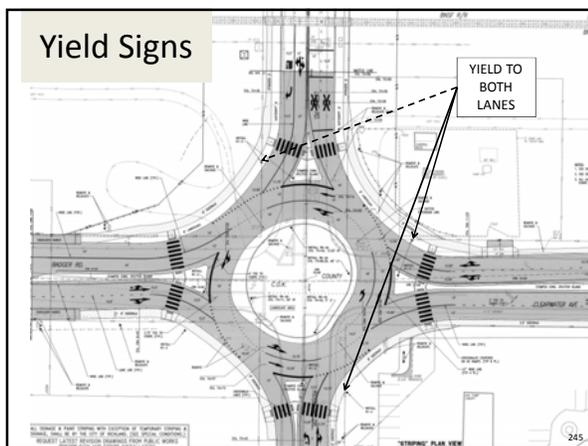
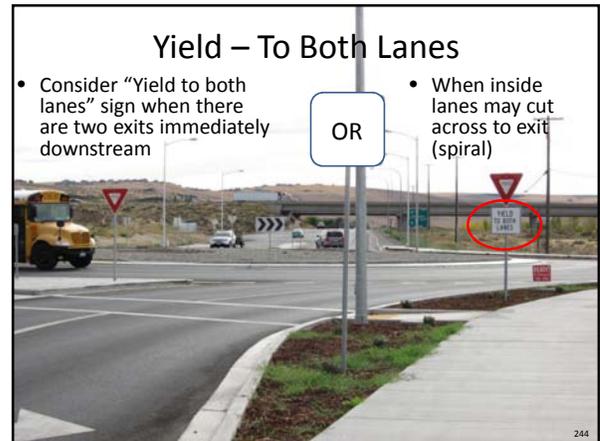
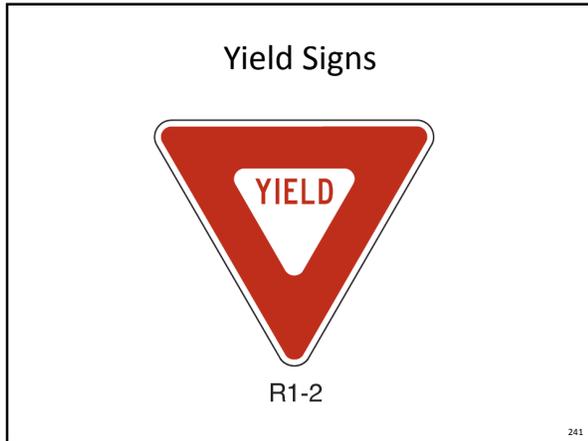


239

- No Ped signs at all in many cases now
  - Leave them in commercial areas and schools



240



### Chevrons – Variations on a Theme



Notice that Black and White can blend into the concrete and asphalt jungle without adequate contrast. I personally prefer Yellow & Black, but it's no longer an option. Thus, considering the OM3-L on the leading edge of Splitter Islands to get the yellow & black back.



247

### Mounting Heights & Sizes



- Large sign sizes and mounting signs too high can take their toll on the chevrons.
- Chevrons & Street Name signs can be mounted 4' from road surface to bottom
- Well placed for driver's eye height

248

### Street Name Signs



249

### Sign Overkill?



- Consider going without peds if it's not a high ped area or school route (for single lane roundabouts)
- Is "Keep Right Sign" really necessary?
- Use smaller Chevrons without One Way signs.

250

### Does Less = More?



- This roundabout has just 40% of the sign area of a fully signed single lane roundabout that includes ped crossing signs, large chevrons with One Way, and Keep Right signs.

251

### Multi-lane Roundabouts – Taking it to the next level



252

### Guide Signs & Markings

- Lane Control - Fish Hook vs. Standard arrows
- How are these perceived by the driver?
  - Are they perceived correctly?
  - Are they perceived and understood in time to get in the proper lane.
- Is there a single correct choice that works for all drivers?

253

### Fish Hooks vs. Standard

- Fish Hooks are stylized, inconsistent, difficult to make and maintain/replace.
- My opinion is they are difficult for the unfamiliar driver to interpret quickly enough to consistently make a proper lane choice.
- My opinion is that using Standard arrows allows a driver to use a familiar and simple graphic to perceive, respond, and react properly to use the correct lane.

254

### Lane Control Signs – Being “Thrown for a loop”

255

### Lane Control Markings

256

### The Challenge of Guide Signs

257

### Guide Signs

258

### Multi-lane Striping

- Many variations of multi-lane depending on the anticipated traffic needs.
- Special guide striping in the roundabout to help give drivers good direction.
- Take note of the design and make sure to match when freshening it up. WSDOT example on Blue Bridge.

259

### Striping Plans

Sometimes the lines fade some before re-striping. Making this mistake when re-striping turns a single left into a double left... but there's only one exit lane! 260

### Wide Lines for Clarity – Thermoplastic for Longevity

261

### Concrete & Contrast

262

### Trucks in Multi-Lane Roundabouts

Contractor having a little fun?

263

### Unfinished Approaches/Exits

### Landscaping & Sight Distance Issues

- Placement of trees in relation to signs
- Placement of trees, shrubs, and fences with regards to sight distance
- Watering of the central island and/or splitter islands and who has control of this.
- Artwork vs. Landscaping

265

### Trees & Signage

- Yield signs, being typically placed around the corner are very difficult to place without being obscured by trees. Can be an issue for ped signs also.
- Makes a case for placing a 2<sup>nd</sup> Yield sign on the splitter island even on single lane roundabouts if trees will be present.

266

### Trees & Sight Distance

- Homeowner chose to trim these arborvitae up from the bottom rather than remove one or two after a complaint.
- This was a good solution here increasing visibility of pedestrians by drivers.

267

### Trees & Sight Distance

- This tree is an issue for pedestrian sight distance.

268

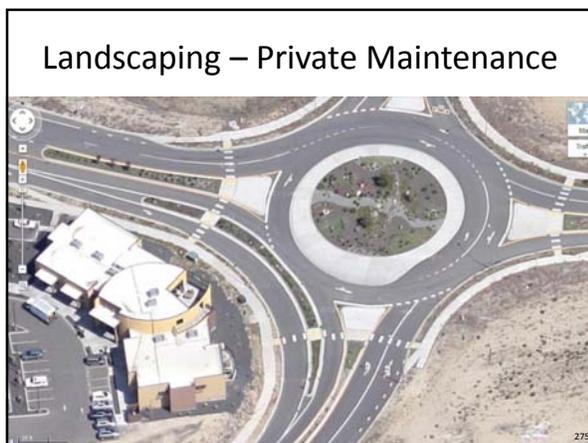
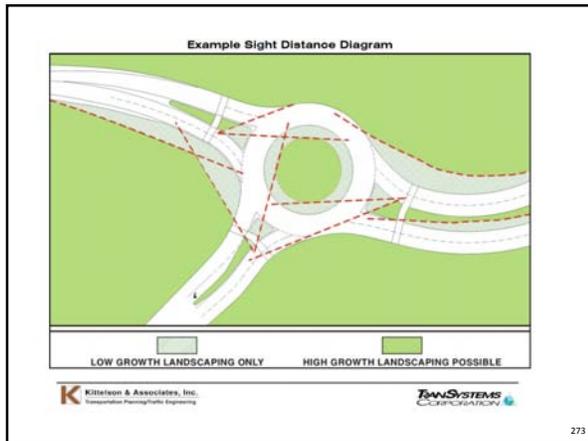
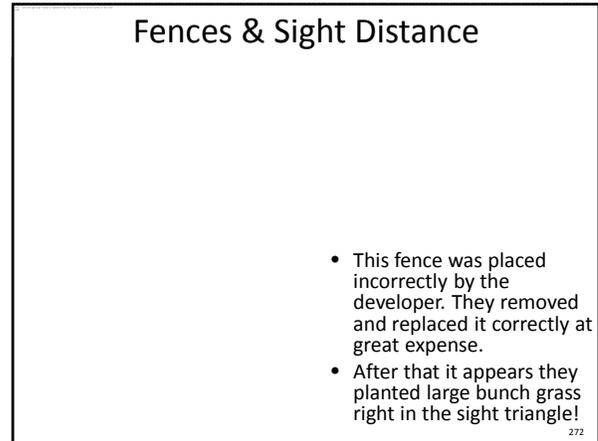
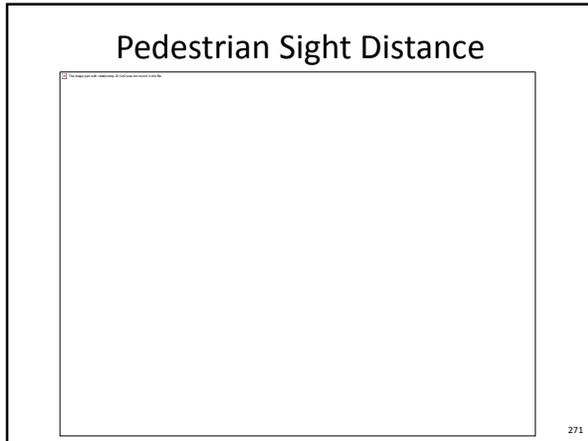
### Fences & Sight Distance

- This fence was trimmed down to provide adequate sight distance.

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### Vehicle Sight Distance

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Attractive Nuisance



Artwork – Leslie & Clearwater



Artwork – Leslie & Clearwater



Artwork – Flowers



Artwork – Man & Boy Flying Kite



The End



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Thank you and  
Goodbye



Next meeting:  
Fall 2014 in Federal Way

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