

# Burke-Gilman Trail Missing Link Project



**Design Advisory Committee Meeting #8**  
**December 15, 2017**



**Seattle**  
Department of  
Transportation

# Agenda

Time	Item
2:30 – 3:00 PM	Introductions
3:00 – 3:45 PM	90% Design updates
3:45 – 4:00 PM	Design next steps
4:00 – 4:10 PM	SPU SCWQP Early Work
4:10 – 4:20 PM	Public comment
4:20 – 4:30 PM	Wrap up
4:30 PM	Adjourn

# Introductions

90% Design  
Updates

# Seattle Municipal Code (SMC)

# SMC Questions

- Who has the right-of-way?
- Is there differentiation between pedestrians and bicycles in the Seattle Municipal code?
- What are the rules of the trail?

# SMC (Pedestrians)

- SMC – 11.44 (Pedestrian Rules)

- 11.44.100: Right-of-way in crosswalk

- **The operator of an approaching vehicle shall stop and remain stopped to allow a pedestrian using an unmarked or marked crosswalk or a disabled person using a curb ramp** as provided in Section 11.40.090 to cross the roadway when the pedestrian or disabled person is upon or within (1) lane of the half of the roadway upon which the vehicle is traveling or onto which it is turning. For purposes of this section, "half of the roadway" means all traffic lanes carrying traffic in one (1) direction of travel and includes the entire width of a one-way roadway.

- 11.44.120 – Prohibited Crossing

- **No pedestrian shall suddenly leave a curb or other place of safety and move into the path of a vehicle which is so close that it is impossible for the driver to stop.**

- 11.40.255: Use of skateboards or rollerskates on sidewalk or public path

- Every person using a skateboard or rollerskates upon any sidewalk or public path shall use the same in a careful and prudent manner and at a rate of speed no greater than is reasonable and proper under the conditions existing at the point of operation, taking into account the amount and character of pedestrian traffic, grade and width of sidewalk or public path, and condition of surface, and shall obey all traffic-control devices. **Every person using a skateboard or rollerskates upon a sidewalk or public path shall yield the right-of-way to any pedestrian thereon.**

# SMC (Bicycles)

- SMC – 11.44 (Bicycle Rules)

- 11.44.100: Right-of-way in crosswalk
  - **A person operating a bicycle across a roadway upon and along a crosswalk shall have all the rights and duties applicable to a pedestrian** under the same circumstances, but shall yield to pedestrians upon and along a crosswalk. **No person operating a bicycle shall suddenly enter a crosswalk into the path of a vehicle which is so close that the driver cannot yield safely.**
- 11.44.120 – Riding on sidewalk or public path
  - Every person operating a bicycle upon any sidewalk or public path shall operate the same in a careful and prudent manner and at a rate of speed no greater than is reasonable and proper under the conditions existing at the point of operation, taking into account the amount and character of pedestrian traffic, grade and width of sidewalk or public path, and condition of surface, and shall obey all traffic-control devices. **Every person operating a bicycle upon a sidewalk or public path shall yield the right-of-way to any pedestrian thereon, and shall give an audible signal before overtaking and passing any pedestrian.**
- 11.44.160: Lamps and reflectors on bicycles
  - **Every bicycle, when in use during the hours of darkness, shall be equipped with a lamp on the front**, which shall emit a white light visible from a distance of at least five hundred feet (500') to the front, **and with a red reflector on the rear** of a type approved by the State Commission on Equipment, which shall be visible at all distances up to six hundred feet (600') to the rear when directly in front of lawful lower beams of head lamps on a motor vehicle. A lamp emitting a red light visible from a distance of five hundred feet (500') to the rear may be used in addition to the red reflector.



# SMC (Drivers)

- SMC – 11.58 (Driving Rules)

- 11.58.230 - Emerging from alley, driveway, private property or building

- Except as directed otherwise by official traffic-control devices, the driver of a vehicle emerging from any alley, driveway, private property, or building shall stop such vehicle immediately prior to driving onto a sidewalk or onto the sidewalk area extending across any alley or driveway, or onto a public path, and **shall yield the right-of-way to any pedestrian or bicyclist** as may be necessary to avoid collision, **and upon entering the roadway of a street shall yield the right-of-way to all vehicles** approaching on the roadway.

- 11.58.310 - Regard for pedestrians

- Notwithstanding the provisions of Chapters 11.40 and 11.44, **every operator of a vehicle shall exercise due care to avoid colliding with any pedestrian or person riding a bicycle upon any roadway and shall give warning by sounding the horn when necessary**, and shall exercise all proper precautions upon observing any child or any obviously confused or incapacitated person upon a roadway.

# SMC (Trails)

- SMC – 11.72 (Trail Rules)
  - 11.72.415 – Trail or path (stopping, standing, or parking restrictions)
    - **No person shall stop, stand, or park a vehicle, bicycle, or other device on or adjacent to a trail, path, lane or other facility or way which has been designated for the use of pedestrians, equestrians, or bicyclists, in such a manner as to obstruct or restrict the use** of any portion thereof: Provided, that authorized emergency and maintenance vehicles are excluded from the provisions of this section when engaged in necessary emergency or maintenance work.

Safety

# Safety Questions

- Is the corridor safe now?
- How do we design a safe facility?







# Non-motorized Incidents



Figure 7-10. Study Area Nonmotorized Incident Responses



# Cyclists in Mixed Traffic

## ***Cyclists in mixed traffic have a higher safety risk than any other type of bike facility***

- *Risk of injury for bicycling on cycle tracks versus in the street. (2011)*
  - 2.5 times more cyclists ride on protected lane than shared lanes
  - The relative risk (RR) of injury on cycle tracks was 0.72 (95% CI 0.60 to 0.85) compared with bicycling in shared (reference) streets
- *Are Signalized Intersections With Cycle Tracks Safer? A Control-Case Study Based On Automated Surrogate Safety Analysis Using Video Data. (2016)*
  - Two-Way SBLs are found to be safer than shared lanes
  - 40% crash reduction predicted when placed on the right side of a one-way street
  - 25% crash reduction predicted when placed on the left side of a one-way street
- *Bicyclists' Injuries and the Cycling Environment: The Impact of Route Infrastructure. (2013)*
  - any bike facility is better (shared street is most risk) than nothing
  - sidewalks, sharrows, and shared lanes have elevated risk (above 1)

# Offset Bike Facilities

## ***Bike facilities offset from the street are safer***

- *Road factors and bicycle–motor vehicle crashes at unsignalized priority intersections. (2011)*
  - 1-way separated bike lanes between 6 and 20 feet from the intersection 55% crash reduction
- *Towards Effective Design Treatment for Right Turns at Intersections with Bicycle Traffic. (2015)*
  - Recessed crossings which forced drivers to turn towards the bicyclists increase driver scanning for bicyclists, including bicyclists approaching from behind and improve crash avoidance.
- *Comparison of five bicycle facility designs in signalized intersections using traffic conflict studies. (2017)*
  - Recessed bicycle track seems to provide the highest safety level for cyclists compared to shared lanes and bike lanes.

# Raised Crossings and Pavement Markings

## ***Raised crossings on bike facilities are safer***

- *Road factors and bicycle–motor vehicle crashes at unsignalized priority intersections. (2011)*
  - Raised crossings had 50% crash reduction

## ***Green pavement marking improves safety***

- *Towards Effective Design Treatment for Right Turns at Intersections with Bicycle Traffic. (2015)*
  - Pavement markings increase driver scanning for bicyclists
  - Green pavement marking has been shown to increase crash avoidance and decrease potential crash severity

# Driveways

# Driveway Considerations

## Design Changes Considered, but not Recommended:

- Stop signs at driveway crossings
  - Trail best practices says to stop control the movement with the lower volumes (otherwise compliance will be low)
- “LOOK” markings on trail
  - May draw attention down to the trail and serve as a distraction
- In-pavement warning lights
  - Opted for signage due to maintenance issues
- Blackout signs (electronic sign that is changes between blank, yield, or stop)
  - Inconsistency of signage could cause confusion for trail users
- In-cab controls
  - Challenging to effectively implement because of the number of different drivers that would need in-cab controls.
  - Requires inventory control, maintenance of the remotes, and another thing for drivers to consider as they approach
  - Would not capture non-regular drivers and would provide an inconsistent crossing experience for trail users
- Speed signs (**still under consideration**)
  - Enforcement
  - How will cyclists track their speed?
  - Trail-wide v Missing Link?

# Comprehensive Safety Package

## Proposed Design:

- Raised Trail
  - Proven to be safer (slows vehicles and makes trail users more visible)
- Offset Trail
  - Use of buffer zones to improve visibility and reduce crashes
- Improved sight lines
  - Improved visibility for all users
- On-pavement trail markings (“SLOW”, speed lines)
  - Typical first level of treatment to alert trail users
- Green driveway markings
  - Green pavement at the crossings is a now universal sign for a conflict zone (to bike riders and motorists)
- Narrowing of trail
  - Trail best practice says that narrowing the trail is the best way to slow trail users
  - Adding a centerline stripe is a form of narrowing the trail (makes each direction feel more constricted)
- LED warning signs
  - Complex system, will be the first installation in this context in Seattle
  - Specifying solar power signs to decrease maintenance
  - Specified for vehicles exiting driveways with large numbers of large vehicles reported
- On-going design refinement
  - Still developing technical solution to address right-turning movements into driveways

# Existing



# Proposed





# Proposed



# Supplemental Signage



# AutoTURN Analysis

# AutoTURN Locations

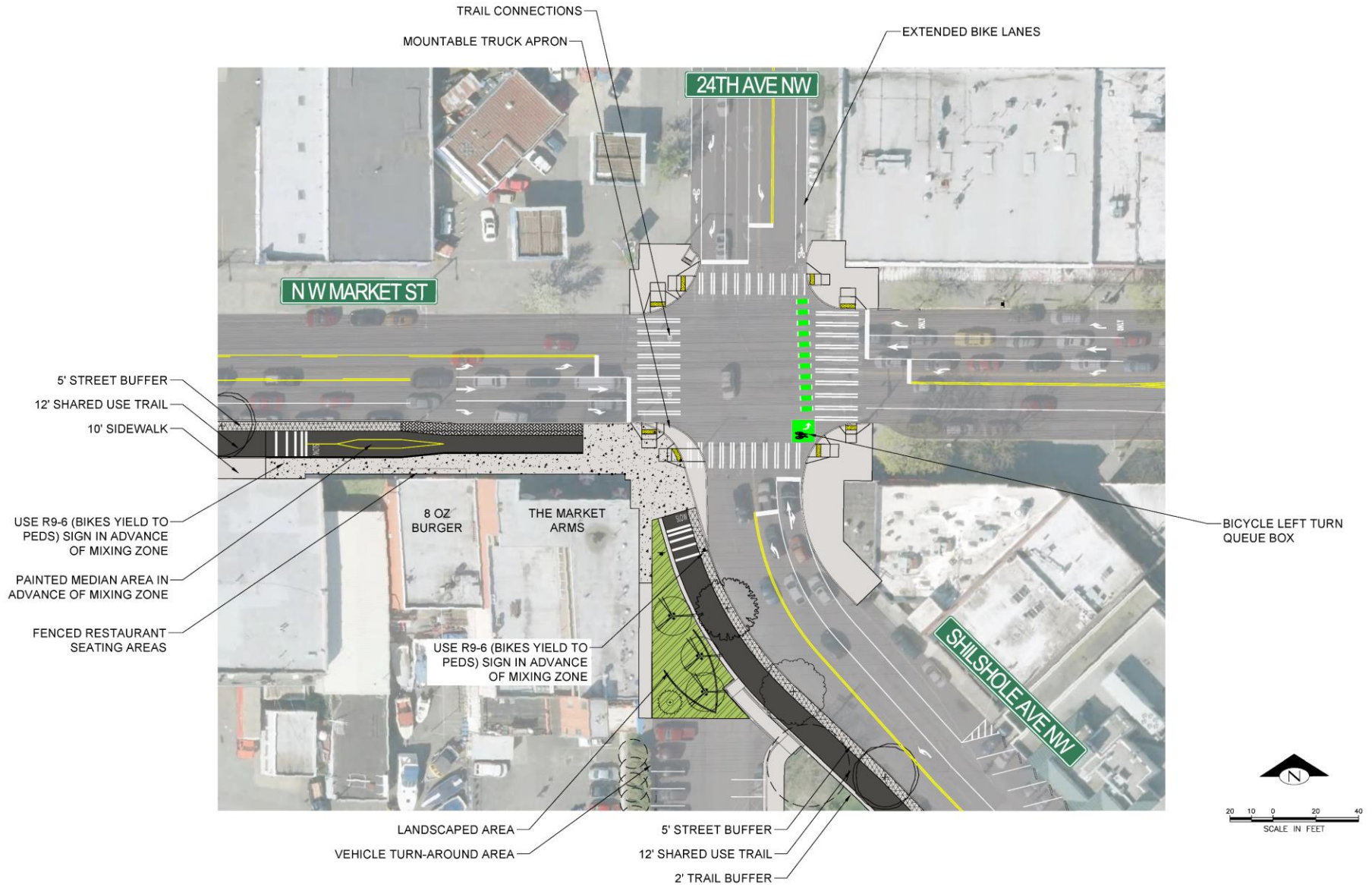


# Mixing Zones

# Mixing Zone – Ballard Locks



# Mixing Zone – 24<sup>th</sup>/Market



Parking



# Parking Summary

- **Final EIS**
  - Current Parking Stock: 595 stalls
  - Proposed Parking Stock: 251 stalls
  - 42% parking to remain
  
- **90% Design**
  - Current Parking Stock: 595 stalls
  - Proposed Parking Stock: 360 stalls
  - 61% parking to remain
    - 89% along Market St
    - 55% along Shilshole
    - 60% along 45<sup>th</sup> St

# 90% Design Update Summary

- Driveway refinements
  - Narrowed trail at industrial driveways
  - Extended green striping over aprons
  - Added centerline striping
  - Adjusted location/design of LED signs
- Driveway removals (33 total remaining on 1.4-mile corridor)
- Removed pinch point at 54<sup>th</sup>/Market to allow for both sidewalk and trail
- Mixing zone revisions
- Concrete stamping pattern refined along Nordic Museum frontage
- Filterra units added for stormwater management
- Proposed drainage pipe (on NW 45<sup>th</sup> St) relocated to avoid the railroad
- 20<sup>th</sup> curb bulbs reduced
- Paving simplified and refined in several locations
- Signage revisions
  - Added truck crossing sign on Dock
  - Added rules of the trail signs at 3 locations

# Review Rollplots

# Design Next Steps

# Getting to 100% Design

## **Between 90%-100% Design:**

- Add any details that are missing
- Finalize all horizontal and vertical design elements
- Finalize traffic signal design, including wiring, conduit routing, and other underground work
- Project specs are finalized

# SPU Early Works

# Ship Canal Water Quality

Ballard Early Works Construction

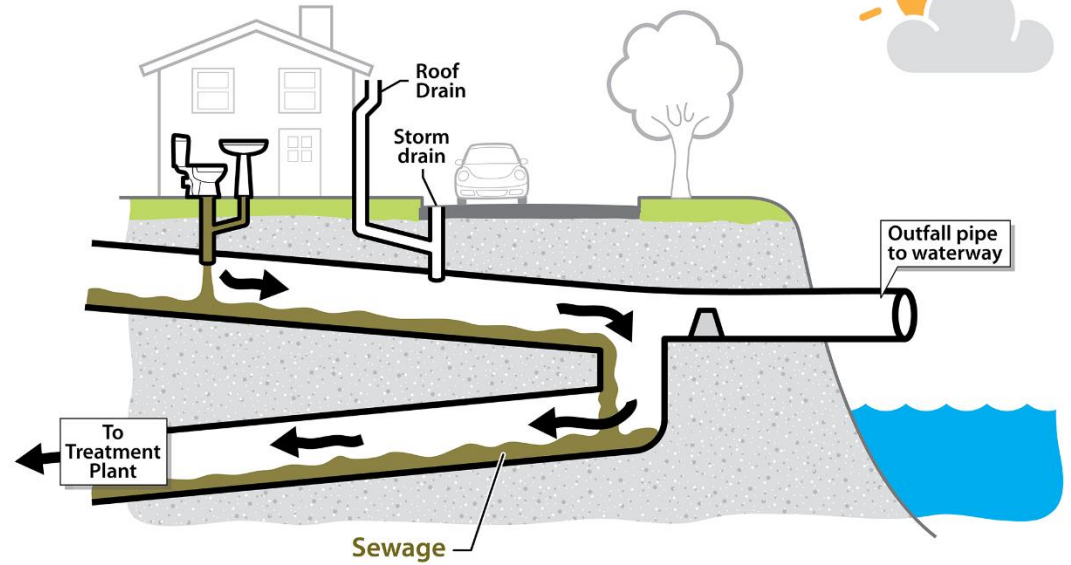
*December 15, 2017*

***Cynthia Blazina***

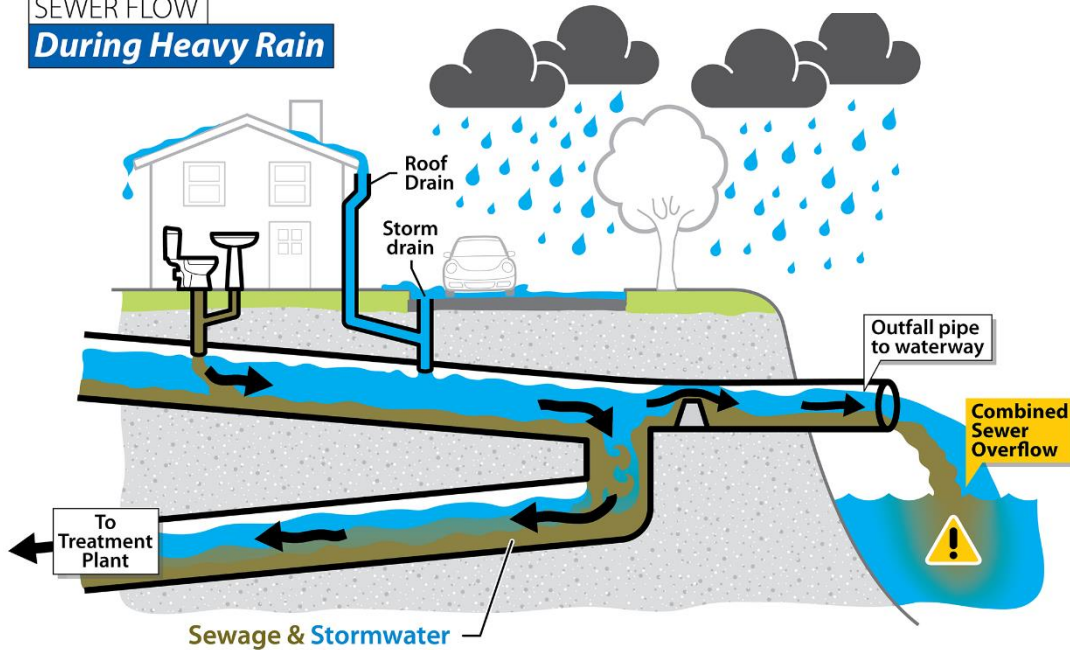
*Ship Canal Water Quality Project Construction Manager*

# Combined Sewer Overflows

SEWER FLOW  
*During Dry Weather*



SEWER FLOW  
*During Heavy Rain*





# Ship Canal Water Quality Project



# Ballard Early Work Construction

- Build new pedestrian pier
- Remove onsite contaminated soil
- Install utilities in 24th Avenue NW
- Construct simultaneously with BGT Missing Link



# Ballard Early Work Construction

## What to expect during construction:

- Truck traffic
- Construction noise
- Marine construction activities (October to March)
- Construction vehicles and equipment in the area
- 24th Avenue NW
  - Pedestrian Pier closure through 2025
  - Temporary lane closures
  - Parking and access restrictions

# Ballard Construction Schedule

## Early Work:

2018-2019

## Shilshole Pipe:

2018-2019

## Tunnel:

2019-2023

## Pump Station and Conveyance:

2021-2024



# Stay Informed

Sign up for email updates at

[www.seattle.gov/lists/shipcanalproject.htm](http://www.seattle.gov/lists/shipcanalproject.htm)

For **project** related questions:

[Keith.Ward@seattle.gov](mailto:Keith.Ward@seattle.gov)

For **construction** related questions:

[Cynthia.Blazina@seattle.gov](mailto:Cynthia.Blazina@seattle.gov)

**Next Steps**

# Public Education & Post-Construction Monitoring Opportunities

## **Phase 1: pre-construction (early 2018)**

- **Public pre-construction meeting**
- **Meeting with adjacent affected property owners**
- **One-on-one and organization briefings**
- **Website/social media**
- **Active phone line**
- **Frequent on-site visits/flyering**

# Public Education & Post-Construction Monitoring Opportunities

## **Phase 2: pre-opening (early 2019)**

- Ribbon cutting event focusing on safety
- Safety-oriented web updates & social media posts
- Video and other multimedia strategies highlighting corridor “rules” and right of way
- Trail/yard sign campaign
- Educational briefings with partners (cycling, pedestrian, truck/freight, adjacent businesses)
- Work with local news outlets



# Public Education & Post-Construction Monitoring Opportunities

## **Phase 3: after opening (2019 & beyond)**

- **Ongoing education campaigns**
- **Post-completion conversations with business owners, property owners, and residents**
- **Monitoring of design/incidents through field observations**
- **Design and implementation of corridor changes, as needed**

# Public Comment

**Wrap-up/  
Next Steps**

# Next DAC Meeting

- **Review Final Design**
- **Construction focus**

# Thank you!

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[www.seattle.gov/transportation/BGT\\_MissingLink.htm](http://www.seattle.gov/transportation/BGT_MissingLink.htm)

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