The First Roundabout in Seattle

Minchul Park, P.E., PTOE, Signal Operations
Jay Backman, P.E., Vision Zero

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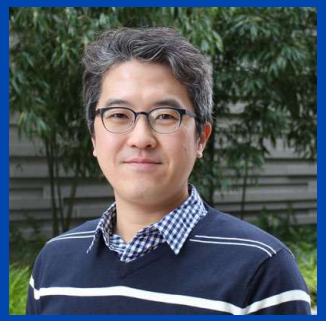

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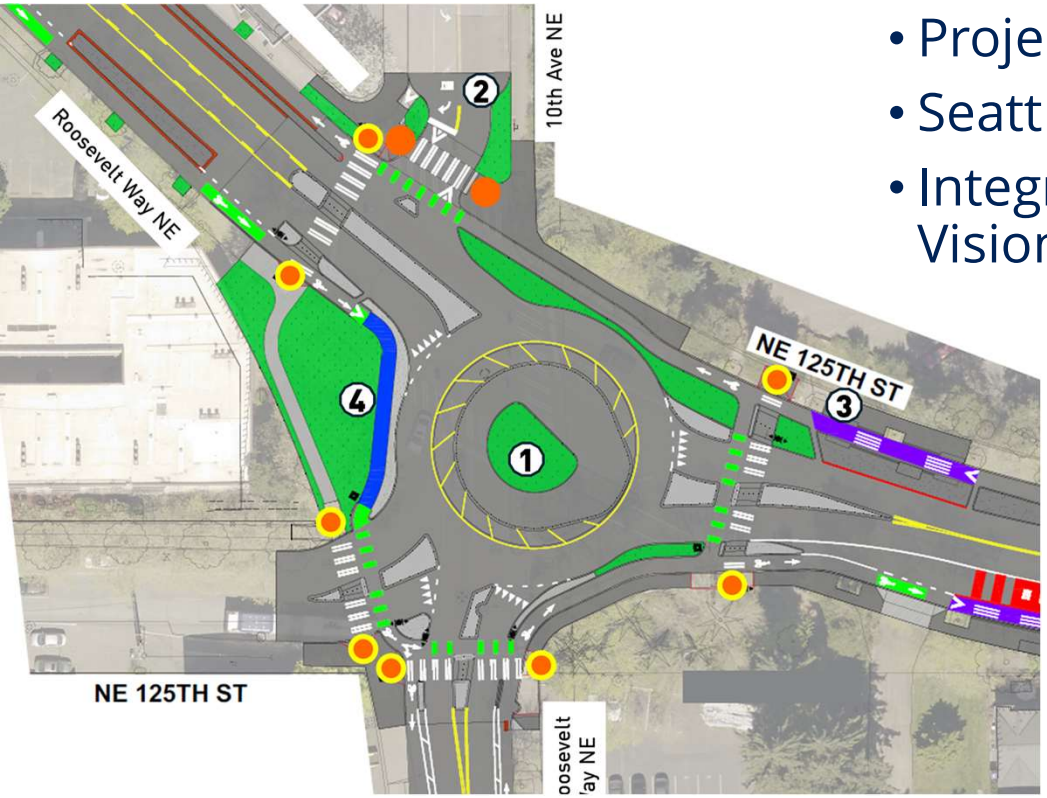
Introduction



- Project Background
- Seattle's First Roundabout
- Integrating Roundabouts into the City's Vision Zero

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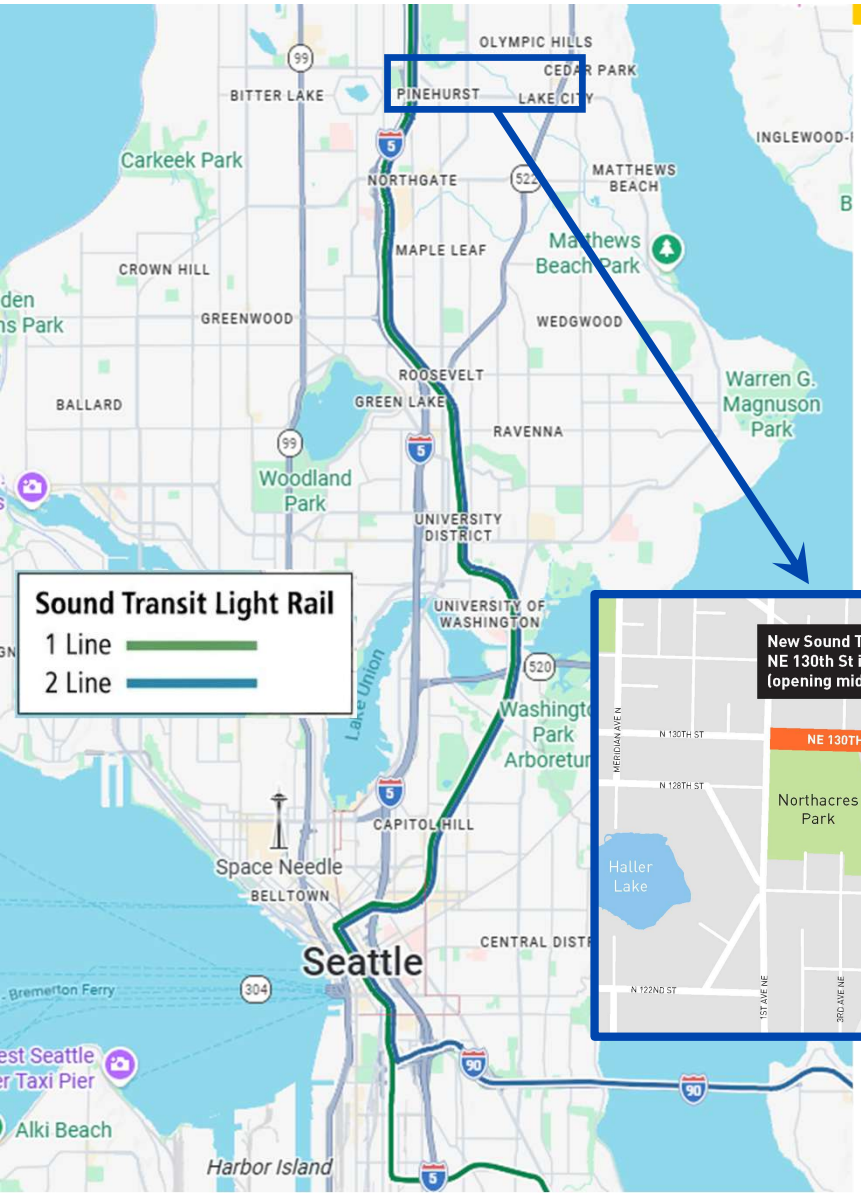
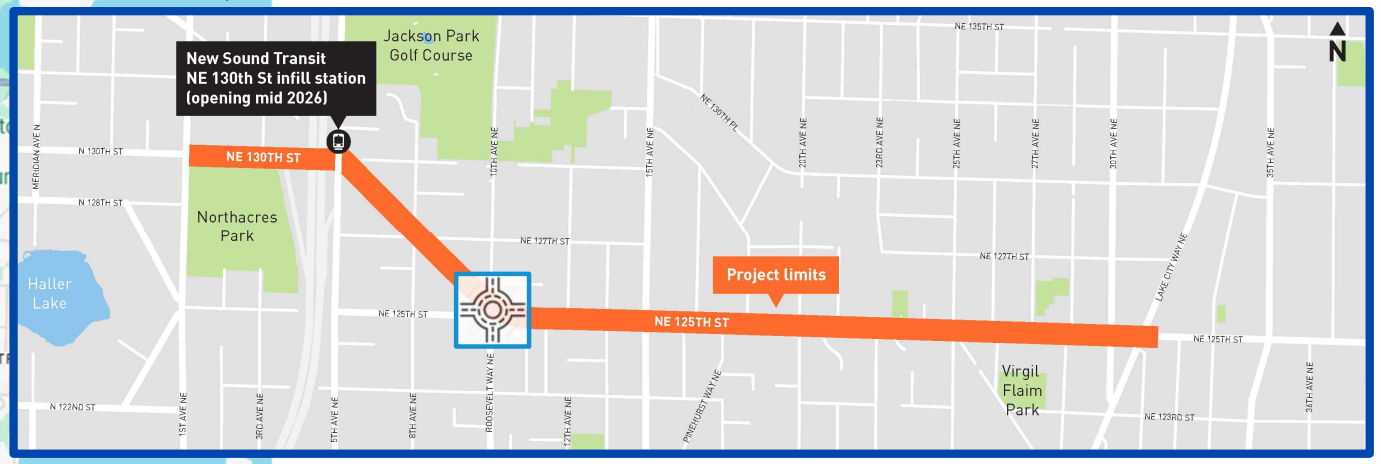
Project Background

- New ST Light Rail Station in Pinehurst
- NE 130th St & NE 125th St Mobility and Safety Project
  - Transit reliability
  - Safe facilities for walking and biking





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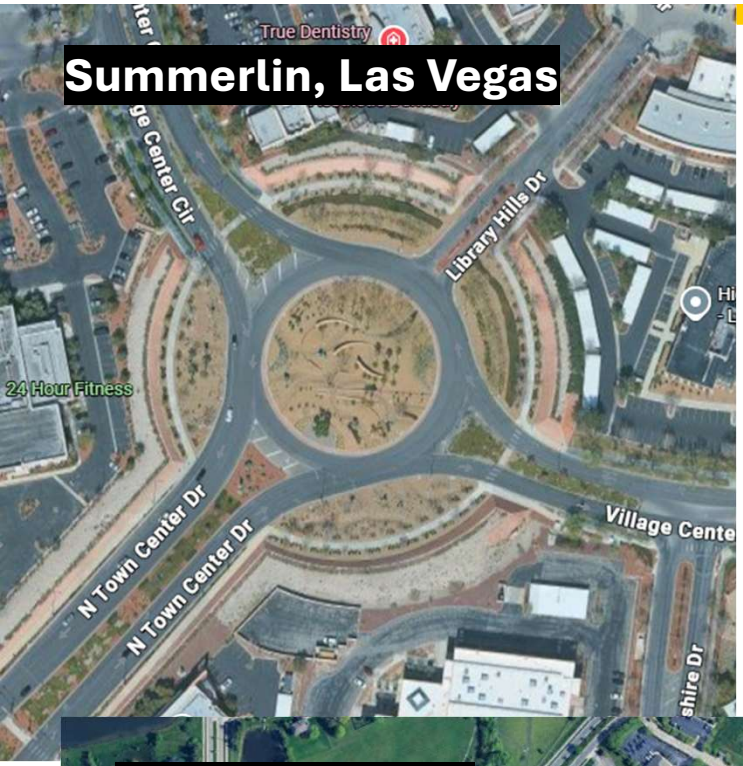
Roundabouts in the U.S.

- First “modern” roundabout in the United States
  - Built in 1990 in Summerlin, Las Vegas
- 11,000 modern roundabouts in the States
- 140 roundabouts in Carmel, Indiana



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Seattle's Traffic Circles

- Dense and narrow rights-of-way
- 1,072 Traffic circle
  - Residential neighborhood to slow traffic speeds and reduce collisions

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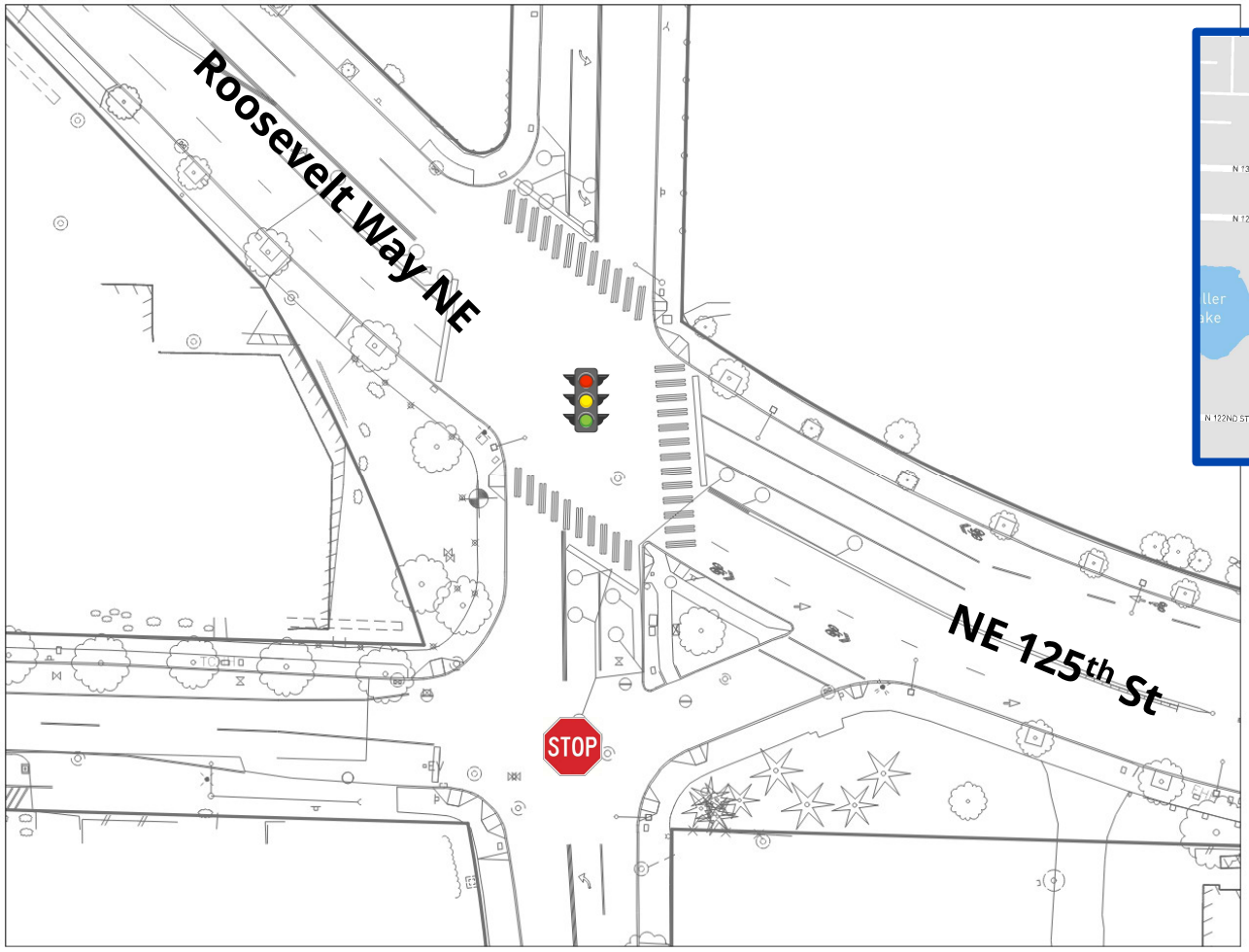
Seattle's First Roundabout



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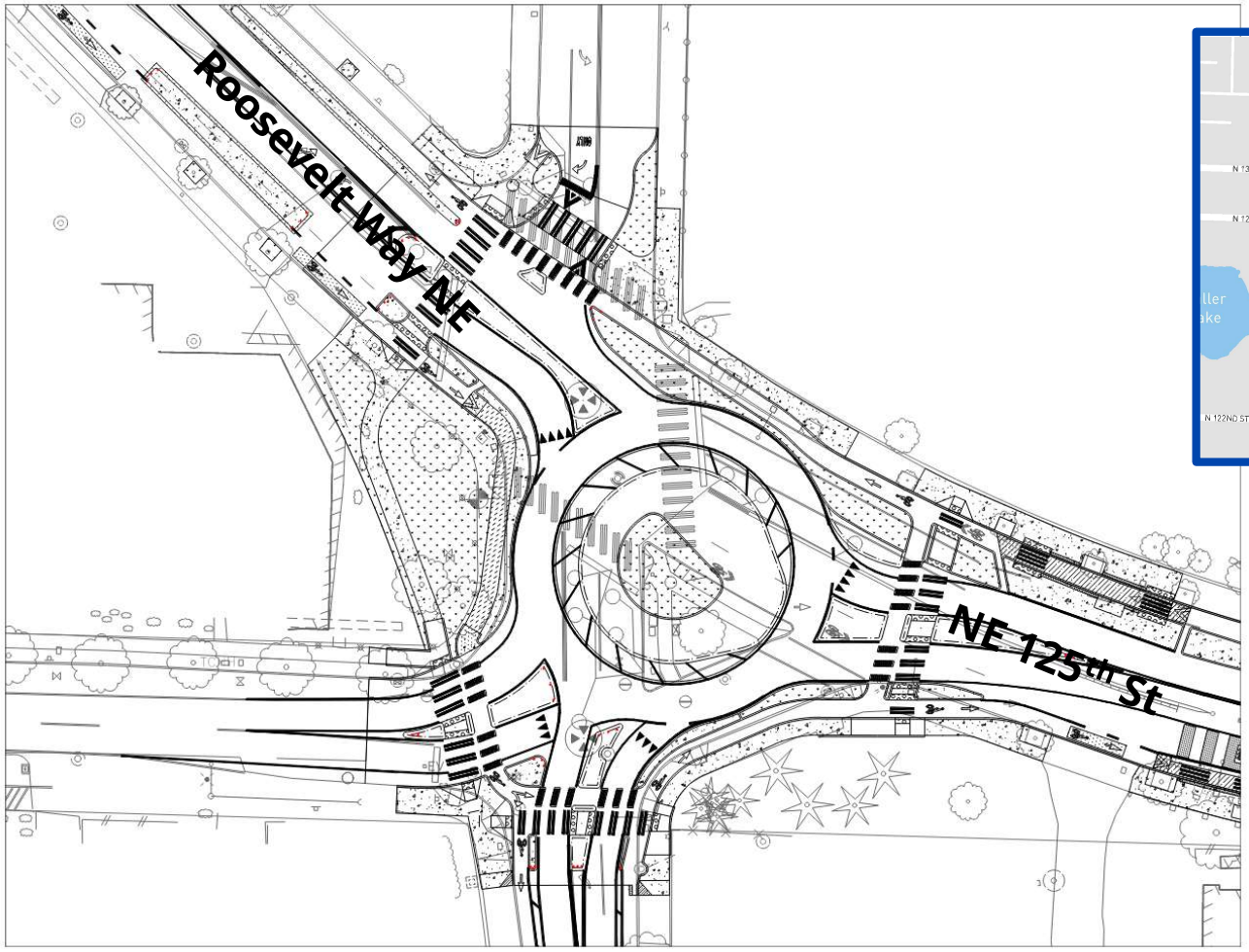
Seattle's First Roundabout



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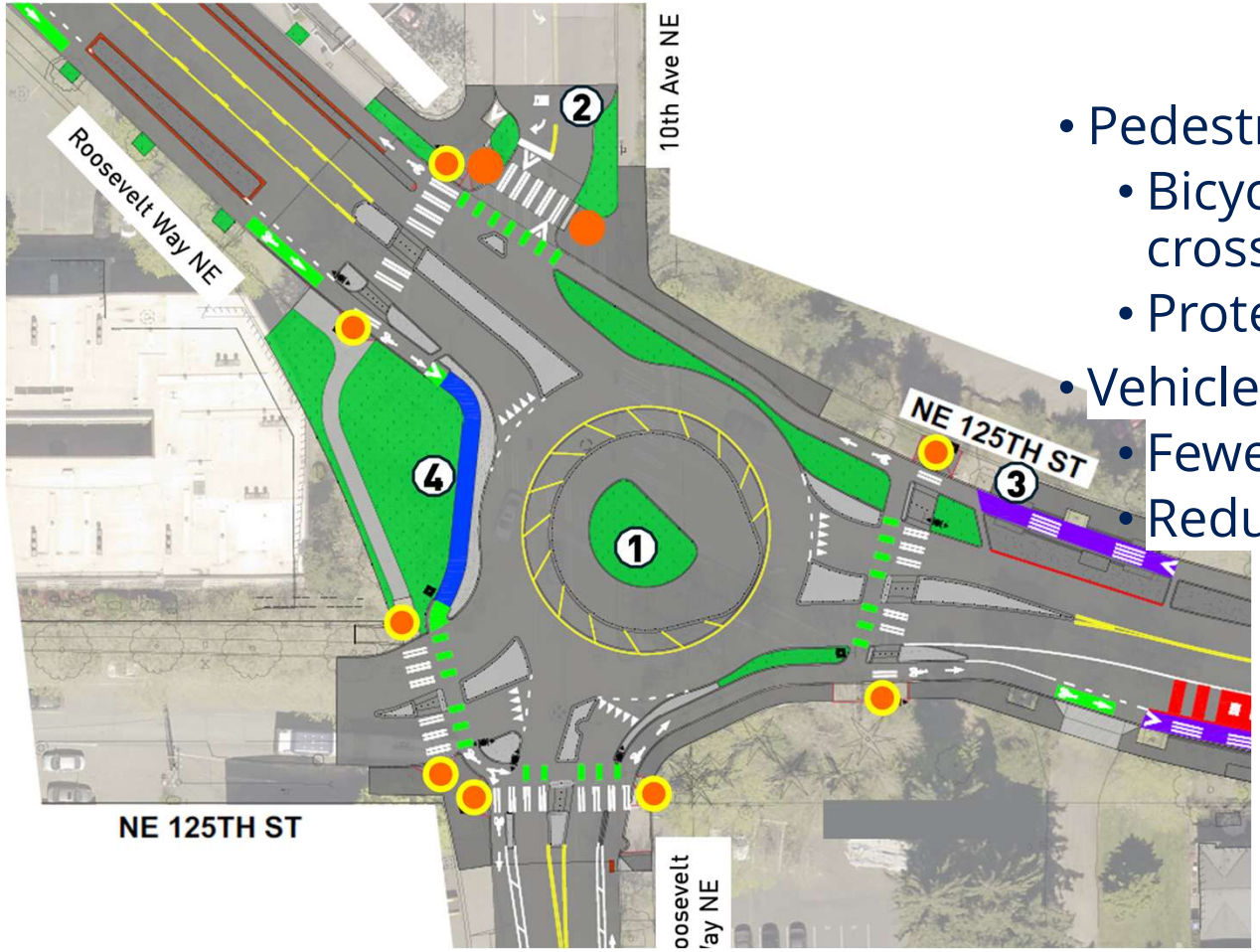
Seattle's First Roundabout



- Pedestrians/Bicyclists
  - Bicyclist and pedestrian crossings with RRFBs
  - Protected bike lanes
- Vehicles/Transits
  - Fewer conflict points
  - Reduced delays

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Seattle's First Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Pr
South:												
3	L2	All MCs	73	1.0	73	1.0	0.088	7.3	LOS A	0.4	9.6	0
18	R2	All MCs	6	1.0	6	1.0	0.088	4.3	LOS A	0.4	9.6	0
Approach			79	1.0	79	1.0	0.088	7.1	LOS A	0.4	9.6	0
East:												
1	L2	All MCs	2	1.0	2	1.0	0.561	7.4	LOS A	4.7	119.3	0
6	T1	All MCs	618	2.0	618	2.0	0.561	4.0	LOS A	4.7	119.3	0
Approach			620	2.0	620	2.0	0.561	4.0	LOS A	4.7	119.3	0
West:												
2	T1	All MCs	346	1.0	346	1.0	0.318	2.1	LOS A	1.9	48.0	0
12	R2	All MCs	33	1.0	33	1.0	0.318	2.5	LOS A	1.9	48.0	0
Approach			379	1.0	379	1.0	0.318	2.1	LOS A	1.9	48.0	0
All Vehicles			1078	1.6	1078	1.6	0.561	3.6	LOS A	4.7	119.3	0

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Seattle's First Roundabout

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Seattle's First Roundabout

- Construction Updates

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The Prongs of Seattle's Vision Zero

Responsive Safety

Use data from past collisions to inform new safety strategies

Proactive Safety

Scale up delivery of effective safety treatments and deploy them where they will have the greatest impact

Capital Project Partnerships

Conduct safety evaluations for all capital projects and develop safety improvements in priority locations

Vision Zero & Roundabouts

- Not a programmatic approach - yet
- Locations are opportunistic - identified during project development
- Special considerations in Seattle
  - Limited space
  - Urban environment
  - Many different modes (pedestrians, cyclists, micromobility) and vehicle types (trucks, buses)

Vision Zero & Roundabouts

Speed Management

- Traffic calming – particularly arterials where there is more space and other traffic calming solutions are less feasible

Collision Trends

- Reduces # of conflict points
- Existing or other traffic control types not addressing collision trend
- Carefully consider crossings design

Traffic Operations

- Improve traffic operations and minimize delay for all users

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Safety considerations in Roundabout Design

Balance Operations and Safety Benefits

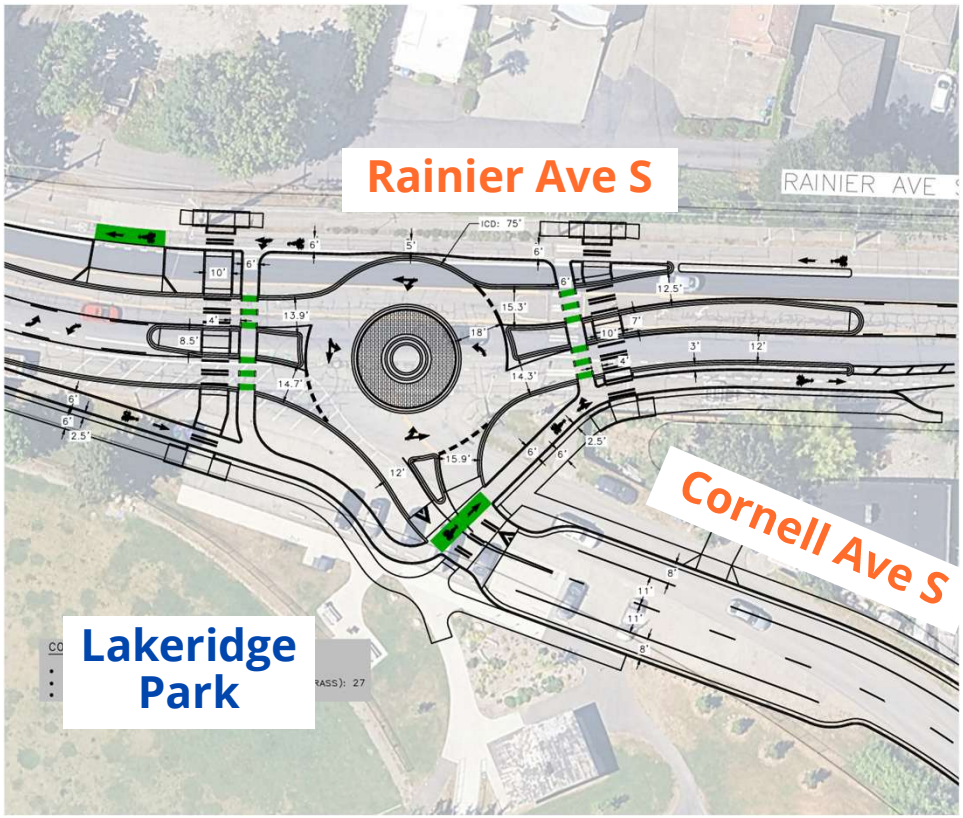
- Minimize # of lanes pedestrians and bicyclists must cross
- Design for full day operations, not just peak hours

Speed Management

- Conduct turning movements for design and accommodated vehicles
- Ensure speed reduction through deflection, lane widths, and apron use

Complete streets checklist

- Design for all modes:
  - Transit/Freight
  - Vehicles
  - Pedestrians
  - Cyclists



Example: Rainier Ave S and Cornell Ave S

- Vision Zero Safety Corridor Project
- Excess speeding along this segment – no traffic control to slow drivers down
- Partnership opportunity with Seattle Public Utilities Taylor Creek Project

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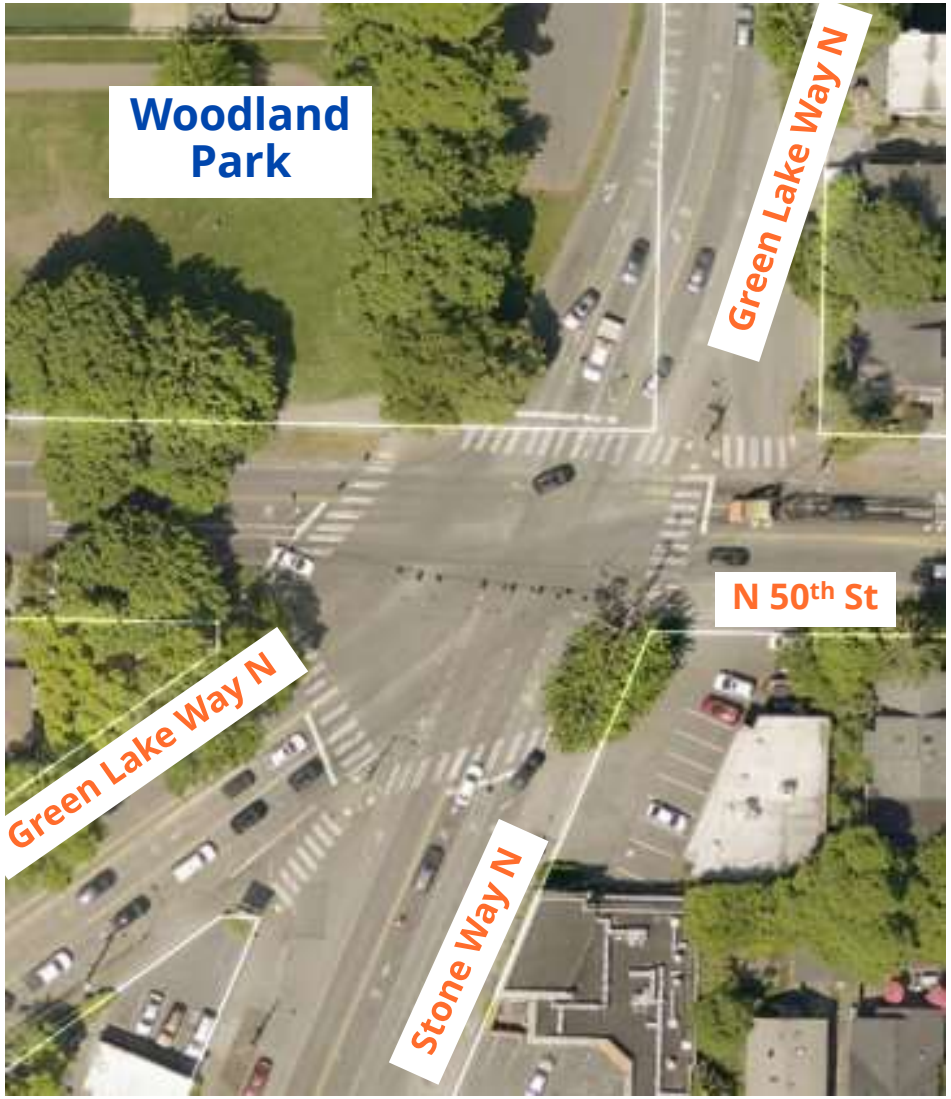

Example: Green Lake Way N/N 50th St/Stone Way N

- Existing traffic signal – split phase operations
- Problem: Long cycle length, delays, and queues. Less than ideal intersection experience for pedestrians & cyclists
- Goal: Improve operations and experience for non-motorized users while minimizing ROW impacts

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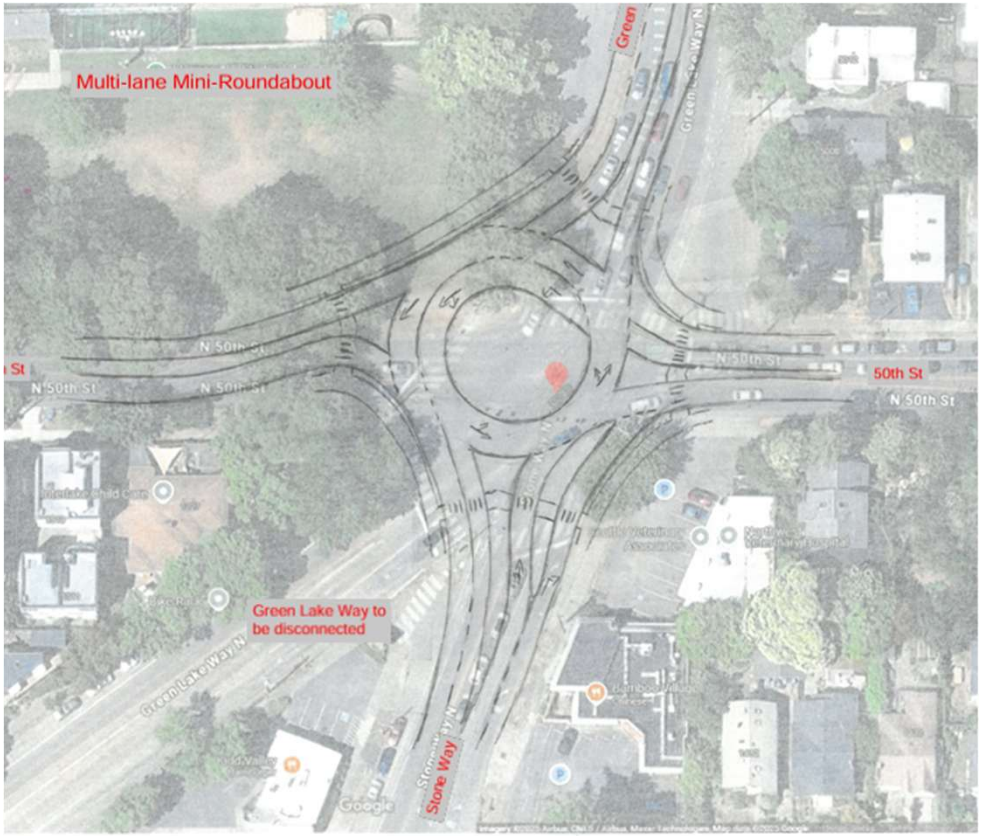
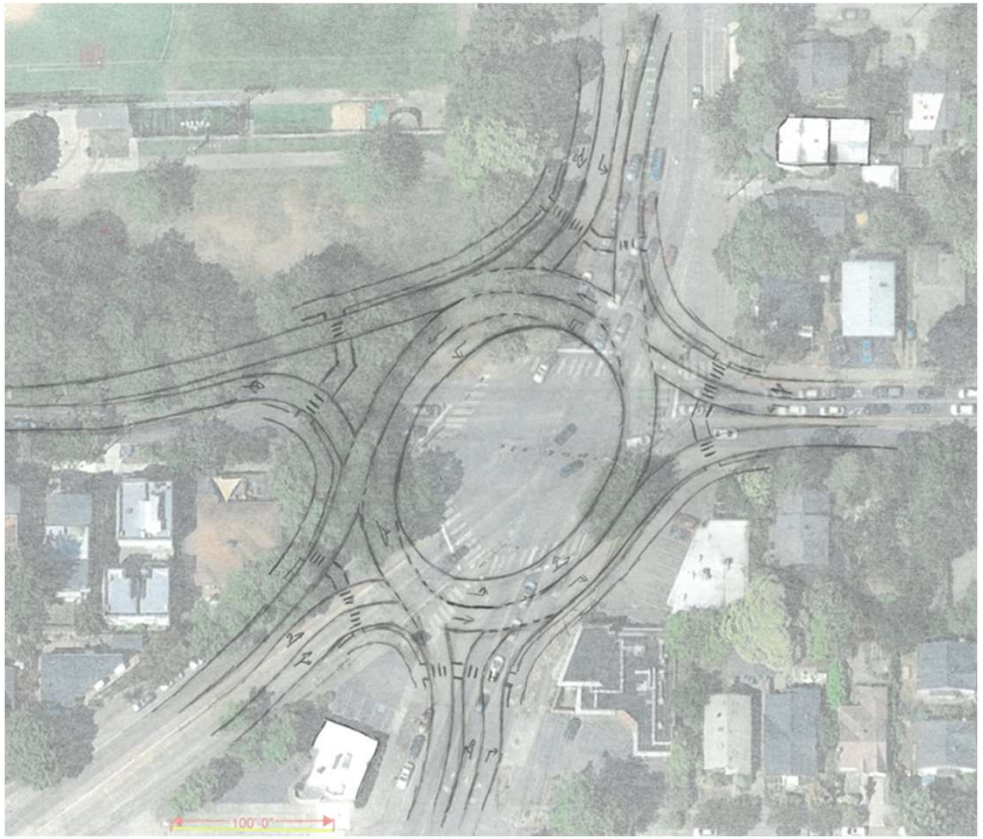
Green Lake Way N/N 50th St/Stone Way N – Alternatives



+ Simplifies network
– Eliminates freight route



+ Most traditional solution
– High impact to ROW

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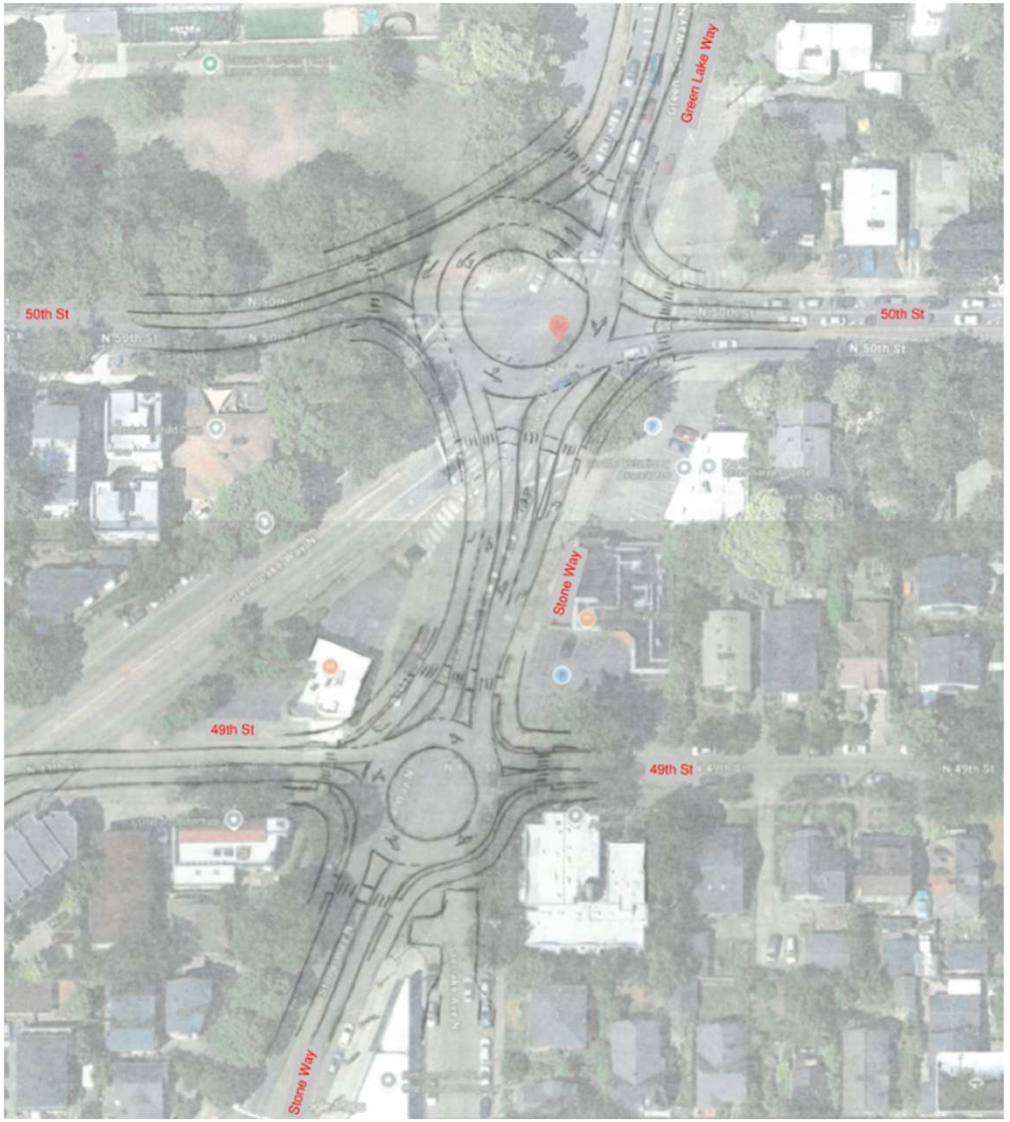

Green Lake Way N/N 50th St/Stone Way N – Alternatives

+ Simplifies 5 leg to 4 leg intersection
+ Possibility to simplify overall network
– Challenges freight connection
– Complicated to navigate
– High cost to construct two roundabouts

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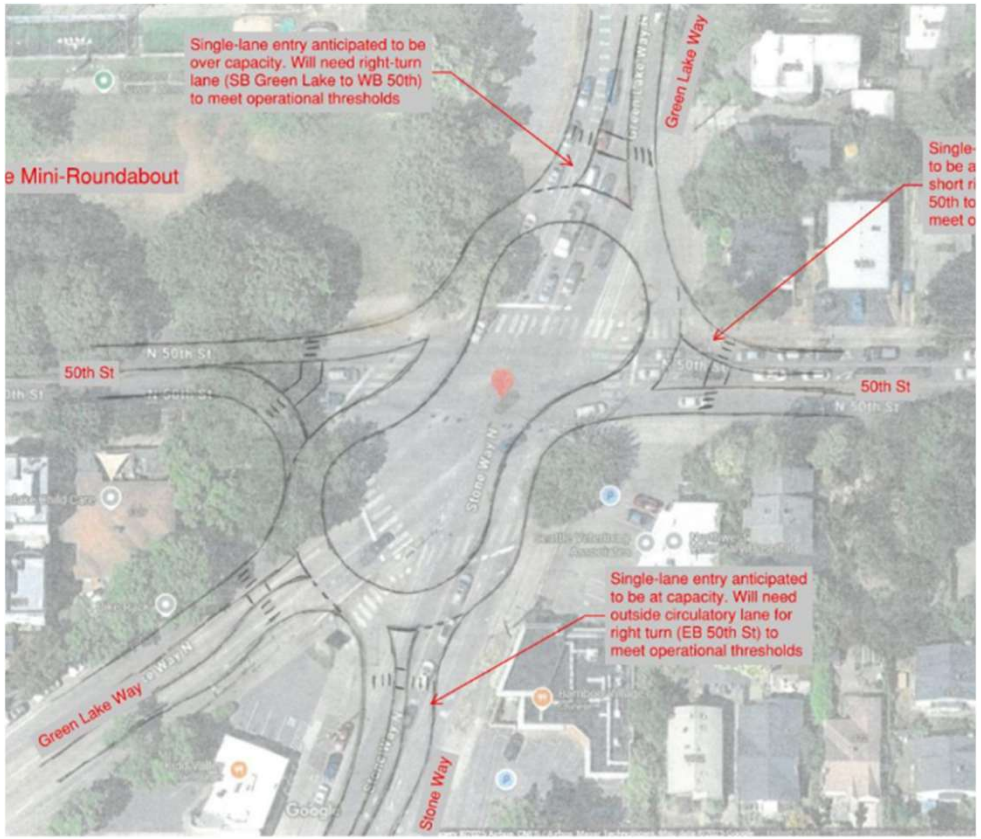
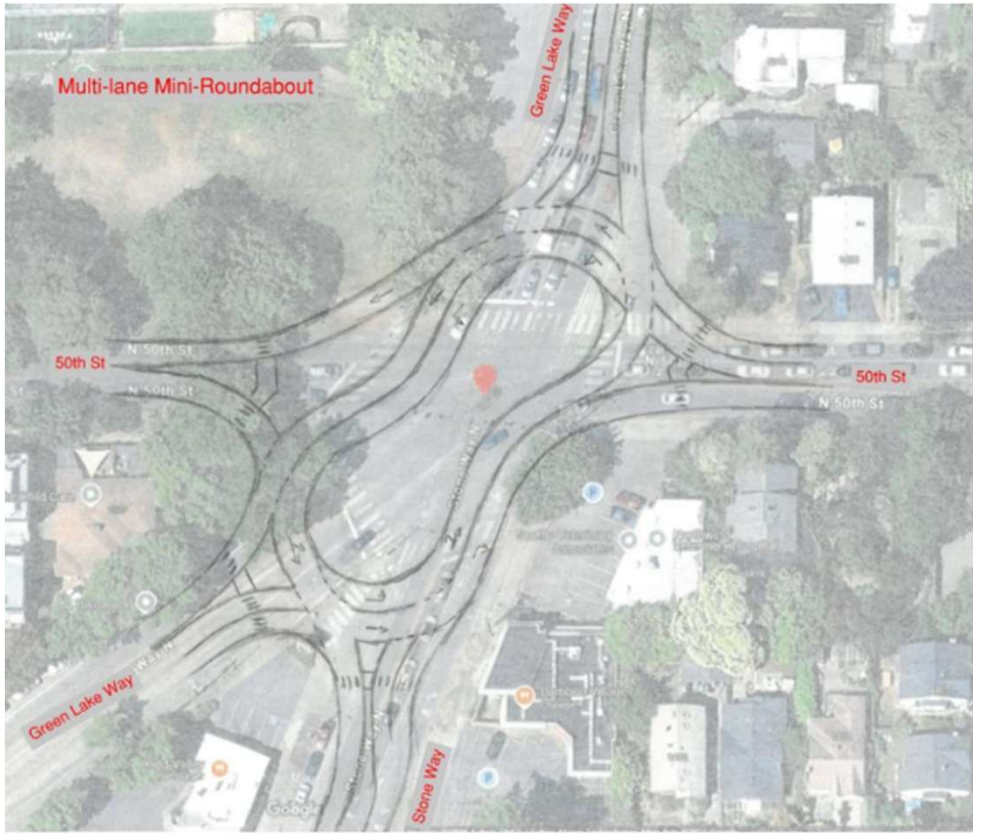
Green Lake Way N/N 50th St/Stone Way N – Alternatives



+ Fits in odd ROW/intersection
– Long queues and delay in peak hours



+ Best operations with minimal ROW impacts
– Complex to navigate

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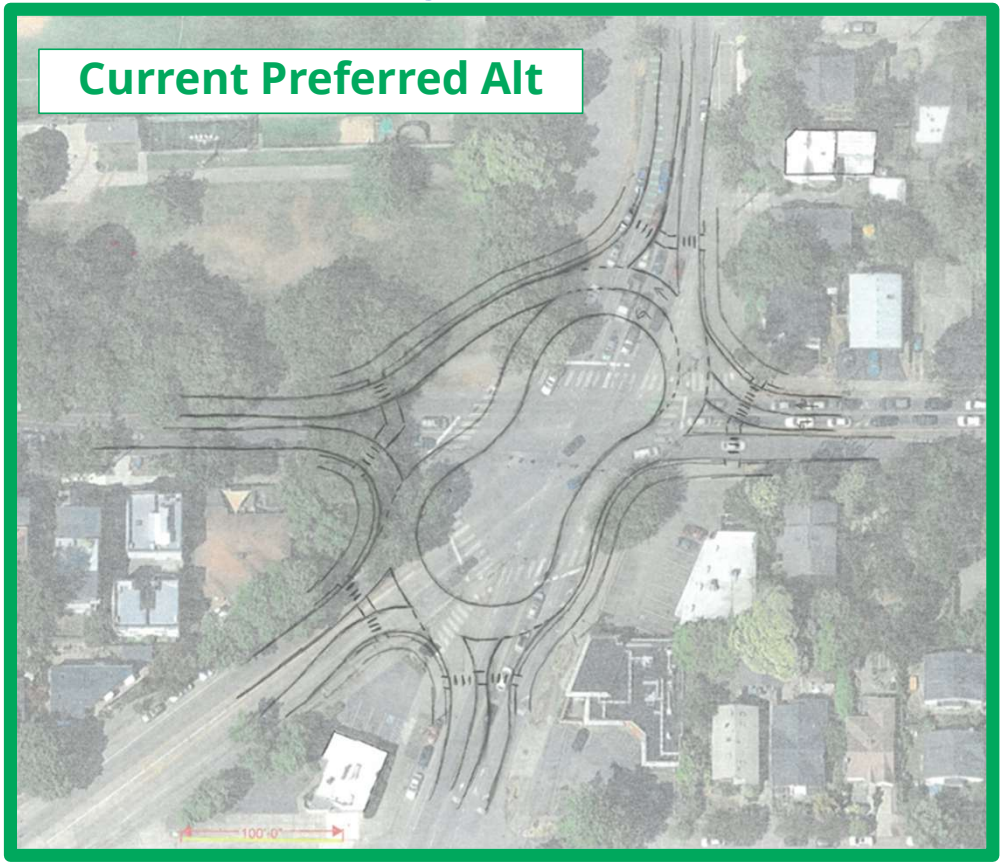
Green Lake Way N/N 50th St/Stone Way N – Alternatives

+ More queue capacity SB and WB
– More multiple lane crossings for VRUs



+ Maximizes single lane peanut benefits
– Longer SB queues in PM peak

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Thank You

Stay in touch

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