Design Alternatives to Mitigate Right Hook Collisions: NW Everett St at 16th Ave

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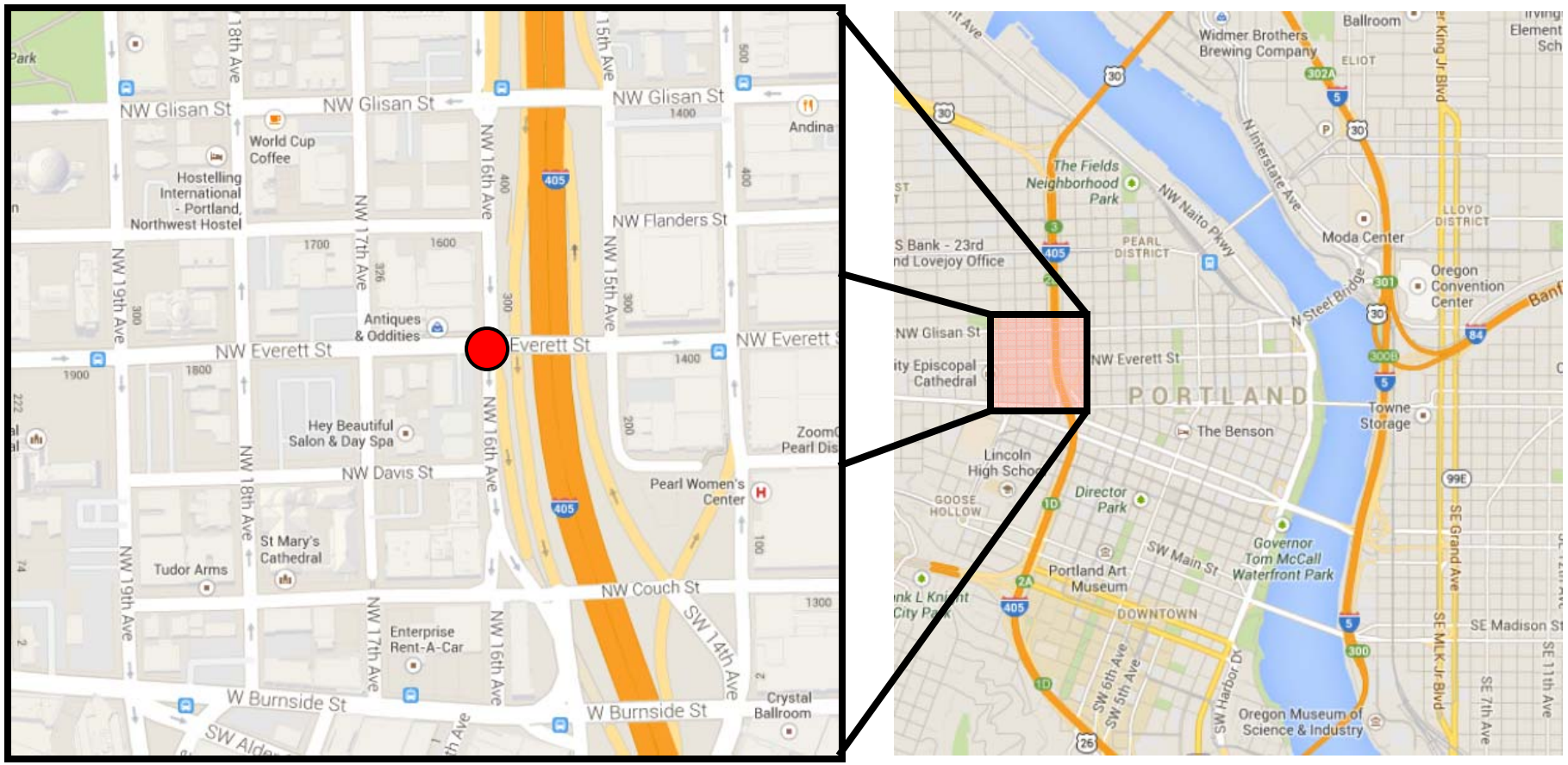
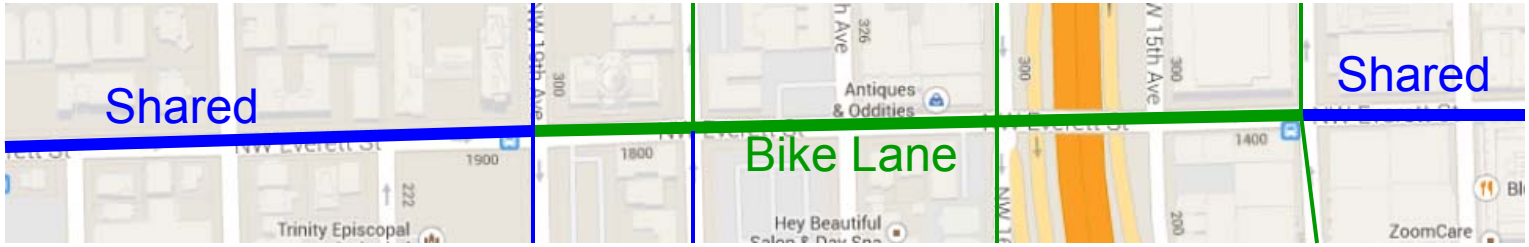
Intersection Location

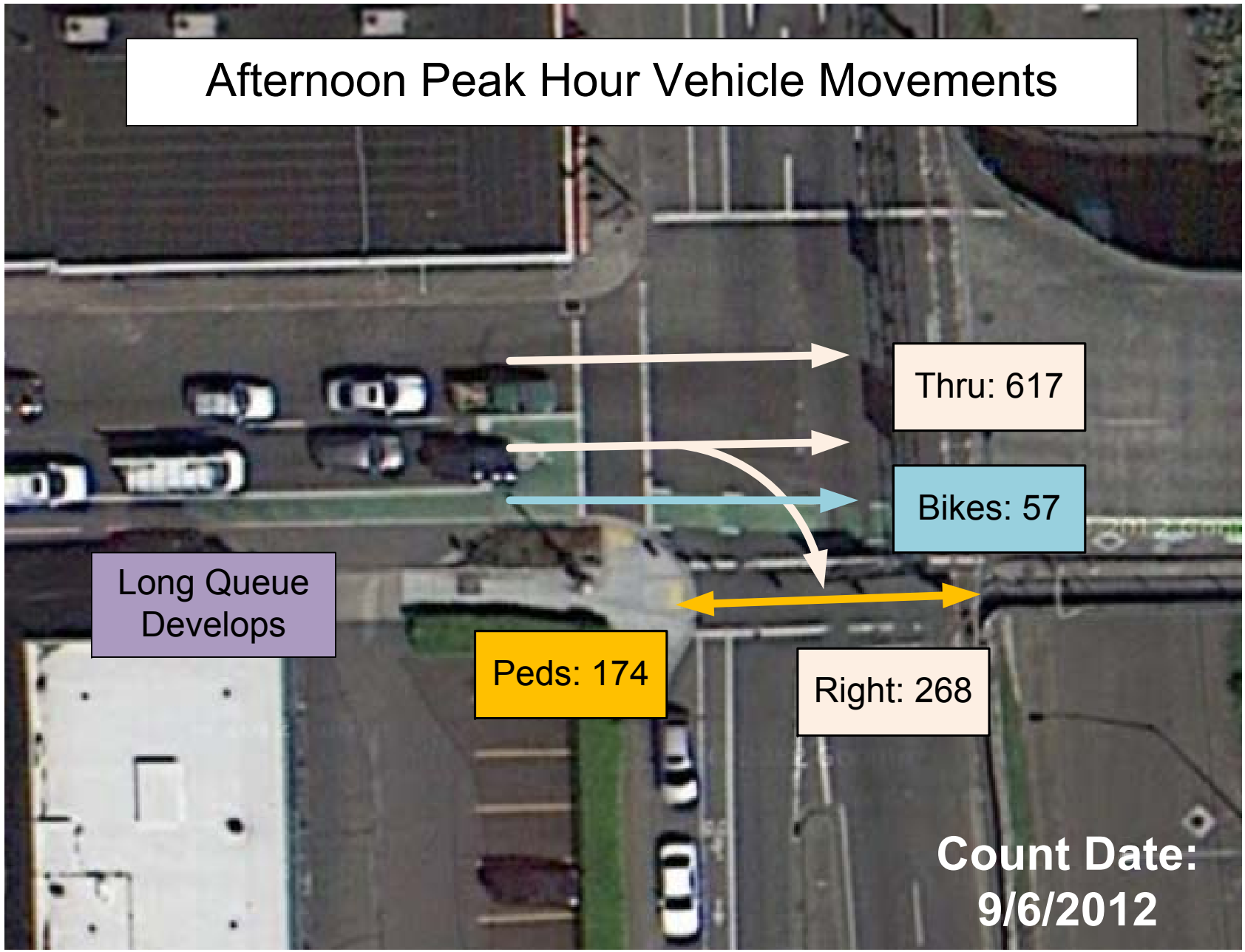




Intersection Background

- Bike box installed 2008
- 2012 performance evaluation revealed seven reported right-hook collisions after bike box installation (two reported in four years prior to installation)
- Two lane, one-way eastbound street with bike lane (44’ width)
- Heavy right turn movement to I-405 southbound
- Bioswale curb extension on southwest corner (36’ width)
- All east-west pedestrians cross south leg

NW 16th Ave & NW Everett St

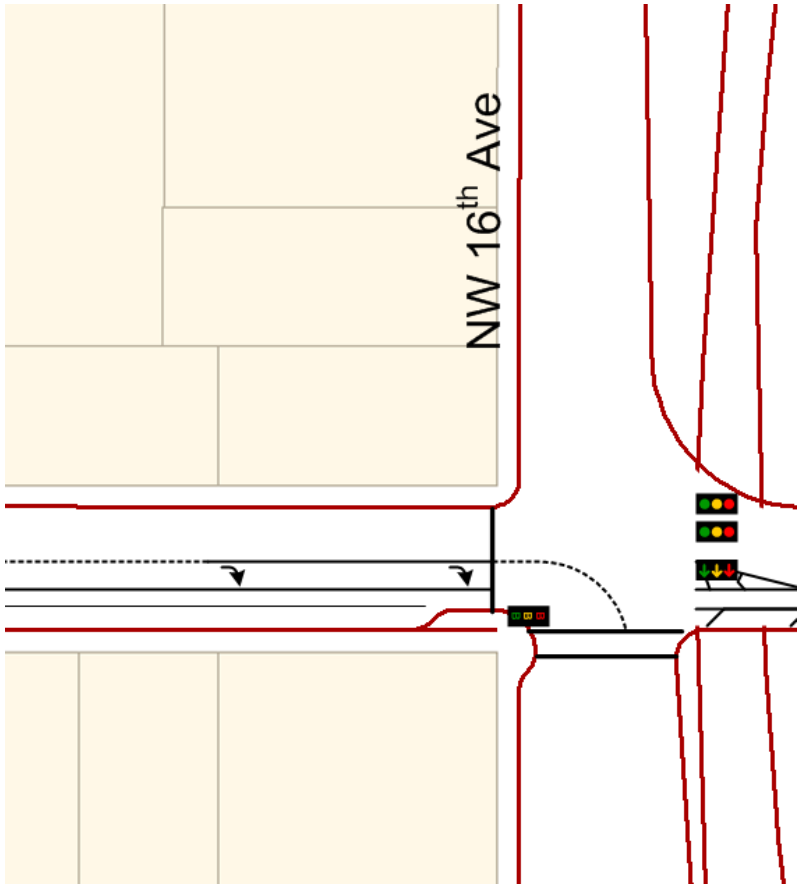

Afternoon Peak Hour Vehicle Movements
Thru: 617
Bikes: 57
Long Queue Develops
Peds: 174
Right: 268
Count Date: 9/6/2012

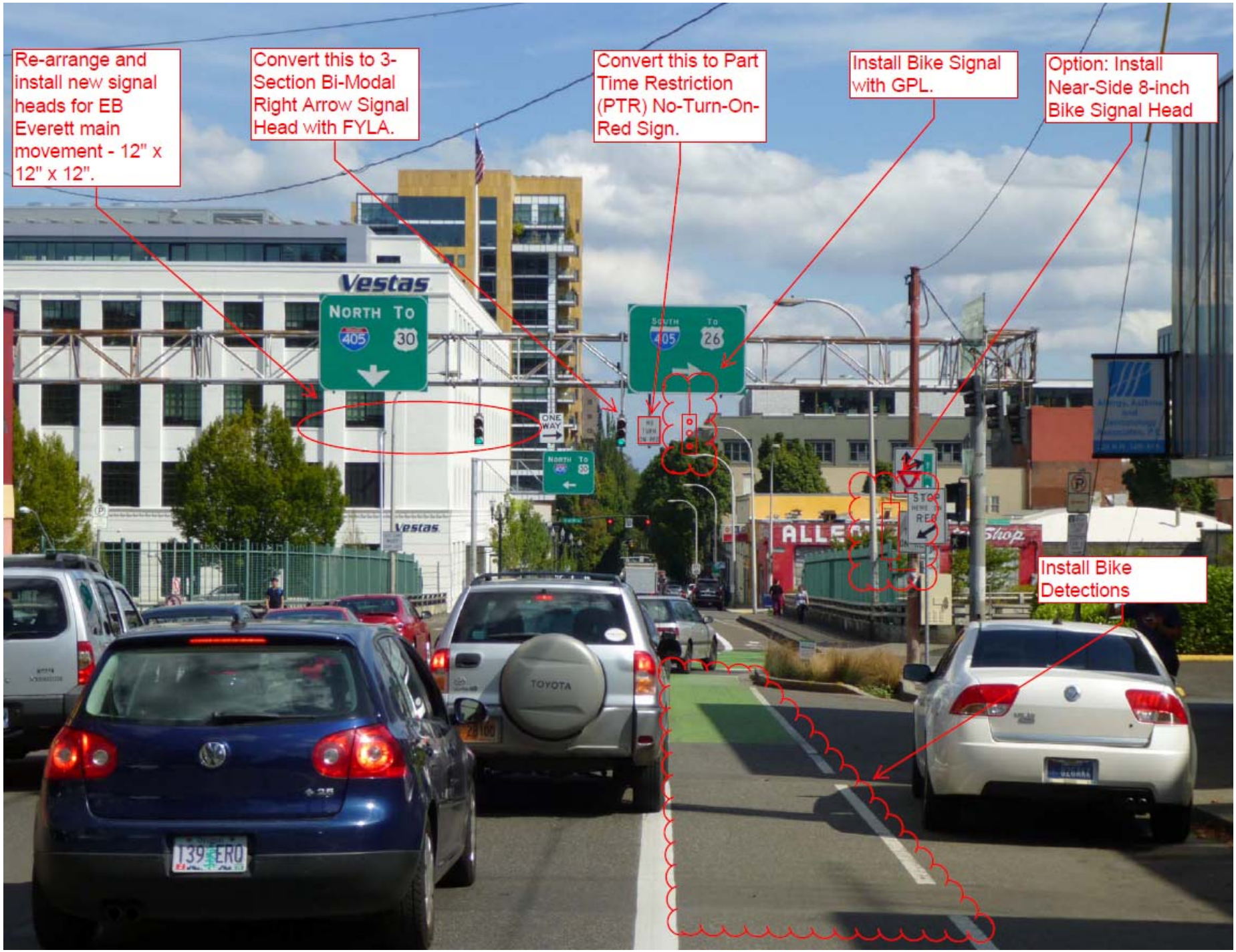
Mitigation Alternatives

1. Exclusive Bicycle/Ped Signal Phase
2. Left-side Bike Lane

Exclusive Bike/Ped Signal Phase

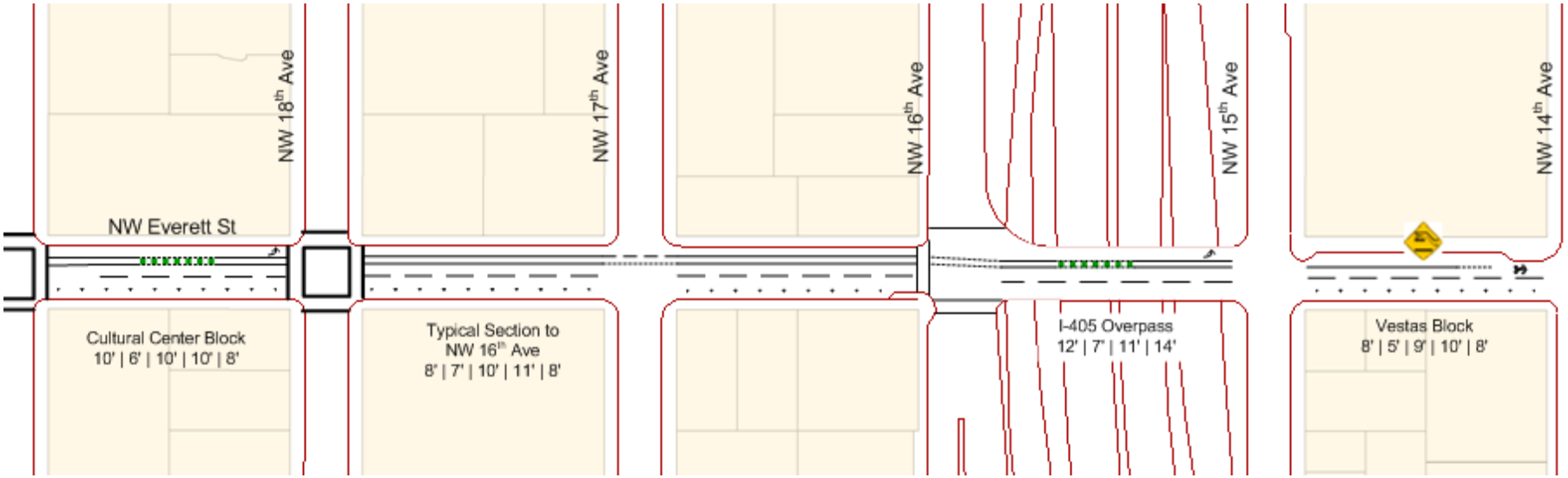
- Remove bike box
- Convert outside thru/right lane to right only
- Install new right turn signal
- Install new bike signals
- Implement leading or lagging bike signal phase
- Implement leading pedestrian interval phase
- Right turns operate under flashing yellow right arrow



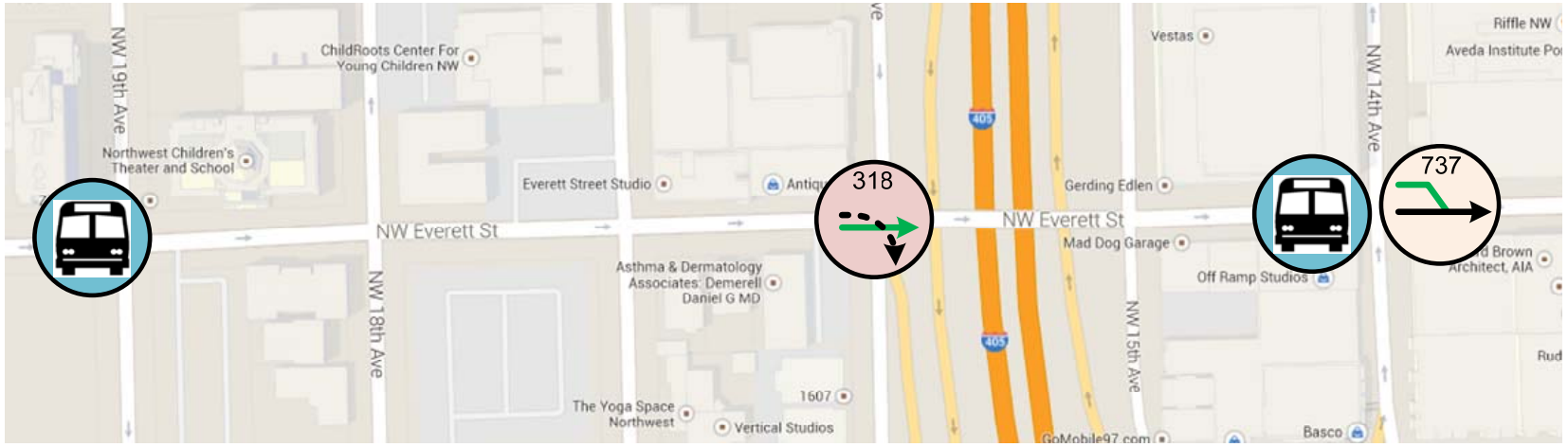

Re-arrange and install new signal heads for EB Everett main movement - 12" x 12" x 12".
Convert this to 3-Section Bi-Modal Right Arrow Signal Head with FYLA.
Convert this to Part Time Restriction (PTR) No-Turn-On-Red Sign.
Install Bike Signal with GPL.
Option: Install Near-Side 8-inch Bike Signal Head
Install Bike Detections
Vestas
NORTH TO
405
30
SOUTH TO
405
26
ONE WAY
STOP HERE ON RED
TOYOTA

Left-side Bike Lane

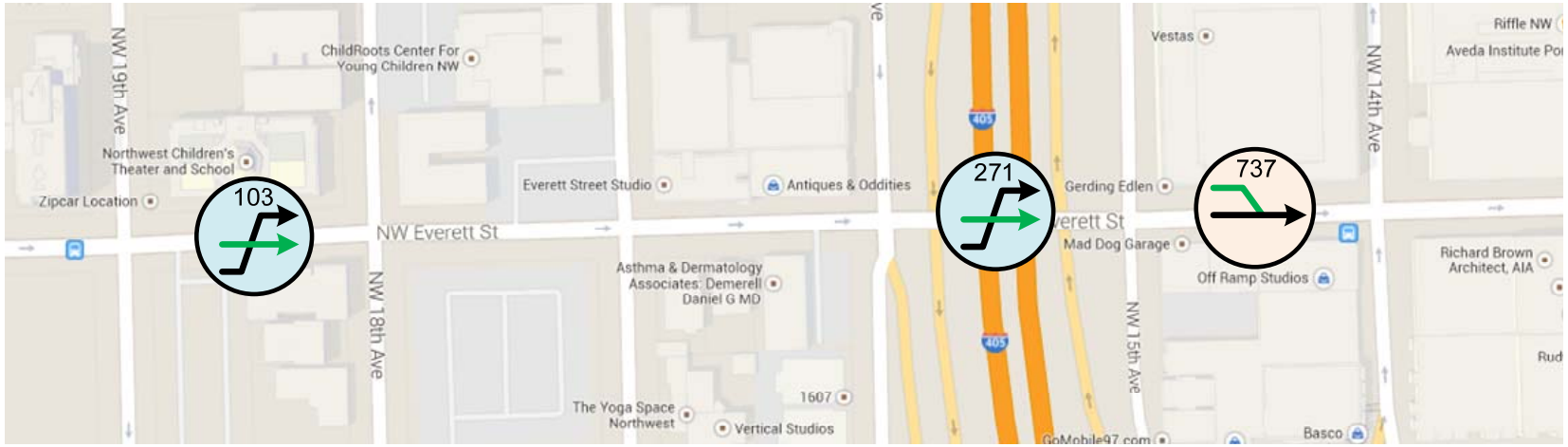
- Shifts bike lane to north side of Everett between 19th and 14th Avenues
- Shared environment west of 19th and east of 14th
- Bike lane drops short of 14th Ave to eliminate left-hook risk
- Left turn add-lanes developed at 18th and 15th Avenues



Bike Conflict Areas



Exclusive Bike/Ped Signal Phase



Left-side Bike Lane

Exclusive Bike/Ped Signal Phase

Pros

- Separates bike/auto movements in time
- Typical right-sided bike lane configuration
- Reduces ped conflict by adding LPI
- Defines right lane as right turn only
- Puts bikes in better position to access southbound bike lane at 16th Ave
- Minimal conflicts at 18th, 15th, or 14th Avenues

Cons

- Increases delay to bikes and right turns
- Decreases thru movement capacity
- Does not eliminate risk of right-hook (non-compliance)
- May disrupt signal coordination
- More expensive
- Requires ODOT involvement
- Flashing yellow right turn is unusual
- Complex configuration
- Significantly more peak-hour right turns at 16th Ave (~250-300)
- Driver-side dooring risk

Left-side Bike Lane

Pros

- Eliminates right-hook conflict at 16th Ave
- Does not impact intersection capacity (retains existing motor vehicle configuration)
- Less expensive
- No ODOT interaction required
- Puts bikes in better position to access northbound bike lanes at 18th & 14th Avenues
- No increase in delay
- Conflicts at 18th and 15th Avenues are easier to deal with (fewer turns, room for add-lanes)
- Eliminates bus conflict
- Significantly fewer peak-hour left turns at 14th Ave (~100)
- No transition issues (shared environments exist west of 19th and east of 14th)

Cons

- Left-side bike lane is unusual
- Passenger-side dooring risk
- Bike lane is dropped prior to 14th Ave
- Introduces weave at 18th & 15th Avenues
- On-street parking impact approaching 18th Ave