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VISION ZERO SUCCESS STORY – INFRASTRUCTURE

Rainier Avenue South Redesign — Seattle, Washington

Key Successes

The redesign of the Rainier Avenue South corridor including geometric changes, signal timing and speed limit modifications, and transit efficiency measures such as new bus lanes (figure 1) resulted in the following traffic safety successes:

15% -**overall decrease** in the total number of crashes.

30% -**overall decrease** in total injury crashes.

28% and **52%** (southbound and northbound, respectively) -**decrease** in the number of speeders recorded at South 42nd Street.

Figure 1. Photograph. Newly installed bus lane on Rainier Avenue South at South Cloverdale Street.

Background

The Rainier Valley neighborhood located in southeast Seattle is home to one of the City's most culture-rich and diverse populations. Rainier Avenue South is a principal arterial street that connects residents and communities along the former regional rail corridor. The area surrounding Rainier Avenue South includes many land uses like retail, schools, and parks. These uses are pertinent to pedestrians, cyclists, transit users, and drivers.

It was also the corridor with the highest number of traffic crashes in Seattle; the corridor had a per mile crash rate that is greater than other streets in the City that carry more than twice the volume of traffic as on Rainier Ave South. The City launched Vision Zero[1] efforts in 2014, one of which was working with the community to redesign a one-mile segment of the eight-mile corridor for the pilot phase of the Rainier Avenue South Corridor Safety Project. The City implemented changes to the piloted segment between South Alaska Street and South Kenny Street over a weekend in August 2015.

Rainier Avenue South carries over 13,000 people daily on transit, is a freight and emergency response route, and serves between 19,700 and 26,600 vehicles each weekday. Studies in the corridor show that between 1,000 and 2,000 vehicles per day travel along the corridor at a speed greater than 10 miles above the 30 miles per hour (mph) posted speed limit. The total average number of annual crashes over the 10 years prior to the redesign was 95 crashes, 9 serious injury crashes, and 1 fatality crash.

[1] Seattle Department of Transportation. (2020). "Vision Zero". https://www.seattle.gov/visionzero

U.S. Department of Transportation
Federal Highway Administration

Safe Roads for a Safer Future
Investment in roadway safety saves lives

Figure 2. Graphic. Aerial photograph of Rainier Avenue South intersection showing transit and lane improvements.
Figure 3. Graphic. Aerial photograph of Rainier Avenue South intersection showing rechannelization improvements.

Additionally, of the over 70,000 people living in the surrounding zip codes, 15 percent of homes do not own a vehicle; making pedestrian safety a top interest of the community.

Implementation

The City made the following design changes to improve safety along the one-mile pilot segment:

- **Reconfigured Roadway** – Removed one travel lane from each direction (shown in both figures 2 and 3) to accommodate a center two-way left-turn lane.
- **Prioritized Transit** – Added a transit priority signal[2] and added dedicated bus (and right-turn) lanes to both directions.
- **Retimed Signals** – Retimed signals for the new flow of traffic, including longer cycle lengths, leading pedestrian intervals[3], and left-turn signals.
- **Lowered Posted Speed Limit** – Reduced the posted speed limit from 30 to 25 mph.
- **Enhanced Sight Lines** – Added pavement paint and flexible delineator posts at crossings to improve sight lines for traffic entering the corridor and reduce distance for pedestrians crossing the street. Additionally, new reflectors, curb bulbs, and raised and/or repainted crosswalks increased visibility for pedestrian crossing.

[2] Federal Highway Administration. (2015). "Signal Priority." https://www.transit.dot.gov/research-innovation/signal-priority

[3] Federal Highway Administration. (2017). "Leading Pedestrian Intervals." https://safety.fhwa.dot.gov/provencountermeasures/lead_ped_int/

Outcomes

The corridor improvements implemented during the pilot consisted of a reduction in high speeding (40+ mph), improved pedestrian crossings, and modified turning movements. This resulted in a 15-percent reduction for all crashes, a 30-percent reduction in injury crashes, and a 40-percent reduction in bicycle and pedestrian crashes. The City anticipated travel time for general traffic along this study corridor to increase and it did so by about 54 and 81 seconds in either direction. The City also expected and observed some diversion in volume from Rainier Avenue South, as traffic rerouted to the nearby, and under capacity Martin Luther King Jr Way South.

The addition of bus lanes and transit priority signals helped to maintain or improve transit services, with the northbound travel time reducing by three minutes during the PM peak hour. The southbound route experienced no significant change during the same time period.

Funding

This project was funded by the City's Bridging the Gap safety program.

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Rainier Avenue South Project Website: https://www.seattle.gov/visionzero/projects/rainier-ave-s