print page close window

Neighborhood Traffic Circles

CASE STUDY NO. 56

SEATTLE, WAÂ

Prepared by Jim Mundell, P.E., City of Seattle, WA.

Problem

Maintaining pedestrian and traffic safety on neighborhood streets requires addressing the dual problems of speeding traffic and intersection accidents.

Background

Seattle's Neighborhood Transportation Services (NTS) began as an outgrowth of programs to improve deteriorating neighborhoods. Residents of Seattle approved the Forward Thrust Bond Issue in 1968 with a major emphasis on reducing traffic impacts and supporting street improvements to re-vitalize deteriorating neighborhoods. Demonstration projects testing a variety of traffic control devices, such as traffic circles, diverters, chicanes and partial and full closures began in 1973 and continued throughout the 1970s and 1980s. The NTS emphasizes citizen participation and has grown into a popular and highly visible program with its most successful device being the traffic circle.

Of all the devices used in Seattle, traffic circles have proven to be the most effective at solving neighborhood concerns about speeding traffic and traffic accidents with a minimum of controversy. In addition, by slowing vehicle speeds, these devices make streets safer for pedestrians. Since 1973, over 600 traffic circles have been constructed in Seattle and the NTS staff receive about 700 requests for traffic circles each year. The program is currently funded to construct 30 traffic circles per year.

Solution

Potential traffic circle locations are identified through community requests or investigation of high accident intersections. In order to ensure that the City's traffic safety funding is allocated to the intersections with the greatest need, a priority point system is used to rank the intersections where traffic circles are requested. The ranking is based on the number of accidents that have occurred at the intersection in the last three years, the speed of traffic (85th percentile speed), and the volume of traffic. Residents are required to submit a petition with signatures representing 60 percent of the households within one block of the proposed traffic circle in order to compete for funding. Funding is allocated starting with the intersection with the worst combination of problems and proceeds as funding allows. The cost to construct each circle ranges from $3,000 to $6,000.

Each traffic circle is individually designed to fit the intersection without having to modify the street width or corner radii. Most of Seattle's local streets are 7.5 m (25 ft) wide or less, and traffic circles are usually 3.6-4.9 m (12-16 ft) in diameter. While traffic circles are designed so that fire trucks should be able to pass around them, they are constructed with a 0.6 m (2 ft) wide mountable curb that allows fire trucks or larger vehicles, such as moving vans, to run over the curb without damaging the vehicle or the circle.

Ground cover and one to three trees are included in all the traffic circles currently being constructed. The pavement inside the traffic circle is removed during construction to allow for drainage and accommodate tree

roots. The landscaping makes the circle more attractive to the neighborhood residents less appealing for high speed driving. The local residents are required to maintain the plantings and are allowed to add their own low growing plants that won't block visibility of pedestrians or traffic.

Results

Between 1991 and 1994, a total of 119 traffic circles were constructed through Seattle's NTS. The number of automobile accidents at these intersections fell 94 percent from 187 in the year before to 11 in the year after construction. The reduction in injuries was even more dramatic, dropping from 153 injuries in the year before construction to a single injury in the year following construction. Accident reduction was also found in subsequent years. The reduction in accidents is even more impressive, most of the intersections had experienced an was an increase in the number of accidents during the years prior to the installation of the traffic circle.

In addition to reducing accidents, traffic circles have been found to be effective at reducing vehicle speeds but have not significantly reduced traffic volumes. The effect on speed generally continues to the middle of the block.

The reductions in vehicle speeds also benefit pedestrians. According to Shauna Walgren, Senior Planner in the NTS Division, community residents often request traffic circles from the City because they are concerned about children who live in the neighborhood, "When motor vehicle speeds are reduced, the frequency and severity of collisions involving pedestrians are also reduced. We work with a great many schools, and the safety of children crossing the street is their main concern. Traffic circles are a solution that works."

Seattle's traffic circles have also received strong community support. Responses on surveys mailed to residents following construction of traffic circles indicate 80 percent to 90 percent of residents feel the circles have been effective and want to keep them permanently. Only two circles have been removed out of more than 600 constructed, and none have been removed in the last 12 years.

After nearly 25 years of experience installing traffic circles, Seattle has found them to be an effective device for controlling neighborhood traffic and improving safety and comfort for the residents of residential streets.

Contact

Jim Mundell, P.E.
Senior Traffic Engineer
Seattle Transportation Department
810 3rd Avenue
Central Bldg., Room 754
Seattle, WA 98104
Phone: (206) 684-0814
E-mail: james.mundell@ci.seattle.wa.us