



Roundabouts in Small-Medium Sized Communities: Why Consider Them?

Infrastructure Assistance Coordinating Council 2014 Fall Conference






PRESENTORS:

- Dave Kliever, PE – J-U-B Engineers, Spokane Manager
- Spencer Montgomery – J-U-B Engineers, Transportation Planner
- Roger Krieger - Public Works Director, City of Deer Park
- Brian Walsh, PE – WSDOT HQ Traffic Engineer

Focus today on small – medium sized towns and mainly single lane roundabouts

ROUNDBABOUTS HAVE SOME ADVANTAGES

- Superior safety record over signalized intersections
- Small town maintenance considerations
- Pedestrian benefits




Truck aprons can be used to help facilitate truck movements while still keeping speeds slow for small vehicles.








27th Avenue & Union Street Roundabout Kennewick, WA

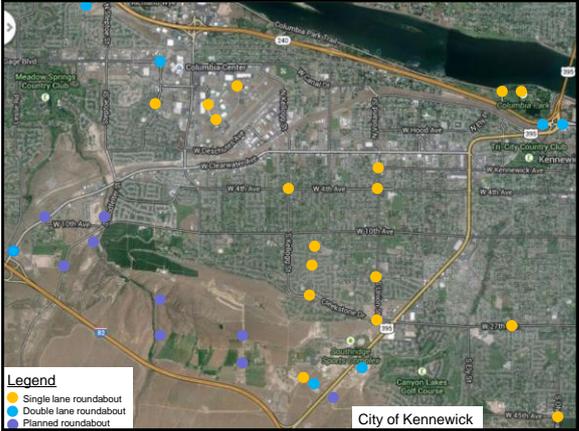


The City's first modern roundabout for two intersections in close proximity to one another. Union Street provides access to Southridge High School, so traffic diversion was a main concern for residents, and the project schedule required construction to be complete by the start of school.

... the jury is in and we have declared it [roundabout] wonderful. The flow of traffic slows a bit at peak congestion times, but it keeps moving! The most important improvement is the reduction in accidents. Our security staff was at the old intersection at least twice a week to assist with student accidents, some of them quite serious. This year we haven't had to deal with any accidents at the 27th and Union intersection and we couldn't be happier. Love it or hate it, the roundabout is working for Southridge.
-Southridge High School Newsletter, December 2006, Vol. 81, Issue 3.



"Our very first roundabout was 27th Avenue and Union Street which went from one of the city's worst intersections, on the city's arterial system for traffic collisions, to one of the safest. In the two years prior to the roundabout, there were 28 reported crashes; in the 2-years after, we have had 6 reported rear-end accidents approaching the roundabout none in the actual roundabout and all minor "fender benders".
 (City of Kennewick Newsletter.)

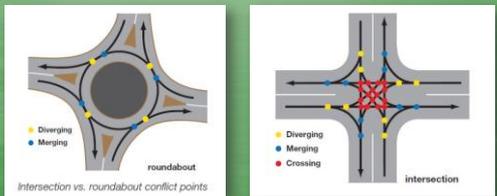
Some Benefits of Roundabouts

- Addresses Peak Hour issues when signal warrants are not met
- More flexibility with available Right-of-way
- Life Cycle costs typically lower
- Lower accident rates
- Less severe accidents



Studies by the FHWA and Insurance Institute for Highway Safety (IIHS) have shown that roundabouts typically achieve:

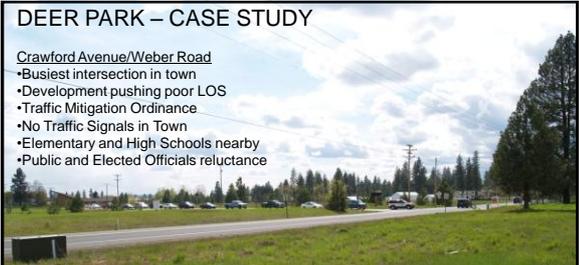
- A 37 percent reduction in overall collisions
- A 75 percent reduction in injury collisions
- A 90 percent reduction in fatality collisions
- A 40 percent reduction in pedestrian collisions
- 75 percent fewer conflict points than a traditional intersection



DEER PARK – CASE STUDY

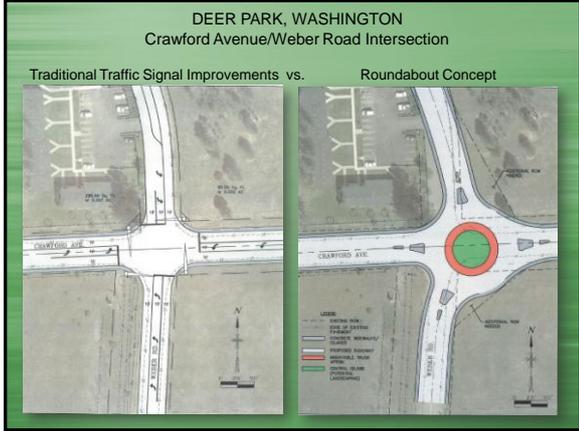
Crawford Avenue/Weber Road

- Busiest intersection in town
- Development pushing poor LOS
- Traffic Mitigation Ordinance
- No Traffic Signals in Town
- Elementary and High Schools nearby
- Public and Elected Officials reluctance





Study performed to compare traditional Traffic signal with Roundabout
 Presented results at Open House with Elected Officials and Public
 Council voted 3 - 2 in favor of roundabout



Crawford/Weber Intersection Comparison of Alternatives

Feature Compared		Traditional Intersection Improvements Alternative (Signalization w/turn lanes)	Roundabout Alternative
Traffic Operations	Short Term	would not meet signal warrants, as unsignalized (with left turn lanes would provide LOS 'D')	minimal delay, LOS 'A'
	Long-term	LOS 'C'	LOS 'F' for WB approach, 'E' for EB, 'C' for NB, 'A' for SB
	Other	off-peak delay caused by signal or stop signs	off-peak traffic has minimal delay
Right-of-Way		minimal, likely < than 500 sq ft	10,000 - 12,000 sq ft
Safety	Vehicle Conflicts	32 conflict points (16 are crossing paths)	8 conflict points, all merging/diverging movements
	Pedestrian Conflicts	16 conflict points, pedestrian must be aware of 3 different directions of traffic	8 conflict points, pedestrian only needs to look one direction
	Accident Severity	higher accident rates as Two-Way Stop Controlled or as Signalized than Roundabout	vehicles slower, conflicting movements less severe therefore fewer injury accidents than either TWSC or signalized intersections

Feature Compared		Traditional Intersection Improvements Alternative (Signalization w/turn lanes)	Roundabout Alternative
Costs	Construction	\$400,000	\$337,000
	Annual Maintenance	Traffic signal equipment, power, approximately \$4,500	Minimal
	Life Cycle	\$28,016/year	\$16,161
Other	Trucks	specific design to accommodate truck turning movements is provided where necessary	not ideal for high truck volume corridors, trucks can be accommodated with truck aprons
	Pedestrians	specialized traffic signal features can be incorporated to accommodate the visually impaired	accommodations for the visually impaired are more challenging but have been developed
	Minor Street Approaches	close access points north and south of the intersection will likely make for short left turn storage lengths approaching the intersections	will not require left turn lanes approaching the intersections, allowing for less conflict between left-turning vehicles on the north and south legs



Still no traffic signals

We're working on our 3rd Roundabout

