

# ***“One State DOT’s Perspective”*** **Roundabout Intersections**

**California Department of Transportation (Caltrans) – Webinar**



**Brian Walsh, P.E.**

**Washington State Department of Transportation**  
***November 9, 2011***

# A "North American" Perspective



4/15/2003



# A “European” Perspective

Photo: Matthew Enders

Is this the future or what we are proposing....?



# Roundabout Guidance/Chronological Timeline (WSDOT)

- **1995 – First roundabout proposal (Port Orchard) on state highway, initial guidance was Maryland Roundabout Guide**
- **1996 – Austroads Part 6 is obtained**
- **1997 – First roundabouts opened (State and City projects)**
- **1998 – Filmed state highway roundabout to understand Operations (Port Orchard)**
- **1999 – Decision was made that WSDOT needed to provide Design Guidance**
- **2000 – Design Manual Chapter produced/ 1<sup>st</sup> Statewide Conference**
  - – First multi-lane roundabout is designed/delayed for next season
- **2001 – 2004 Held one day workshops through LTAP Center (20 total)**
- **2005 – Choosing Intersection Control Chapter Discussion**
- **2005 – 2008 Roundabouts continue to be controversial – Trucks, Capacity Issues. 5 of 6 WSDOT Regions had constructed a roundabout**
- **2008 - Roundabouts continue to be proposed and designed, Truck Listening Session**
- **2009 - Number of roundabouts built and operating passes 120, Choosing Intersection Control Policy to be implemented**
- **2011 – Number of roundabouts built passes 215. Agency as a whole has accepted roundabouts however reservations remain**

# Planning Effort/Initiative Results in Progress

## *2008 Stats*

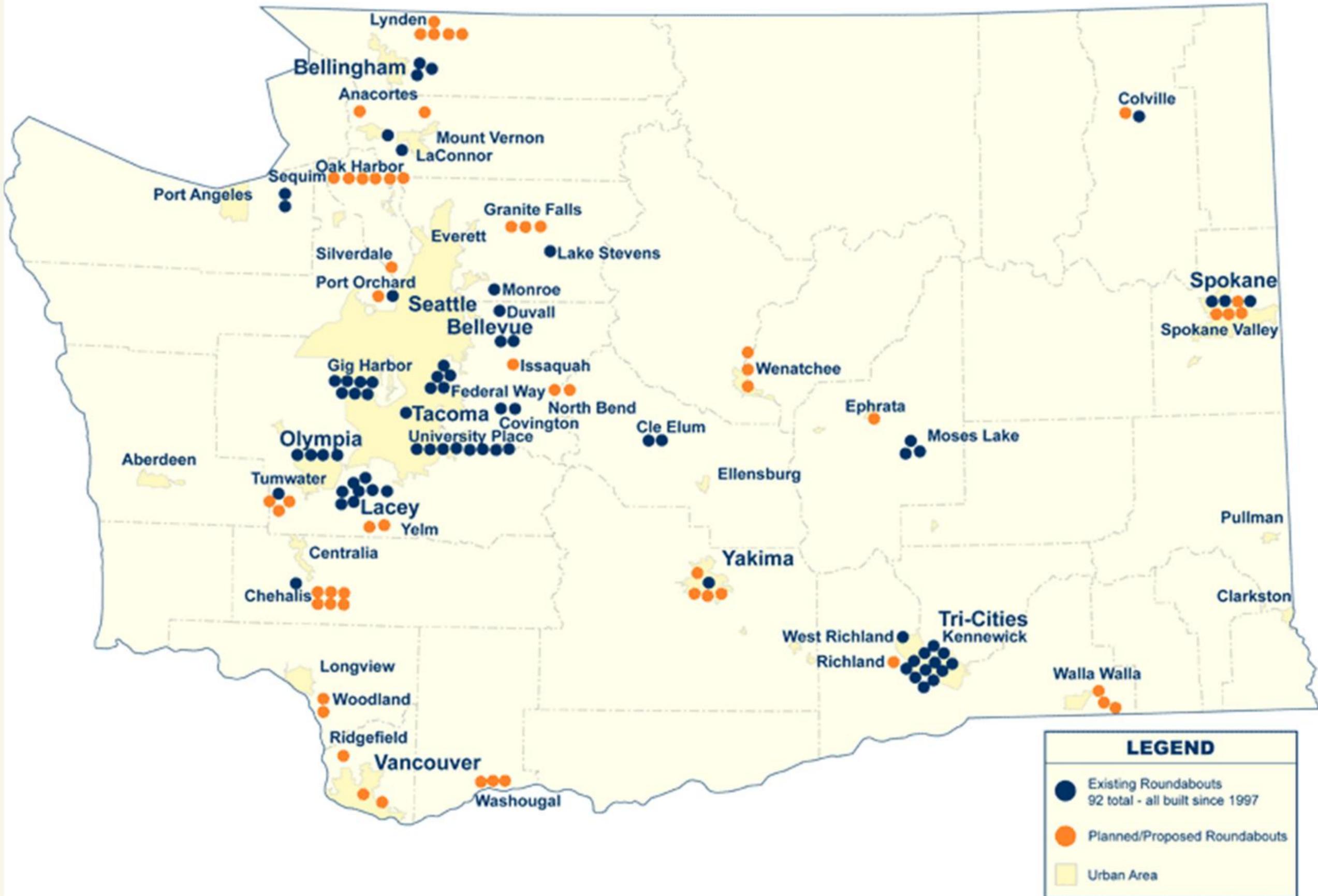
- **120 Roundabouts Total**
- **22 on state highways**
- **46 separate jurisdictions**

## *2011 Stats*

- **218 Roundabouts Total**
- **57 on state highways**
- **Over 70 jurisdictions**

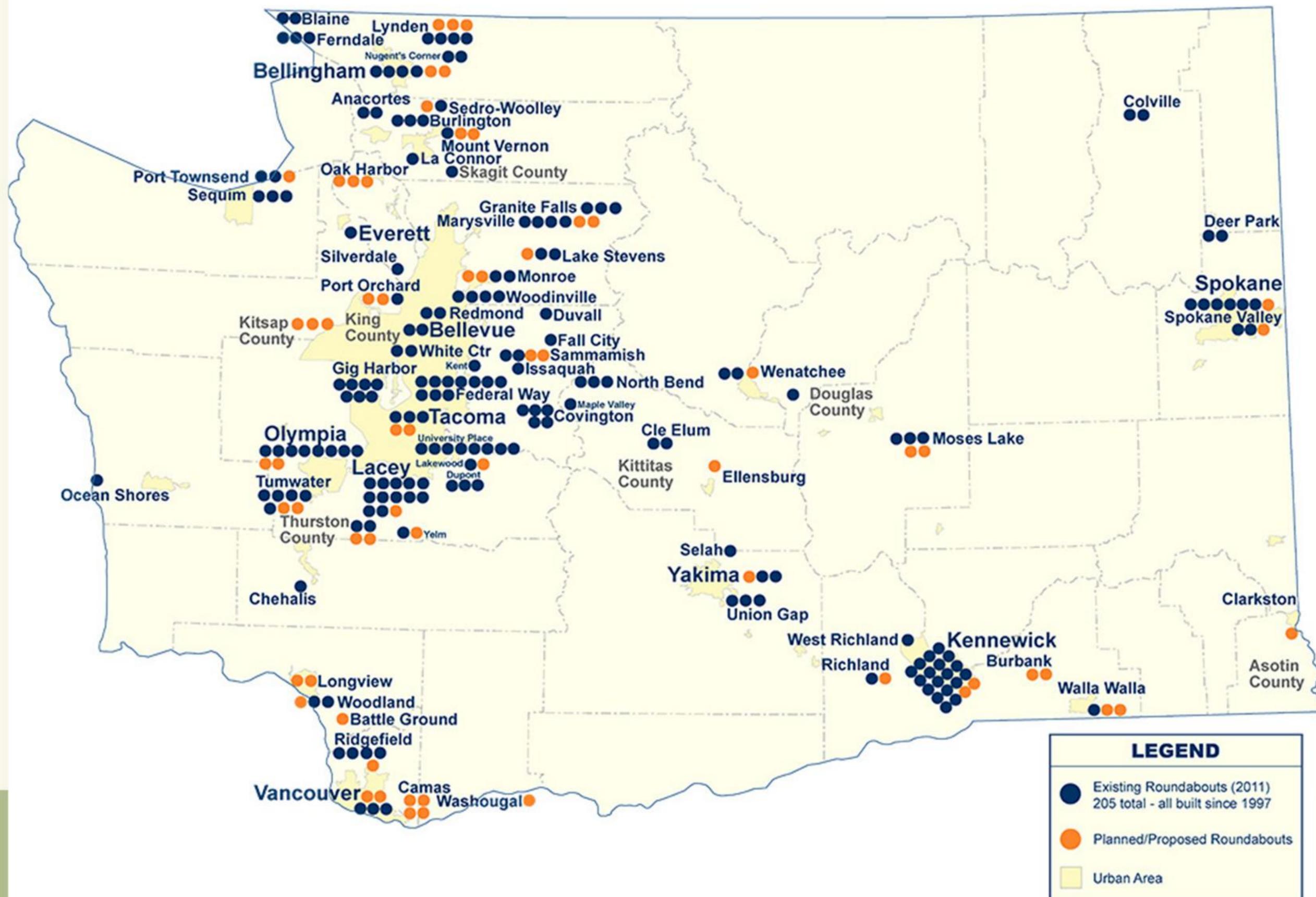
# A 2008 look at the map

## Roundabouts in Washington State



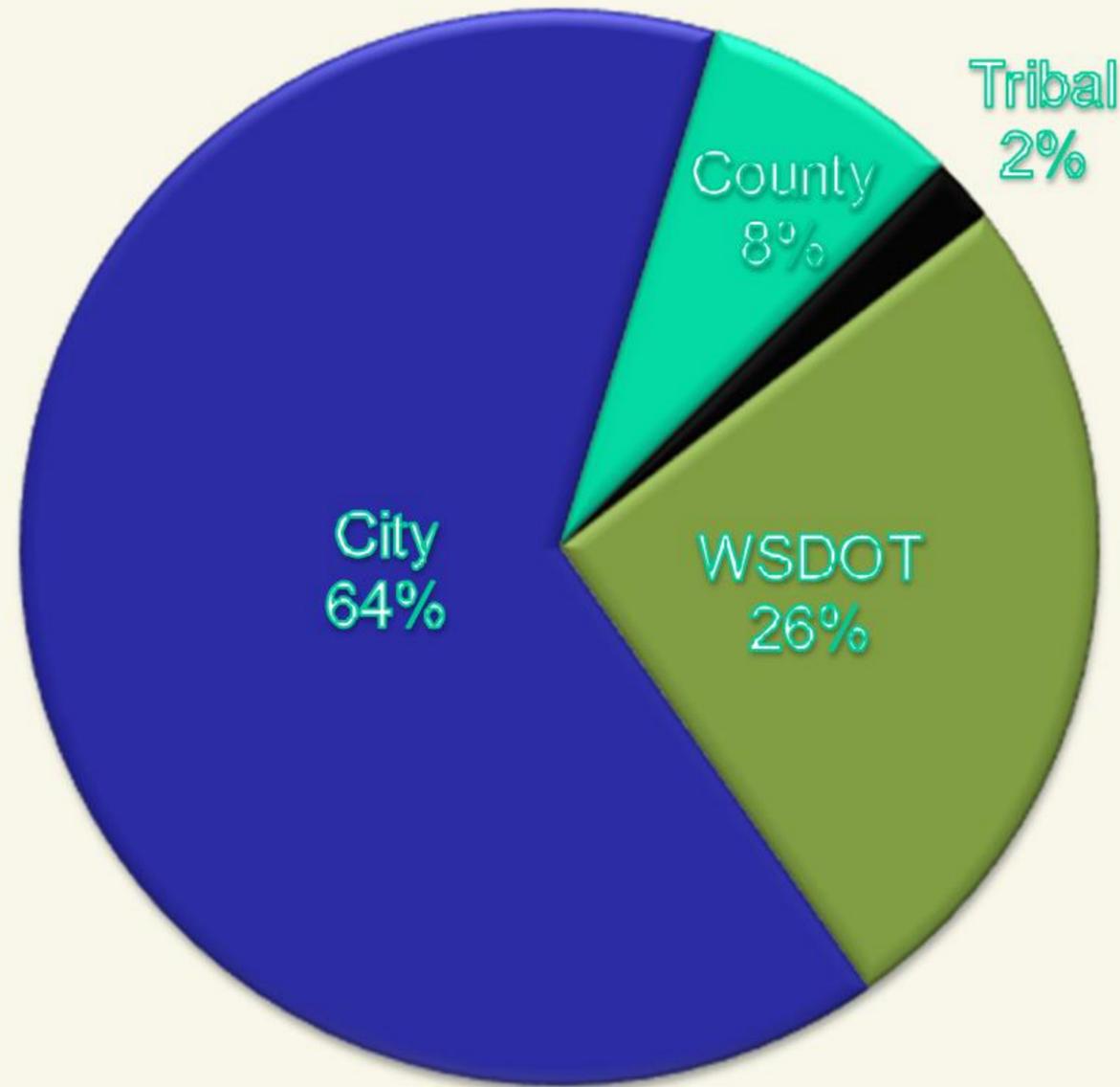
# A 2011 Look at the map

## Roundabouts in Washington State

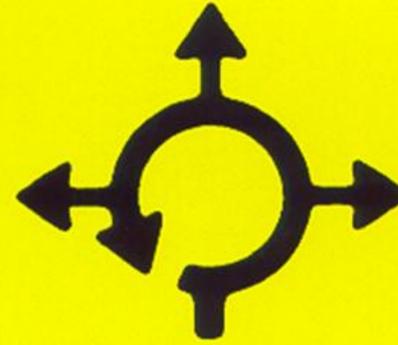


# Distribution of Roundabouts by Jurisdictional Type in Washington State

## Washington State Roundabout Distribution



# *ROUNDAABOUT DESIGN GUIDELINES*



STATE OF MARYLAND  
DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION



# ROUNDABOUTS: AN INFORMATIONAL GUIDE



U.S. Department of Transportation  
**Federal Highway Administration**

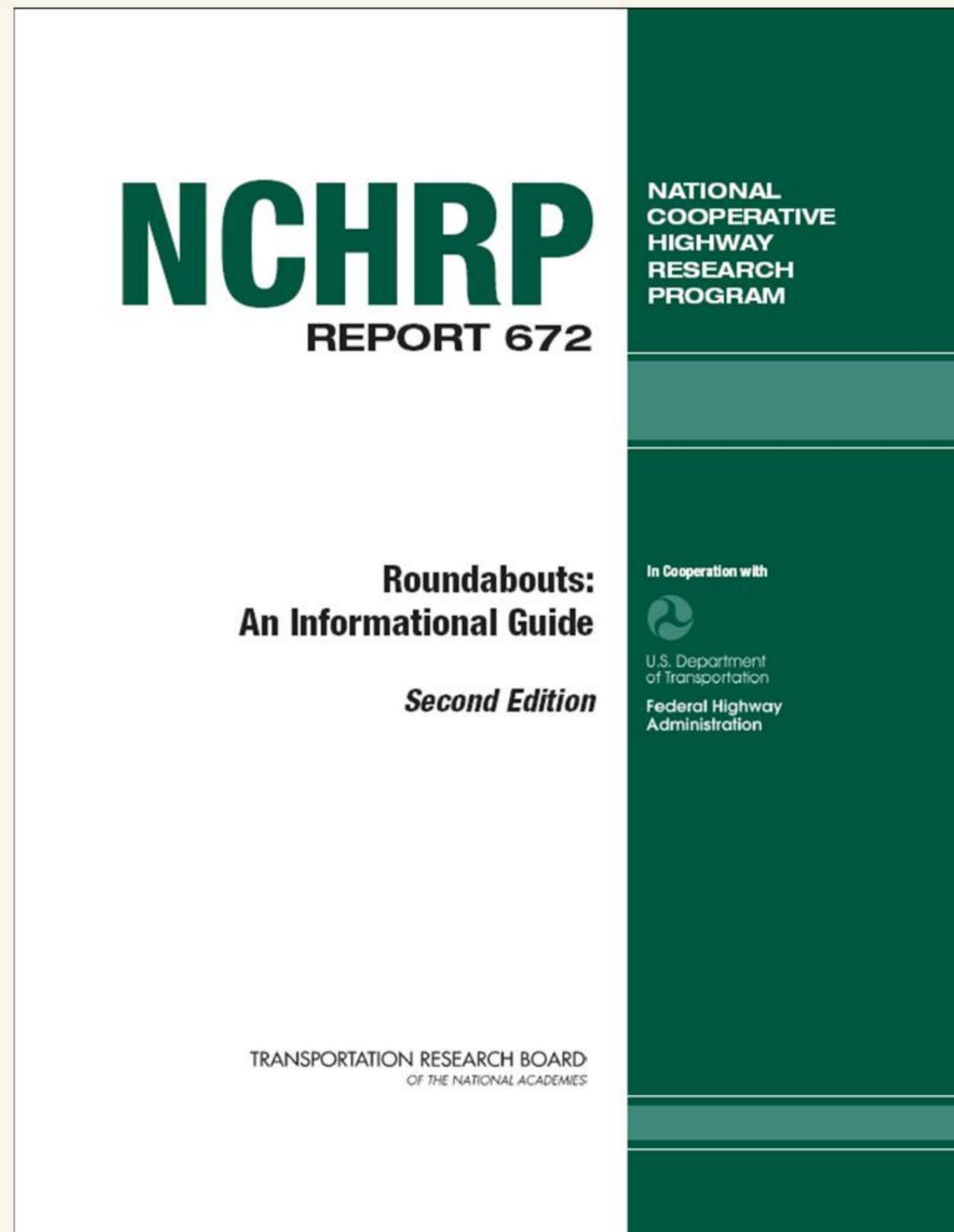
Publication No.  
FHWA-RD-00-067

1<sup>st</sup> Federal Highway  
Administration  
Guide

released in 2000

This is considered newest FHWA Roundabout Guide

- **Associated with NCHRP Project 3-65A**



Is this the future or what we are proposing....?



# Public Outreach to promote/justify projects



Arcata, CA (US 101)

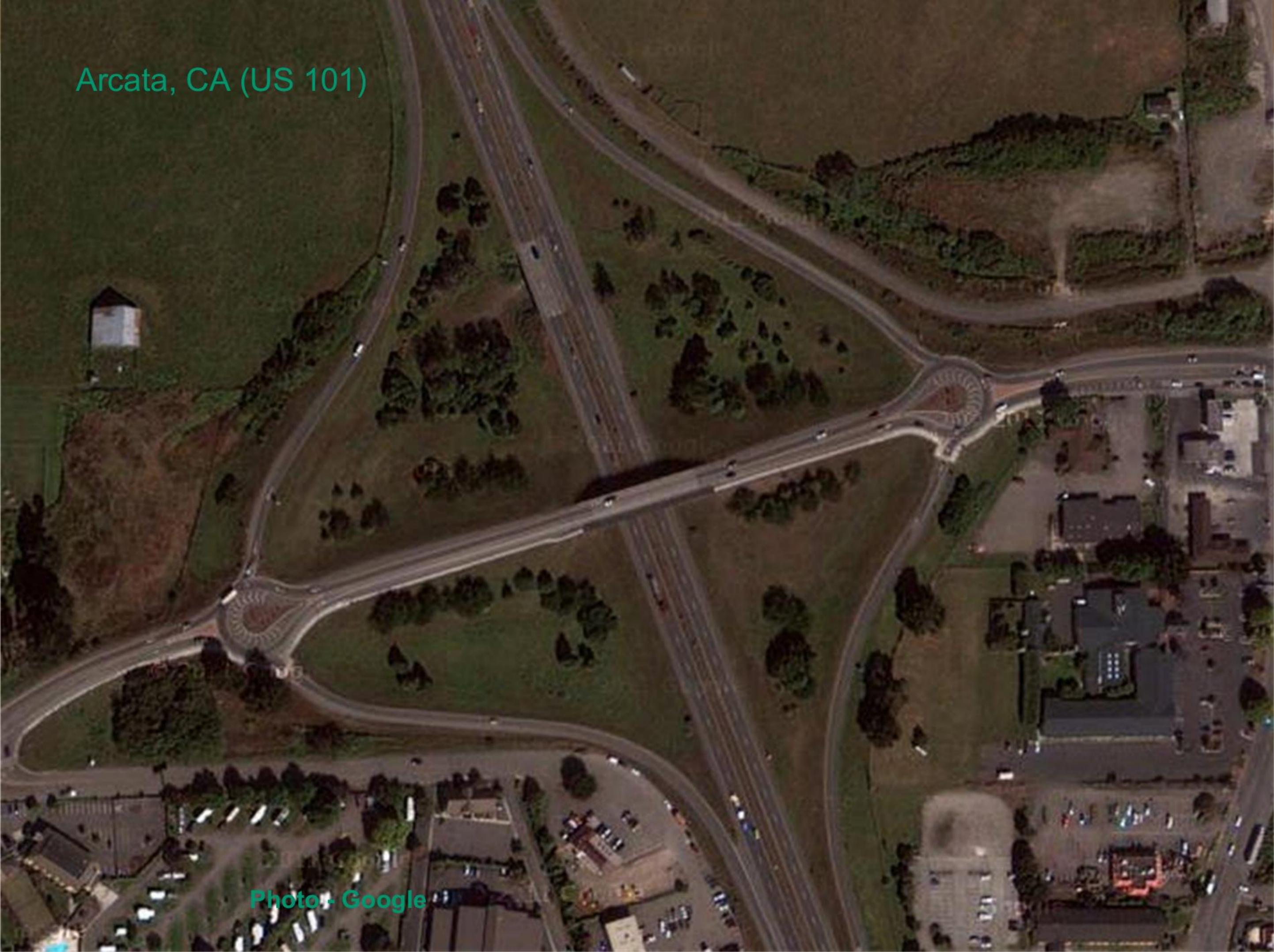


Photo - Google





**Monroe, WA Story (built 2001)  
State Route 522 – Tester Road**

**Photo: Kurt Stiles, WSDOT**

An aerial photograph of a complex highway interchange. The interchange features two roundabouts: a larger one at the top with a central pond, and a smaller one at the bottom. A multi-lane highway runs horizontally across the middle. The surrounding area is a mix of green grass and dense evergreen forests. Several cars are visible on the roads.

**Gig Harbor (Built in 2001 and 2002)  
State Route 16 Interchange – Burnham Drive**

# SR 206 (Mount Spokane Highway) and Bruce Road





# Roundabout Examples – What can you learn from their design/operation



However not without its challenges during the 15  
minute Peak Hour



honkinghorn.MP4



NORTH  
WEST LAKE  
SCHOOL  
SMM PKWY  
EAST

STOP  
HERE ON  
RED  
1 CAR PER GREEN

PEDESTRIAN CROSSING AHEAD

SCHOOL  
SPEED LIMIT  
20  
ONE WAY

ISSAQUAH



## Rectangular Rapid Flashing Beacon



VISSIM Modeling can be very helpful however caution in interpretation



# Conceptual Drawing on an aerial photograph





# Design Visualization



# Public Perception Poll

Retting, Luttrell, and Russell  
November 2001

Public Opinion	Before Construction	After Construction
▪ Strongly opposed	41%	15%
▪ Opposed	14%	13%
▪ Favoring	31%	63%

“Public Opinion and Traffic Flow Impacts of Newly Installed Modern Roundabouts in the United States”

## Further study substantiated the findings of earlier IHS Report

In 2006, Retting et al. followed the same procedure to examine public opinion of a roundabout at the intersection of Route 29 and Route 40 in Greenwich, NY [9]. The analysis revealed that after construction, the proportion of drivers favoring the roundabout increased from 37 percent to 53 percent. Drivers opposed to construction of the roundabout provided multiple reasons, the most common being that the roundabout was confusing or unsafe. Similar results were obtained from analyses conducted in Nashua, NH and Bellingham, WA produced comparable trends as the proportion of drivers opposed to the roundabout declined from 53 percent to 38 percent. Although public opinion became more positive after construction, the change was modest at the site in Bellingham compared with other study sites. One reason could be that the prior form of traffic control was 4-way stop, which provides a high level of safety and simplicity for drivers.

Retting et al. [10] also conducted long-term follow-up surveys of public opinion and attitudes toward roundabouts in six communities one to five years after the roundabouts were constructed. For all six communities combined, the proportion of drivers in favor of the roundabouts increased from 34 percent before construction to 57 percent soon after roundabouts were built and to 69 percent after roundabouts were in place for 1 year or more. Opinion data were also

# Development of a Web Site

- Website was a joint effort from the Traffic Office and the Communications Office in 2005
- Invaluable to WSDOT and local agencies when assisting individuals during the public input process for a roundabout project

The screenshot shows a web browser window with the address bar displaying 'projects/roundabouts/default.htm'. The browser's toolbar includes search, mail, and other utility icons. The website header features the WSDOT logo and navigation links for News, Employment, Good To Go!, Contact WSDOT, and WSDOT Home. Below the header, there are tabs for Traffic & Roads, Projects, Business, Environment, and Maps & Data. The main content area is titled 'Driving Roundabouts' and includes a search bar, text size controls, and an email update subscription link. The page is divided into sections: 'More Information' with links to 'What is a roundabout?', 'Roundabout Benefits', 'Washington's Roundabouts', and 'Public Opinion of Roundabouts'; 'What is a roundabout?' with a definition and an aerial photograph of a roundabout; 'How to drive a roundabout' with instructions on yielding and driving; 'Driving a Multi-lane roundabout' with lane-specific instructions; and a diagram of a roundabout sign with 'LEFT LANE' and 'RIGHT LANE' labels.

Windows Internet Explorer provided by WSDOT

projects/roundabouts/default.htm

Search

Washington State Department of Transportation

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Traffic & Roads | Projects | Business | Environment | Maps & Data

Search Driving Roundabouts text size: T T T

E-mail updates

**More Information**

- **What is a roundabout?**
- [Roundabout Benefits](#)
- [Washington's Roundabouts](#)
- [Public Opinion of Roundabouts](#)
- Contact: [Dustin Terpening](#), WSDOT Communications 360-757-5997

**What is a roundabout?**

A roundabout is a circular intersection where traffic flows around a center island. Roundabouts are safe, efficient and less costly. Since vehicles entering the roundabout are required to yield to traffic in the circle, more vehicles can move through the intersection with less delay. The unique one-way design of roundabouts also accommodates the turning radius of large vehicles, like semi-trucks and buses.



**How to drive a roundabout**

Watch a video on [how to drive in a multi-lane roundabout](#).

As a driver approaches a roundabout, there will be a YIELD sign. The driver should slow down, watch for pedestrians and bicyclists and be prepared to stop if necessary.

When the driver enters, he/she yields to circulating traffic on the left, but does not stop if the way is clear.

The roundabout will have ONE WAY signs mounted in the center island. They help guide traffic and indicate that the driver must stay to the right of the center island.

Upon passing the street prior to the desired exit, the driver should turn on his/her right turn signal and watch for pedestrians and bicyclists as he/she exits.

Traveling around the central island completes left turns.

**Driving a Multi-lane roundabout**

Get in the correct lane early. Observe pavement markings and signs (For example: Use the right lane to turn at the first right or go straight. Use the left lane to go straight, make a left turn, or make a U-turn).

Give large trucks (with long trailers) room to take up both lanes as they approach, circulate and exit the roundabout.

Yield to ALL traffic already in the roundabout, even if you're only entering the right lane (or outside lane) of the roundabout.



# Important to put Social Media to good use

SR 539 Ten Mile roundabout on Flickr - Photo Sharing! - Windows Internet Explorer provided by WSDOT

Windows Internet Explorer browser interface showing the address bar with the URL <http://www.flickr.com/photos/wsdot/3698228016/>. The browser includes navigation buttons (back, forward, home, stop), a search bar with the text "Google", and a menu bar with "File", "Edit", "View", "Favorites", "Tools", and "Help". The taskbar shows several open tabs: "The Real Roundabout (Roun...", "YouTube - wsdot's Channel#...", "Washington State Departme...", and "SR 539 Ten Mile roundab...".



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## SR 539 Ten Mile roundabout

ALL SIZES



Looking north along SR 539 at the completed Ten Mile Road roundabout, which opened May 16. Photo courtesy of Lyle Jansma.

Would you like to comment?

[Sign up](#) for a free account, or [sign in](#) (if you're already a member).

Uploaded on July 7, 2009  
by [WSDOT](#)

### WSDOT's photostream

11,059 uploads

browse

This photo also belongs to:

### SR 539/Ten Mile Road roundabout (Set)

33 items

Part of: [SR 539 \(Guide Meridian\)](#)

1 person calls this photo a favorite

### Tags

- SR 539
- Guide Meridian
- roundabout
- Ten Mile

# WSDOTBLOG Washington State Department of Transportation

This Blog [Linked From Here](#)

## [The WSDOT Blog: Carefully moving 61 tons of bridge in Union Gap](#)

Jun 18, 2010

This year, construction crews will build two of the three **roundabouts** and build the new eastbound I-82 bridge. Next summer, construction crews will finish the third **roundabout**, the westbound I-82 bridge, pave the Yakima Greenway parking ...

<http://wsdotblog.blogspot.com/>

## [The WSDOT Blog: New simulations showcase proposed Alaskan](#)

Aug 10, 2009

Here's a tip: use **roundabouts** in place of some of them. They are proven WAY more effective at moving traffic. And according to video, there is ample meridian space to allow for them. Pedestrians can cross at intersections having ...

<http://wsdotblog.blogspot.com/>

## [Busy times in the transportation world...](#)

Apr 08, 2010

And for those of you who love **roundabouts**, there are three of them being built on this project. Work continues on I-405 between NE 8th Street and SR 520 in Bellevue. Work on I-5 in Blaine will close D Street/Peace Portal Drive for 50 ...

<http://wsdotblog.blogspot.com/>

1

## Missouri DOT worker riding across country to raise money for a workzone safety memorial

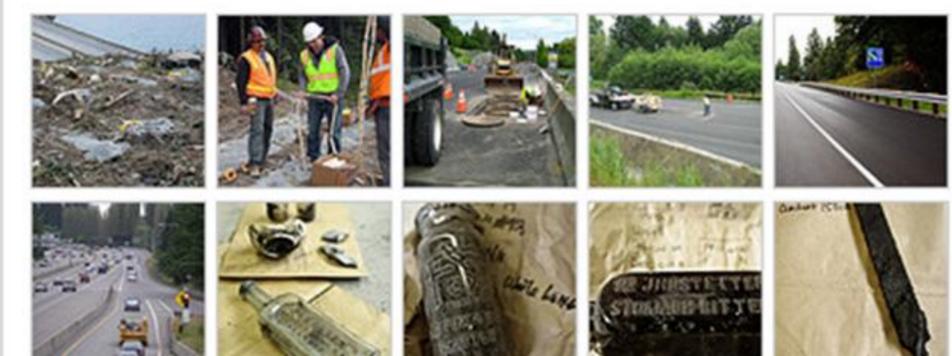
Tuesday, June 22, 2010

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### Flickr - Photo of the Week



Aerial view of new SR 532 bridge





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Video player controls including a play/pause button, a progress bar showing 0:45 / 2:21, a volume icon, and a resolution indicator for 360p.

Info Favorite Share Playlists Flag

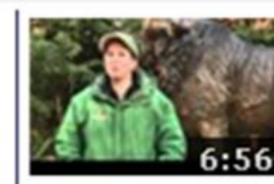
### US 12 - Mossyrock Conceptual Roundabout Option

From: wsdot | February 01, 2010 | 979 views

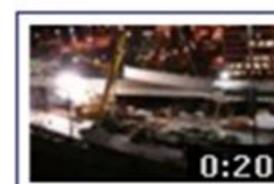
A visualization of how traffic might flow if WSDOT constructed a roundabout at the intersection of US 12 and SR 122 in Mossyrock.

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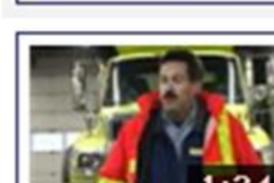
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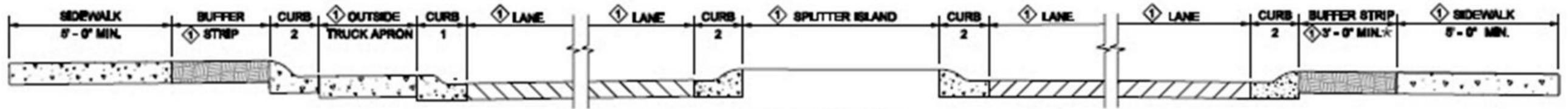


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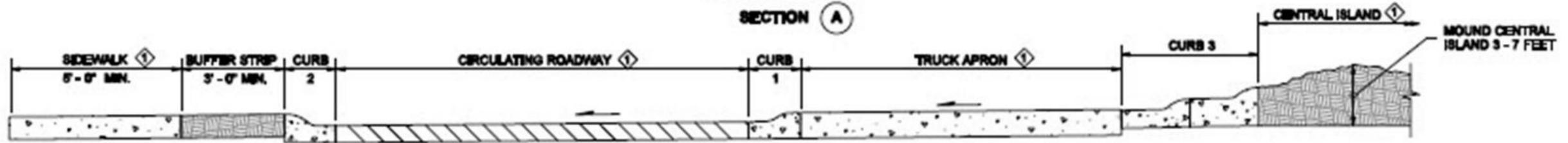


Match Your Speed to Conditions  
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# WSDOT specific Roundabout Curb Detail



CURB PLACEMENT SECTION A



CURB PLACEMENT SECTION B

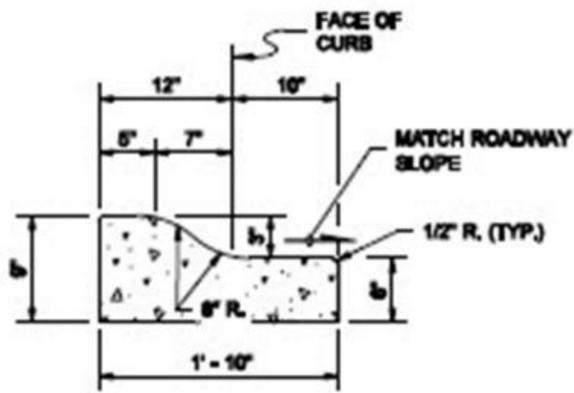
(THIS ROUNDABOUT CONFIGURATION WILL VARY DEPENDING ON CONTRACT PLANS)

**NOTES**

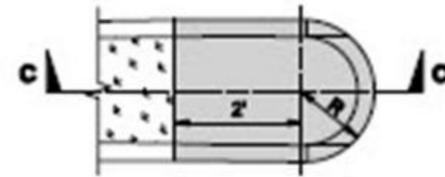
1. See Standard Plan F-30.10 for Curb Expansion and Contraction Joint spacing.
2. Island nose shall be painted with yellow reflectorized paint shaping and painting will be subsidiary.

**LEGEND**

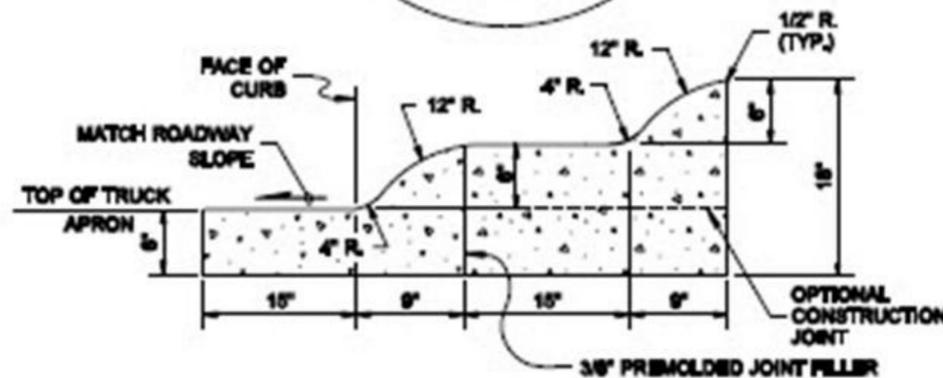
- ① WIDTH VARIES - SEE CONTRACT PLANS
- \* 5'-0" MIN. SIDEWALK WITHOUT BUFFER STRIP



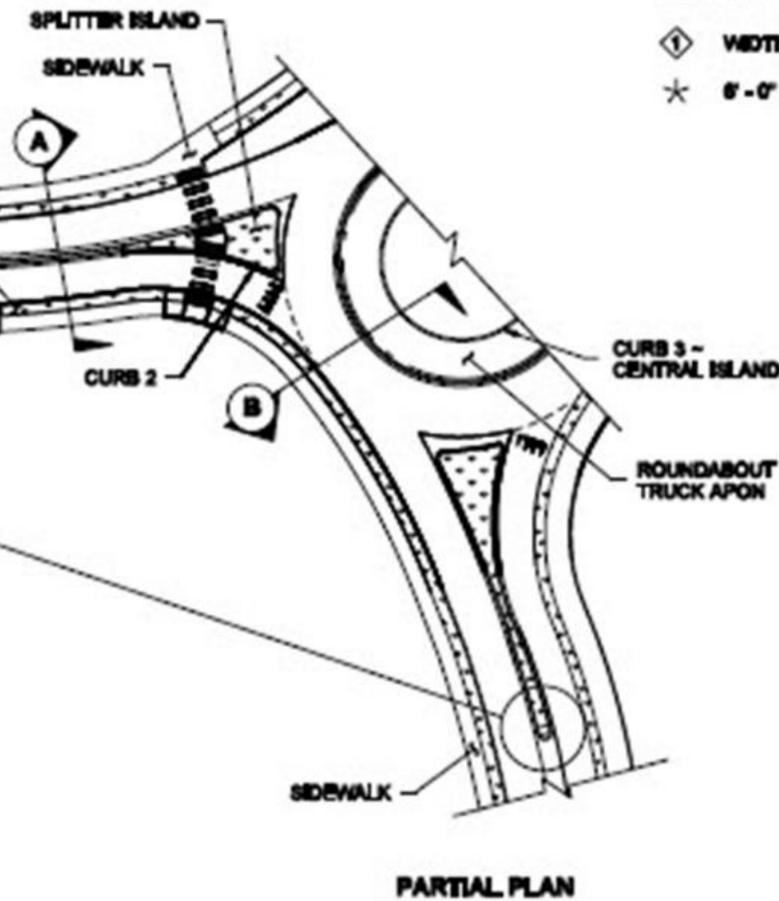
CURB 1 - ROUNDABOUT TRUCK APRON



ISLAND NOSE DETAIL SECTION C-C



CURB 3 - CENTRAL ISLAND CURB



PARTIAL PLAN

PRELIMINARY

**ROUNDABOUT CEMENT CONCRETE CURBS**  
**STANDARD PLAN F-10.18-00**

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

# Truck Operations





ascadeStRoundabout Top Site  
May 2011 16:44:31 Pacific Daylight Time



ascadeStRoundabout Top Site  
May 2011 16:44:37 Pacific Daylight Time

# Roundabout Coordination Group

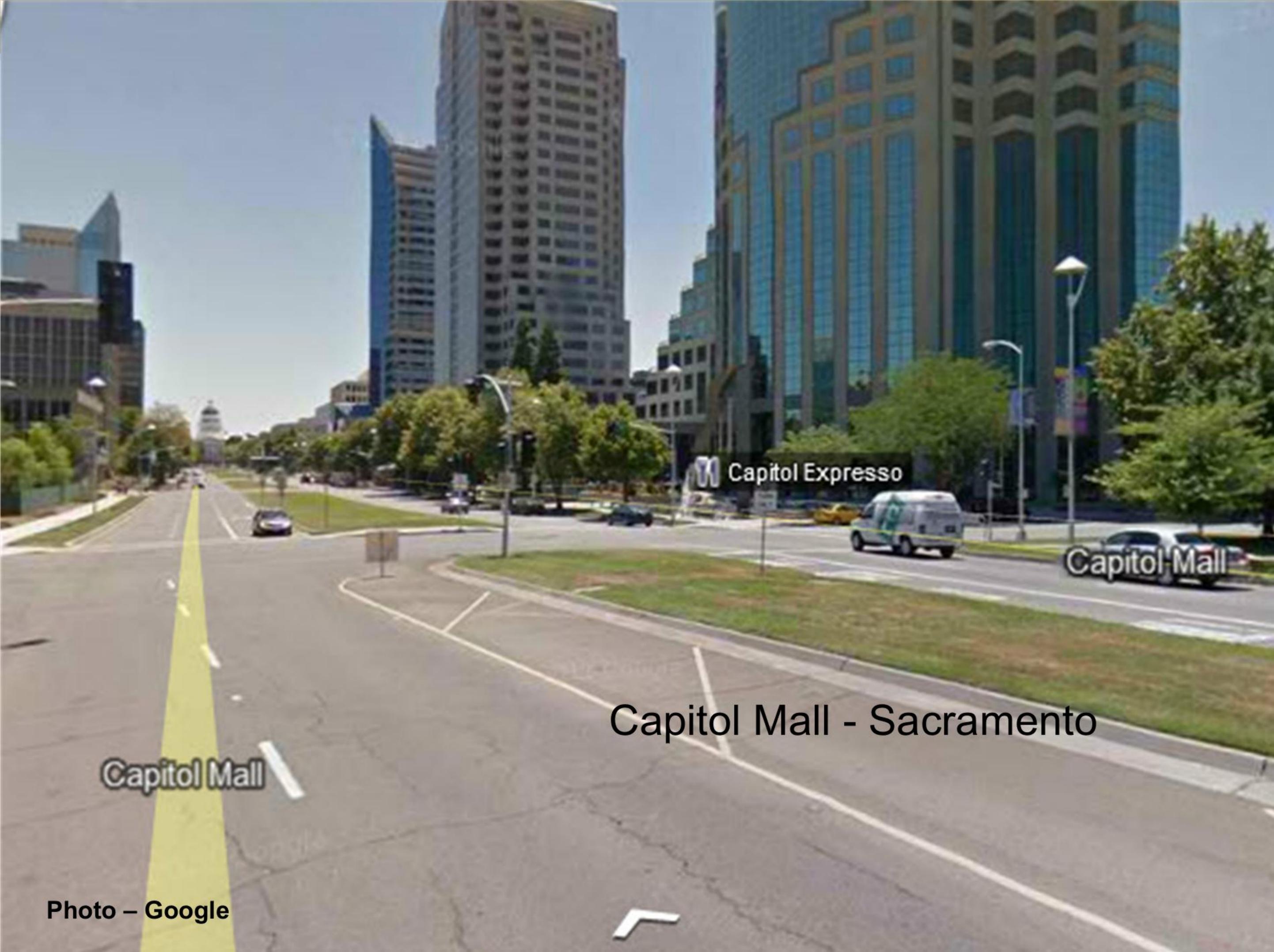




GRANDVIEW

SPEED  
LIMIT  
25

12/13/200



Capitol Express

Capitol Mall

Capitol Mall - Sacramento

Capitol Mall

An aerial photograph showing a complex highway interchange. At the top, a multi-lane highway (SR 160) runs horizontally. Below it, a concrete barrier separates it from a curved off-ramp. The off-ramp curves to the right and then back to the left, eventually merging with a road that runs vertically through the center of the image. This vertical road is labeled 'Exposition Blvd'. Several cars are visible on the roads. To the right of the interchange, there is a large, flat-roofed building and a parking lot. The surrounding area is mostly dry, brownish ground with some sparse green vegetation. The text 'SR 160 Offramp at Exposition Blvd' is overlaid in the upper-middle part of the image.

SR 160 Offramp at Exposition Blvd

Photo – Google Maps

Questions  
or  
Comments?

