

AGENDA ITEM NO.

COUNCIL MEETING

APPROVED BY



DEPARTMENT DIRECTOR

CITY MANAGER

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SUBJECT: PRESENTATION ON ROUNDABOUTS

## RECOMMENDATION

Staff recommends that Council receive the presentation.

## EXECUTIVE SUMMARY

Roundabouts are used throughout the world as a traffic control device. Roundabouts are a relatively new traffic control device being implemented within the City of Fresno; however, they are not new to many communities in California and throughout the United States. Fresno has a number of roundabouts already constructed and in use, as well as several more planned for future intersections. This presentation is designed to provide information about roundabouts, including the circumstances under which they can provide benefits for the community, as well as an understanding of the circumstances under which their use would not be advisable.

## BACKGROUND

### *What is a Roundabout?*

Roundabouts have been used throughout the world as a traffic control device at intersections in the place of a traffic signal or stop signs. They are designed in a circular shape with multiple spokes (roadways) coming into the roundabout. Each spoke has yield control signs for entry into the roundabout, which means motorists entering the roundabout have to yield (allow the motorist in the circle to proceed first) if a vehicle within the roundabout is coming to their approach. However, if as the motorist approaches the roundabout no vehicles are conflicting with them entering the roundabout then the motorists can continue into the roundabout without stopping. Roundabouts are typically designed with physical features for 15-25 MPH design speed so that a motorist cannot safely exceed that speed; warning speed signs are posted for traffic approaching the roundabout. Larger vehicles such as trucks are accommodated through the use of a truck apron between the circular roadway and a central median island, which may include either hardscape or planting and irrigation. There have been extensive studies on roundabouts through

the world and the nation, including publications by the U.S. Federal Highway Administration and the California Department of Transportation (Caltrans).

### ***What are the Benefits of a Roundabout?***

For motorists:

- Safer than a traditional intersection
  - No left turns versus opposing traffic, which constitutes the majority of fatal accidents at intersections
  - Reduction of 32 possible conflict points down to 8 -- fewer accidents, and the most severe types of accidents (head-ons and broadsides) are eliminated
  - Traffic calming – slower speeds through intersections
  - Eliminates red light running or accelerating on yellow
- Reduces fuel consumption
- Reduces automobile emissions

For pedestrians:

- Pedestrians only have to cross 15-25 feet at a time rather than 60-100 feet at a traffic signal
- Pedestrians only cross one direction of vehicle traffic at a time.

For cyclists:

- Cyclists do not have to worry about pushing a pedestrian button or hoping to be detected by loop detection like at a traffic signal to be able to proceed
- Cyclists can utilize the sidewalk if they are not comfortable taking the lane through the roundabout
- The vehicle traffic is going much slower so experienced cyclists can travel the lane through the roundabout with greater confidence

For the environment:

- Lower vehicle emissions / improved air quality

For quality of life:

- Reduce travel delays at intersections
- Can be landscaped, including creating a “gateway” effect

For the City budget:

- Reduced capital, energy, and maintenance costs compared to fully-signalized intersections

### ***Existing and Planned Roundabout Locations***

There are several roundabouts currently in operation at several locations within the City of Fresno, including Chestnut Avenue at California State University, Fresno; Copper River Ranch, El Paso Drive in the Riverpark Shopping Center; Armstrong Avenue in the Fancher Creek Industrial Park; and Palmdon commercial retail center near Herndon and Palm. Roundabouts are currently proposed for installation near Tulare and Clovis Avenues in the Fancher Creek Town

Center, at the intersection of Clinton and Locan Avenues, on Audubon Drive at the entrance to Woodward Park, and at the intersection of Fancher Creek Drive and Fowler Avenue. It should be noted that the Belmont Circle near Roeding Park is not a roundabout, but rather is an early East Coast type of high-speed traffic circle that shares little with a roundabout other than the circular roadway design.

Several other agencies within Fresno County either have implemented roundabouts within their jurisdiction or are making concerted efforts toward their construction. California State University, Fresno, is pursuing funding for installation of a series of roundabouts along Barstow Avenue between Cedar Avenue and Chestnut Avenue. The City of Clovis Harlan Ranch project includes roundabouts on collector streets within the development; several subdivisions within Clovis have included small roundabouts that are in operation today. In October 2009, several roundabouts were submitted as grant applications to the Council of Fresno County Governments (COG) under the Congestion Mitigation / Air Quality (CMAQ) program, including a City of Clovis application at Armstrong and Tollhouse, two City of Kingsburg applications and an application from the City of Parlier. The City of Reedley also has a roundabout scheduled to be constructed at the intersection of Dinuba and Buttonwillow. Caltrans is implementing roundabouts at many locations within the state and is considering a roundabout in Fresno at the complex intersection of Shields Avenue, Marks Avenue, Parkway Drive and the SR-99 on- and off-ramps.

The Public Works Department is also considering a future capital improvement project for the installation of roundabouts on Audubon Drive between the SR-41 overpass and Nees Avenue (near Palm/Nees). This roadway segment is approximately 1.5 miles long without any traffic control, one lane in each direction with a two-way left-turn lane. The roadway has front-on homes, is designated as a scenic connector and has a posted speed limit of 40 MPH. As northeast Fresno and Calcot/Palm Bluffs areas have developed this roadway has experienced substantial increases in traffic volumes and speeds as it provides a bypass to staying on the major arterial route of Friant Road, Blackstone Avenue and Nees Avenue. The Friant/Blackstone/Nees corridor includes seven traffic signals where motorists may be further delayed by red lights or congestion, thus making the Audubon Drive bypass even more desirable. Speeding has been a problem on the Audubon Drive corridor as well. Audubon Drive is heavily patrolled by Fresno Police Department Traffic Enforcement Bureau requiring regular resources to help slow the speeds of travel. However, when the Police Department is not present, speeds have been observed to increase, thus resulting in more calls to the Traffic Engineering Division and the Police Department. No intersections along Audubon Drive from SR 41 to Nees Avenue meet traffic signal or stop sign warrants and none have any probability of ever meeting warrants for a signal or an all-way stop. There is no viable option other than roundabouts to slow vehicles on the Audubon Drive scenic collector to allow residential homeowners more access onto Audubon Drive from their driveways and minor residential streets that intersection Audubon Drive. A neighborhood meeting was held in November 2008 with residents that live on Audubon Drive to discuss roundabouts as a potential solution to address speeding and improved access to and from the local streets that intersect Audubon Drive.

### ***General Concerns Regarding Roundabouts***

Staff has identified some challenges to overcome in regards to roundabouts:

- Some Visually Impaired Pedestrians (VIPs) that utilize their hearing to determine when it is safe to cross may feel they cannot distinguish the direction of travel of a vehicle in the circulating road
- Very little training has occurred for VIPs in Fresno on how to cross roundabouts
- Not all motorists understand the yielding and merging concepts of roundabouts, nor they have been trained
- Modern Roundabouts have had negative association with East Coast roundabouts and European Roundabouts that feature higher speeds of traffic
- Roundabouts need to be fully constructed with all four corners of the intersection with pedestrian pathways prior to opening
- Multi-lane roundabouts can present challenges to motorists, cyclists, and pedestrians

In light of these issues, staff made a presentation to the City of Fresno Disability Advisory Commission (DAC) in September 2009, in order to provide opportunity for input by the DAC in advance of the Council receiving the presentation. Subsequent subcommittee meetings occurred to further discuss roundabouts and possible solutions to address the concerns of the DAC. On November 4, 2009, the Chair of the DAC presented a letter to the Public Works Department with the official comments from the DAC subcommittee. Staff is utilizing the DAC comments in developing design features.

Staff has been and will continue to work closely with the Guide Dogs for the Blind organization and local Orientation and Mobility (O&M) Specialists. We have also done sensitivity training for Public Works engineering and maintenance staff so they can better understand the issues and concerns of VIPs. This training includes roundabout discussions with certified O&M Specialists, as well as walking in the shoes of a VIP by wearing a blind fold and utilizing both a guide dog and cane to navigate the public street right-of-way. Staff is of the understanding that very few Public Works Departments in the nation are performing this type of training. Staff will continue to provide outreach to the VIP community to improve pedestrian mobility and safety at roundabout-controlled intersections.

## **SUMMARY**

Roundabouts provide a number of potential benefits, and under the right circumstances, roundabouts can be the best choice for providing traffic control for certain intersections. The challenges can be overcome for the most part through careful design and VIP training.

## **FISCAL IMPACT**

No fiscal impact; presentation only.