Appendix C

Roundabouts Evaluation

MTCo

SR 32 Widening – SR99 Ramps to Yosemite Ave
03-BUT-32 PM 10.4 to 12.6
Roundabout Analysis Matrix

Intersection	Issue				Recommendations
	Pedestrian Movements	Existing Terrain/ Site Conditions	Right of Way Impact	Accident Safety	
Forest Avenue	➢ Movements from residential area on north and commercial area on south ➢ Existing crosswalks on all legs	➢ Flat terrain ➢ Existing residential on north ➢ Existing commercial on south	➢ Acquisitions likely at all 4 quadrants of intersection ➢ Takes in NE and SW quadrants will not likely involve demolition of structures or have major impact ➢ Take in NW quadrant will not likely result in structure demolition but will have large impact to property ➢ Take in SW quadrant will be from existing gas station and will likely have impact to existing gas pumps	➢ Accident rates are higher than average ➢ Accidents related to left-turn failure to yield to through traffic on permitted left-turn phase ➢ North/South left-turn phasing has recently been changed to protected (which should improve safety at the intersection)	Roundabout not recommended for future study due to traffic analysis indicating LOS would be worse. Heavy Left turns NB Forest to WB SR32
El Monte Avenue	➢ Heavy movements in north and south direction ➢ Peak movements associated with existing school south of SR32 ➢ Existing crosswalks on all legs	➢ Flat terrain ➢ School located south of SR32; causes heavy pedestrian movements	➢ Acquisitions needed in all 4 quadrants of intersection ➢ Take in NW quadrant will impact existing residential structure ➢ Take from NE quadrant will require take from residential lot; no structure demo anticipated ➢ Take from SW quadrant; no impact to existing structures ➢ Take from SE quadrant will impact frontage of development currently under construction	➢ Accident rates lower than average ➢ Due to pedestrian movements by the School, pedestrian crossing guards would be necessary to consider a roundabout at this location	Roundabout not recommended due to heavy pedestrian movements associated with El Monte School, unless pedestrian crossing guards can be guaranteed
Bruce Road	➢ No existing developments in any quadrants; pedestrian movements light ➢ Future developments anticipated; pedestrian movements will increase ➢ No existing crosswalks at intersection	➢ Intersection located at bottom of long grade ➢ Undeveloped parcels in all 4 quadrants ➢ Large developments anticipated in future ➢ Dead Horse Slough box culvert located approximately 50 feet east of intersection ➢ Proposed future roundabouts on Bruce Road	➢ Acquisitions needed in all 4 quadrants ➢ All takes will be from undeveloped parcels ➢ Potential for dedication of right of way by developers	➢ Injury rates associated with accidents are slightly higher than average, although there were only three accidents ➢ Three accidents recorded over three years ➢ Accidents consisted of both rear-end and broad-side collisions	Roundabout further evaluated by Fehr & Peers but not accepted by Caltrans per November 9, 2006 letter. At four years of construction (2015), the roundabout reaches unacceptable levels of saturation from traffic entering the roundabout from the eastbound approach. It, therefore begins to fail well before its intended 10-year design life.
Yosemite Avenue	➢ No existing pedestrian movements across SR32 ➢ Future developments anticipated; pedestrian movements will increase ➢ No existing crosswalks at intersection	➢ Steep downgrade on westbound SR32 approach ➢ Existing residential development in SW quadrant. Steep grade difference between development and roadway ➢ Undeveloped parcels in NE, SW, and SE quadrants. All are anticipated to be developed ➢ Higher design speed east of Bruce Road	➢ Acquisitions in all 4 quadrants ➢ Acquisition from existing development will result in impact to existing structure ➢ Potential for dedication from undeveloped parcels	➢ No accidents at the intersection over the last three years	Roundabout not recommended due to steep downgrade for WB approach and grade difference between existing development and existing/proposed roadway

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Flex your power!
Be energy efficient!

November 9, 2006

Matt Brogan
Mark Thomas and Company
7300 Folsom Boulevard, Suite 203
Sacramento, California 95826

Dear Mr. Brogan,

This letter is in response for a request by Fehr and Peers Transportation Consultants to review the operations analysis for a proposed 2-lane roundabout at the intersection of State Route 32 (SR32) and Bruce Road. It was assumed construction would be completed in the year 2011. The proposed roundabout project has been determined to serve as an interim design (design life of 10 years) for the intersection of SR32 and Bruce Road. Fehr & Peers provided analysis results using three different methodologies.

The analysis methods used were the Federal Highway Administration's (FHWA) guideline *ROUNDABOUTS: AN INFORMATIONAL GUIDE,* roundabout operational analysis software aaSIDRA®, and micro-simulation analysis using VISSIM® software.

Caltrans recognizes the benefits of roundabouts as effective traffic control devices when properly used. In the interest of the traveling public and as the owner and operator of the facility it is important that a placement of a roundabout be done so with a full understanding that the facility will function well for the design life of the facility. Because a roundabout's traffic operations are sensitive to and dependent upon geometric design, and is influenced by the proximity to adjacent intersections it is extremely important for Caltrans to verify the data that supports a roundabout proposal. It was found that the delay results and degree of saturation results give conflicting results. When looking at the delay results it appears as though the roundabout would offer acceptable operations until the year 2021. When looking at the degree of saturation it appears at 4 years after construction (Year 2015) the roundabout reaches unacceptable levels of saturation from traffic entering the roundabout from the EB approach.

The 2-lane roundabout operational analysis as presented to the District indicates that the facility begins to fail well before its intended 10-year design life. For this reason it is difficult for the District to support a full endorsement of the facility as presented.

The Office of Special Funded Projects therefore is not willing to recommend approval of this roundabout proposal as presented because there is compelling data indicating full saturation of the roundabout from the east approach of SR 32 occurring at or near the

fourth year of operation.

The Office of Special Funded Projects suggests you proceed with the signalized intersection option as the preferred alternative for traffic control.

If you have any questions please contact me by phone at (916) 274-0666 or via email at John_holder@dot.ca.gov.

Sincerely,

JOHN HOLDER, P.E., P.M.P.
Project Manager, Special Funded Projects

c. Rick Montre- Chief, Caltrans Traffic Operations
cc. Jason Pack- Fehr and Peers