FEHR & PEERS
TRANSPORTATION CONSULTANTS

MEMORANDUM

Date: January 26, 2009

To: Jill Mercurio

From: Ryan McClain
Rob Rees

Subject: ***Response to Comments Regarding the St. Mary's Road Improvement Evaluation at Rheem Boulevard and Bollinger Canyon Road***

WC08-2580A

Below are responses to questions raised during the Traffic Safety Advisory Committee meeting on January 7, 2009 regarding the *St. Mary's Road Improvement Evaluation at Rheem Boulevard and Bollinger Canyon Road Memorandum* dated December 17, 2008.

ROUNDABOUT SAFETY STUDIES

In 2000, the Insurance Institute for Highway Safety (IIHS) published a report titled *Crash Reductions Following Installation of Roundabouts in the United States*. The study evaluated 24 intersections that were stop-controlled or signalized prior to being converted to a roundabout. These intersections were located across eight states. Single lane roundabout installations (such as that recommended at the St. Mary's Road/Rheem Boulevard intersection) reduced crashes by about 60%, and injury crashes were 80% lower than prior to installation.

The National Cooperative Highway Research Program published *Roundabouts in the United States* in 2007 and found that conversions of an intersection from a side-street stop controlled intersection to a roundabout had a 44% reduction in all crashes and an 81% reduction in injury crashes based on a study of 36 intersections.

There are cases where temporary roundabouts (using pavement markings and delineators) have been removed after a trial period and not replaced with permanent roundabout installations. The reason for this is that some drivers disobey the striping by traveling straight through the roundabout so that they do not need to slow, while other drivers try to obey the striping. Aesthetic concerns are also raised with temporary installations. Because temporary installations are unattractive, residents raise concerns about the look of the final installations. As such, we do not recommend the installation of temporary roundabouts. We are aware of one jurisdiction that considered the removal of a permanent roundabout installation because drivers complained about needing to slow to 20-mph to negotiate the roundabout.

ESTIMATED CONSTRUCTION COSTS

The cost for the all-way stop alternative would be around $75,000 for advanced warning signs with flashing beacons, but no loop detection. Installing detector loops and an extinguishable message sign (e.g., displaying "Stopped Traffic Ahead") would cost an additional $50,000.

The cost for the roundabout would be around $500,000. The realignment of Bollinger Canyon Road with a bridge would cost around $4 million, based on a cost of $3 million for the structure and $1 million for the approaches.

BICYCLE AND PEDESTRIAN SAFETY AND ACCESS

Because the crosswalks at roundabouts are removed from the circulating roadway, a driver's attention can be directed at the crosswalk and not divided between other conflicting vehicles. Since roundabouts are designed to be traveled at 20 mph, the time it takes to stop is short. Additionally, pedestrians only need to cross one lane of traffic at a time and can wait in the refuge island until there is a break in traffic.

Bicyclists traveling along the Lafayette-Moraga Trail will have the same benefits as mentioned for pedestrians above. Bicyclists traveling through the roundabout usually take up the travel lane and are traveling near the speed of vehicles.

Neither of the U.S. studies mentioned above had sufficient pedestrian and bicycle accident data to evaluate reductions in these crash types. The IIHS study references Scandinavian evaluations of roundabouts that found single-lane roundabouts to be safe for both pedestrians and bicyclists (*Traffic Safety of Roundabouts for Cyclists and Pedestrians,* Swedish National Road and Transport Research Institute, 1999). The Institute of Transport Economics in Norway reports a 30-40% reduction in pedestrian crashes and a 10-20% reduction in bicycle crashes after the installation of a roundabout. (*Traffic Safety Handbook, 1997)*

To provide a pedestrian connection between Bollinger Canyon Road and the Lafayette-Moraga Trail, we recommend placing a crosswalk at the southbound (or northbound) approach to the roundabout (see attached figure). A decomposed granite or similar trail could be provided between the St. Mary's Road crossing and the informal trail along the west side of Bollinger Canyon Road. Improvements would be needed at the creek crossing to provide a safe walkway between the existing guardrail and the creek on the south side of St. Mary's Road such as leveling of the pathway and possibly safety railing on the creek side (see photo).

RESPONSE TO LETTERS FROM BLUFFS RESIDENT'S COMMITTEE

The Consultant Recommendations from the original memorandum as well as the addition of a crosswalk on the southbound approach to the roundabout address several of the concerns voiced in these letters.

This evaluation looked at traffic operations and intersection characteristics at both the Bollinger Canyon Road/St. Mary's Road intersection and Rheem Boulevard/St. Mary's Road intersection. Impact of all potential projects was evaluated at both intersections.

A left turn pocket from St. Mary's Road to Bollinger Canyon Road was recommended, which would reduce the potential for rear end collisions with through traffic and vehicles waiting to turn left, a concern expressed in the letter.

The addition of the crosswalk connecting the east side of St. Mary's Road to the Lafayette-Moraga Trail would provide safer access to the trail for Bluffs residents. Additionally, the roundabout would eliminate the sight distance issue discussed in the letter at Rheem Boulevard, where a vehicle waiting to turn left blocks the view of a vehicle trying to turn right and vice versa.

These recommendations do not directly affect the ability of vehicles to turn from Bollinger Canyon Road onto St. Mary's Road; however, the evaluation did not find significant delay at this intersection or a pattern of collisions indicating there is an existing problem. The roundabout option would slow all traffic down through the corridor as opposed to a traffic signal which would only stop some traffic.

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ST. MARY'S ROAD:
ROUNDABOUT OPTION 1

FIGURE 1

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