

Date: October 9, 2007

Committee Meeting Date: \_\_\_\_\_

Board Meeting Date: October 18, 2007

**BOARD MEMORANDUM**

ACTION  X  DISCUSSION \_\_\_\_\_ INFO \_\_\_\_\_

**TO:** Silicon Valley Rapid Transit Corridor  
Policy Advisory Board

**THROUGH:** Jack J. Collins  
Chief Engineering & Construction Officer

**FROM:** Mark S. Robinson  
SVRT Central Area Group Manager

**SUBJECT:** Tunnel Alignment Alternatives at the Coyote Creek Bridge

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**Policy-Related Action: Yes**

**Government Code Section 84308 Applies: No**

**RECOMMENDATION**

Approve the study of three alternative BART tunnel alignments at Coyote Creek in the Environmental Impact Statement (EIS), and approve proceeding with the design of an offset alignment with the condition that the EIS demonstrates the option to be viable.

**BACKGROUND**

The BART tunnel alignment along Santa Clara Street in the Coyote Creek area has been the subject of considerable engineering analysis. The current design takes the tunnel alignment from a typical depth of approximately 40 feet to a depth of 70 feet to clear the existing Coyote Creek roadway bridge which is supported by 339 timber piles. The challenges and risks of this design alignment are substantial and include:

- deeper construction of tunnels, cross passages and vent structure in sandy ground conditions and within the water table.
- safety risks associated with constructing in the sandy ground conditions and within the water table.
- construction risks with the potential of hitting piles and damaging the bridge and/or the tunnel boring machine.

- construction risks with the potential of water inflow, particularly during the hand excavation of the two cross passages in this area

For these and other reasons, the SVRT engineering staff explored alternatives to the deep tunnel street alignment design. These alternatives were as follows:

- to remain in the street alignment at a tunnel depth of 40 feet and either tunnel through the timber piles or remove those piles in conflict with the tunneling.
- to offset the alignment to the north by 70 feet and avoid the roadway bridge and piles, having the tunnel at a depth of 40 feet.
- to offset the alignment to the south by 70 feet and avoid the roadway bridge and piles, having the tunnel at a depth of 40 feet.

The different risks, impacts and costs with staying in the street alignment at a tunnel depth of 40 feet and tunneling through or removing the bridge piles were substantial. This alternative has been dropped for engineering reasons. The better street alignment option is to remain at a 70 foot depth and not contend with the piles.

The alternatives that offset the tunnel alignment to the north or south of the Coyote Creek roadway bridge do offer measurable engineering advantages as listed below:

- avoids conflicts with the bridge and piles
- locates the tunnels in better ground conditions (clay soils, lower water pressures)
- significantly reduces construction and safety risks of tunnels, cross passages and vent structure
- minimizes potential community impacts
- significantly reduces risk of additional costs
- minimizes potential project delays

For these engineering considerations, it is recommended that three alternative BART tunnel alignments in the Coyote Creek area be addressed and analyzed in the upcoming Environmental Impact Statement:

- Santa Clara Street alignment at Coyote Creek, with a tunnel depth of 70 feet.
- Northern offset alignment at Coyote Creek, with a tunnel depth of 40 feet.
- Southern offset alignment at Coyote Creek, with a tunnel depth of 40 feet.

To maintain the project design and construction schedule, it is necessary to proceed with a tunnel alignment design at this time based on the engineering information at hand rather than to wait for the conclusion of the environmental analysis in Fall 2008. Design would proceed at risk. Should the environmental study identify additional findings that lead to a different conclusion on an alignment selection, the original design would be discarded and the new, final alignment selected, beginning design anew and delaying the project.

Presentations were made on the subject of the BART tunnel alignment at Coyote Creek to San Jose City staff, and at three workshops held with interested community members on July 25<sup>th</sup>, August 28<sup>th</sup> and September 10<sup>th</sup>. Since those presentations, City staff has prepared a recommendation to select the Southern offset alignment for the purpose of supporting continuation of project design work, and with the condition that a subsequent environmental review process demonstrates the option to be preferred based on environmental and cost effectiveness issues. This recommendation will be presented to the San Jose City Council on October 16, 2007.

Pending the outcome of the City Council action on October 16<sup>th</sup>, SVRT Project staff will support proceeding with the design of an offset alignment as the alternative to the street alignment design.

### **DISCUSSION**

Additional questions have been raised by community members regarding the challenges of the street alignment alternatives. A City-led community meeting has been scheduled for October 15<sup>th</sup> to discuss further the street alignment issues. The information and input received from this meeting will be shared with the City Council on October 16<sup>th</sup>.

### **ALTERNATIVE**

The Board can elect to continue with the current design, with the BART tunnel alignment remaining within the street corridor at a depth of 70 feet, accepting the associated challenges and risks.

### **FISCAL**

The preliminary cost estimates for the alternatives being considered are within \$5 million to \$10 million of each other, with the deep tunnel alignment being the more expensive alternative. More significant is the cost of the risks associated with the different alternatives. The deep tunnel alignment alternative has major risks involved in its construction and therefore carries the greatest cost potential. The cost of the selected alignment alternative will be reflected in the update to the Preliminary Engineering Project Cost Estimate to be issued later this year.

Prepared by: Mark S. Robinson, SVRT Central Area Group Manager