

### ***Caltrain Viaducts - A 21st Century Showcase Opportunity***

Caltrain should lead the construction of fully elevated viaducts to provide grade separations along the peninsula. An appropriate initial project would be the 7 mile section from Redwood City / Highway 84 through Atherton and Menlo Park to Palo Alto / San Antonio Road for \$400M. Such a project would showcase American quality and cost-effectiveness in railway construction.

The United States and California are behind China and Europe in rail transit construction, as highlighted by the current issues with California High Speed Rail. Caltrain grade separations provide a key opportunity to be a 21st century showcase of American rail construction.

Caltrain's medium-distance, medium-speed route provides an excellent showcase opportunity because it has few complications: the route is already graded, has no major elevation changes, no new tunnels, no or minimal eminent domain land acquisitions, and no roadway changes and minimal earthworks (i.e., grading or berms) with a fully-elevated viaduct approach. Our cities could work together to jointly commit to and fairly share the cost of multi-city projects, rather than have each city work alone. Our Federal government, California and the Bay Area could find ways to fast-track government reviews to move quickly to the start of prefabricated manufacturing and on-site modular assembly.

The 7-mile section from Redwood City / Highway 84 through Atherton and Menlo Park to Palo Alto / San Antonio Road is an appropriate initial project. A single fully-elevated viaduct project would benefit from some economies of scale rather than multiple independent city-led projects. As taxpayers we should expect a prefabricated modular approach to cost on the order of \$50M per double-track mile totaling about \$400M for this project, a per-mile cost achieved by many projects around the world. The experience from this project could then be applied to other grade separation projects along the Peninsula and in Santa Clara County.

America can deliver cost-effective transportation construction. From 1956 to 1992, the United States constructed about 42,700 miles of interstate highways at a cost of about \$12M per mile (in 2018 dollars) - over mountain passes, through tunnels, across rivers, and through cities. In the mid-to-late 20th century, America leveraged its construction and manufacturing expertise to extend its influence around the world.

So far in the 21st century, it is China that is leveraging its expertise in manufacturing and in constructing tens of thousands of kilometers of high-speed rail to secure contracts and influence countries around the world through its Belt and Road Initiative.

We Peninsula, California, and United States residents should not take it as a given that construction costs must be high and must always remain so. For the United States and California to compete with China, we must become better, faster, and more cost-effective than we have been recently. A Caltrain grade separation program is an excellent opportunity to showcase such an achievement.