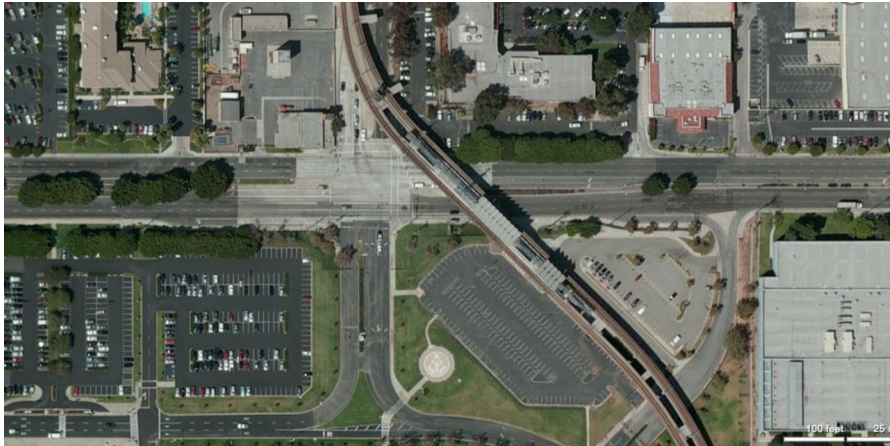


## Up in the Air: Urban Design for Light Rail Stations in Highway Medians



Anastasia Loukaitou-Sideris, Harrison Higgins, Dana Cuff, David Dixon, Dan Oprea,  
University of California, Los Angeles

### ISSUE



Aerial image of the Green Line El Segundo Station, one of 14 studied.

Good urban design is essential if transit stations are to successfully connect to the communities that surround them. Increasingly, transit agencies are constructing light rail systems in and above freeway medians to reduce land acquisition costs, minimize traffic conflicts, and increase train speeds. Elevated stations,

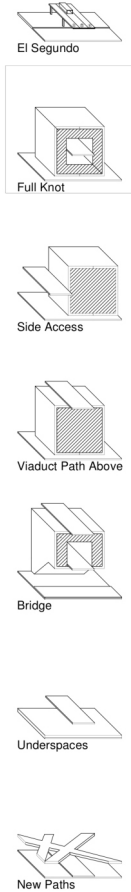
however, are difficult to physically link to surrounding communities, resulting in lost opportunities for transit-oriented development (TOD).

This study examined all 14 elevated and freeway-median light rail stations along the Green and Gold Lines in Los Angeles. Challenges in accessing these stations and connecting to surrounding communities are documented. Remedies are suggested based on a review of good urban-design practices and interventions for different contexts that have been successful in improving station access. The study tests some of these interventions using as case studies four elevated Green Line stations.

### RESEARCH FINDINGS

We grouped the 14 elevated stations along LA's light rail network into four types, based on the extent to which the freeway interrupts the street pattern: 1) *No Interruption* (elevated stations not on freeway medians); 2) *Linear Interruption* (on freeway medians with no ramping obstructions on either side); 3) *Single Interruption* (on freeway medians with one or two ramps on one side of the freeway); and 4) *Multiple Interruption* (on freeway medians with ramps on both sides of the freeway).

We developed a number of metrics to measure station accessibility and connectivity and found that all 14 stations face serious accessibility/connectivity challenges. Different station types scored better than others in regards to the variables measured.



Architectural options for the El Segundo station.

Four categories of design interventions were identified:

1. Architectural interventions use building structures such as bridges, viaducts, and paths to connect stations and surrounding properties that are at different elevations.
2. Landscape interventions range from the construction of new expanses of open space above or below the tracks to retrofitting existing outdoor spaces for recreation activities.
3. Mobile urbanism interventions deploy means of connecting transportation infrastructure to adjacent or more remote areas. These can include walkways, escalators or bridges connecting the platform to a remote location or specially programmed train cars, which display exhibits relating to a particular station or neighborhood.
4. Perceptual links use graphics, narratives, murals, markers, and signs to facilitate a perceptual linkage of transportation infrastructure to nearby development.

These various design interventions pose different advantages and disadvantages and vary widely in costs, site requirements, and their ability to adapt to different contexts and mitigate nuisances (e.g., exposure to car fumes or noise). The activities hosted at the settings also vary from residential, office, or retail uses, to parks and public spaces, to signage and public art.

In general, we found that *No Interruption* stations, defined in part by elevated tracks with ample developable space, permit the widest array of design interventions. Linear Interruption and Single Interruption stations—tracks raised above the street grade to meet the highway median elevation—allow for fewer. Multiple Interruption stations allow a limited number of landscape interventions, and only if the station has significant developable land underneath its elevated right of way.

## RECOMMENDATIONS

There are no easy formulas for identifying design solutions for different types of elevated stations. Many factors—surrounding land uses, building orientation, availability of developable land, street patterns, block configurations, densities of populations and jobs, and the local real estate market—all play a role. The study focused specifically on light rail transit. However, some of these interventions may be applicable to heavy rail as well.

Mobile Urbanism and Perceptual Links are almost universally applicable, relatively inexpensive, and require little developable land. They can play an important role in enhancing station access, way-finding, and the quality of station environments. However, they must be accompanied by other measures, like good quality pedestrian and bicycle infrastructure and permissive land-use zoning, to catalyze TOD.

