

SPECIFIC AREAS

Northern Gateway

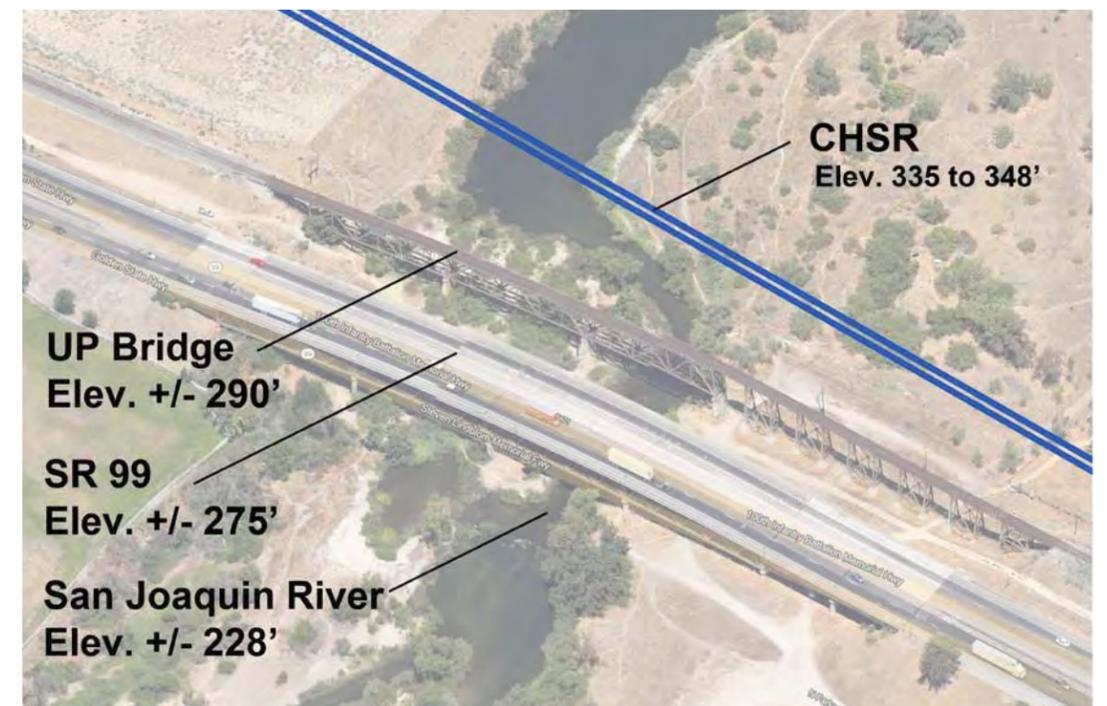
The Northern and Southern gateways are two areas of special interest in the HSR alignment through Fresno. The recommended concept calls for gateway treatments at both of the locations as introductions into the city from either direction.

The Northern Gateway occurs where HSR will cross the San Joaquin River and regional greenway park. This location is complex visually as the HSR alignment begins converging on the Highway 99 and UPRR freight alignments. The profile requirements set the HSR trackway at approximately 30 feet above the UPRR trestle trackway grade so it will be visually above the horizon line and conspicuous. The span requirements here lend themselves to a bridge structure that can gracefully fly over the river and park at an elevation that preserves light, air and views at park grade. The structure most suited to this requirement is a through-arch. The through-arch allows the thinnest depth of deck structure and the overhead arch makes a signature statement about the HSR alignment as it enters the city. It also allows HSR, as a 21st century element of infrastructure, to contrast with earlier railroad and highway structures.

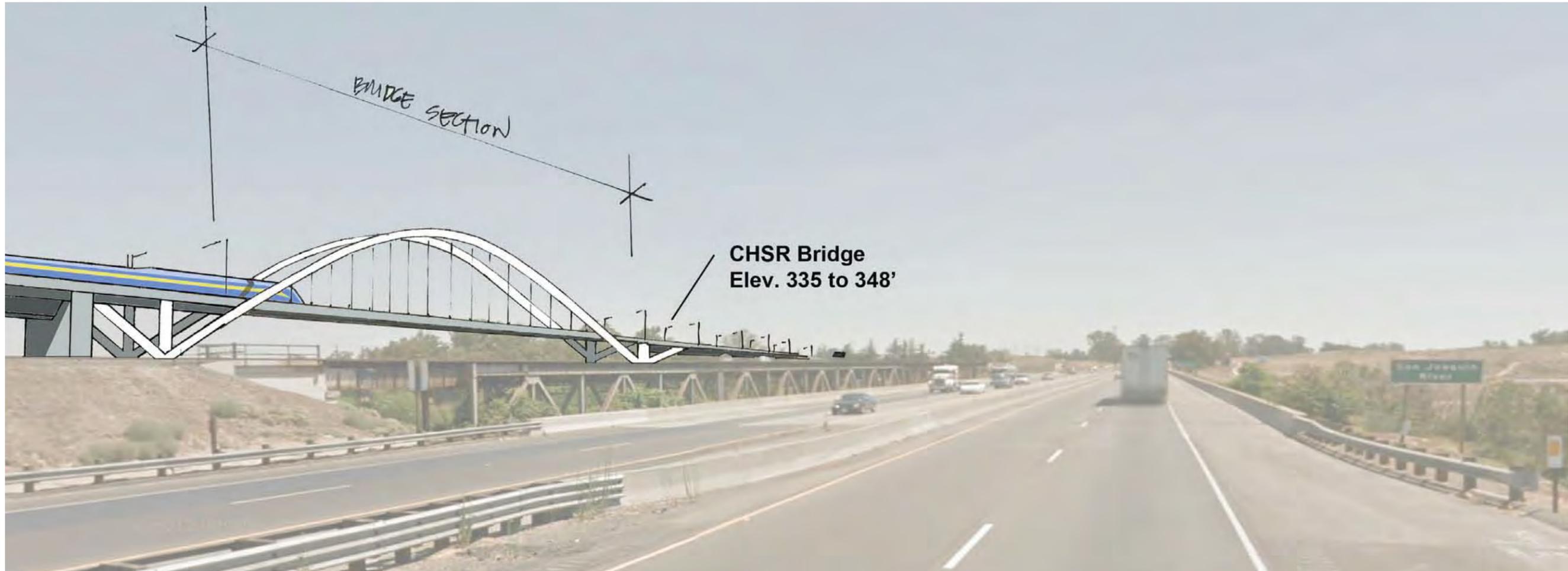
The change from box girder guideway to through-arch needs be designed as a planned transition. A traditional transition at through-arch bridges is the inclusion of a lower, return-arch that can terminate either at an abutment wall or a straddle bent pier on both ends. Since the arch structure is on the outside of the deck, a higher straddle bent allows the return-arch to terminate near the straddle bent ends and the box girder to terminate at the straddle bent center. The included sketches demonstrate this concept.

There is a section of guideway south of the river crossing where, due to conflicts with the UPRR right-of-way and proximity of the Highway 99 right-of-way, the standard piers directly below the guideway will not be possible. For approximately 1200 feet, straddle bent piers will be required. This type of structure uses two side piers located in acceptable right-of-way and a connecting beam section to provide support for the box girder and deck structure. Our recommendation here is that the same aesthetic guidelines as applied to the general guideway, be applied to the straddle bent piers: round pier sections with flared tops and flared ends of the beam with rounded corners at all edges. The goal is the consistent, smooth, aerodynamic appearance.

Recommendations: through-arch primary span over the San Joaquin River with return arches; straddle bent transition to box girder; aerodynamic forms for all piers, straddle bents; concrete or steel arch structures.



Above: Aerial image of existing conditions
 Below: Diagram overlay of horizontal and vertical relationships



Recommendation: A single through-arch span over the San Joaquin River



Existing



Example: A through-arch bridge with a lower return-arch