



City of Fresno
Design Guidelines
California High-Speed Train Project
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INTRODUCTION

Project Overview & Purpose Statement

From the California High Speed Rail Website:

Vision

“Inspired by successful high-speed train systems worldwide, California’s electrically-powered high-speed trains will help the state meet ever-growing demands on its transportation infrastructure. Initially running from San Francisco to Los Angeles/Anaheim via the Central Valley, and later to Sacramento and San Diego, high-speed trains will travel between LA and San Francisco in under 2 hours and 40 minutes, at speeds of up to 220 mph, and will interconnect with other transportation alternatives, providing an environmentally friendly option to traveling by plane or car.”

Scope

“800 miles of track... up to 24 stations... the most thorough environmental review process in the nation. Due to the large scope of the project, the planning process proceeded in phases: first, program-level review assessing the need and service area for a statewide system, presenting broad policy choices, and identifying corridors for further study, and second, project-level review in more detail for determining the best alignment and station locations within each of nine system sections. Why? Greater community input, resulting in the best system for all Californians.”

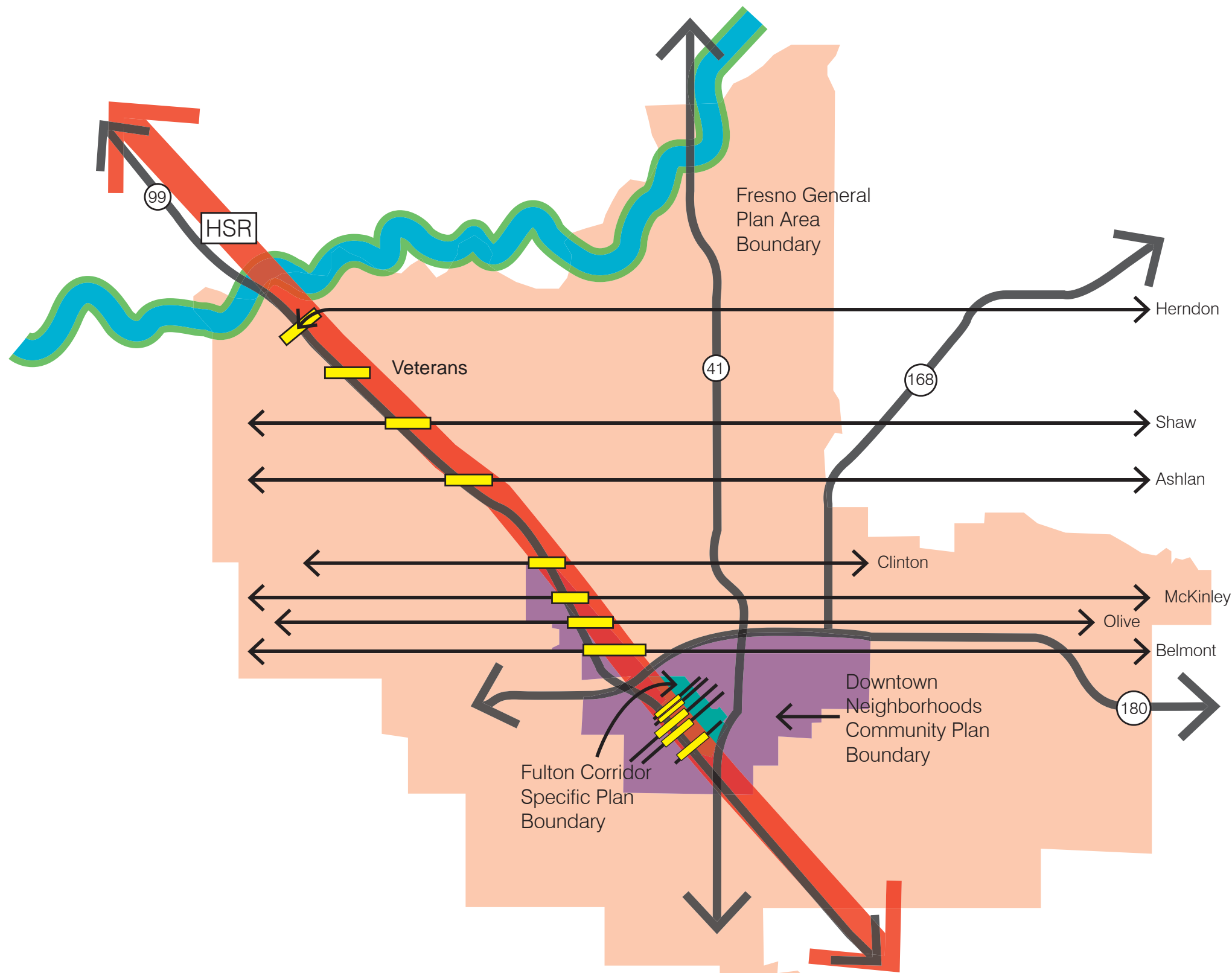
The first phase of design and construction of HSR will be the Merced to Fresno section.

“The Merced to Fresno high-speed train section is approximately 65 miles long and will follow a route known as the “Hybrid” alternative. This alignment was identified as the preferred alternative out of three primary alternatives studies in 2011. The “Hybrid” alternative generally parallels the Union Pacific railroad tracks and State Route 99 between Merced and Fresno and is responsive to community and civic feedback. To avoid impacts to downtown Madera, the alignment travels east of Madera and generally parallels the existing Burlington Northern Santa Fe (BNSF) railroad corridor. The board also selected the Downtown Merced Station location, and the Downtown Fresno Station at the Mariposa Street location as part of the statewide High-Speed Train System.”

The CHSRA has released a request for proposal to the industry for design and construction of the Merced to Fresno section and has now selected five engineering-construction teams to advance to bidding and final design. From this effort, a single winning team will be selected.

Purpose of this document

The Design-Build proposal and bidding process is now underway and the City of Fresno is concerned about the look and feel of HSR infrastructure in Fresno. To that end, the City desired an independent review of the current 15% design documents that are the basis of design for the five Design-Build Teams. This abbreviated report is a summary of that independent review and recommendations for additional design requirements to be considered by CHSRA as addenda in the design documents being used by the Design-Build teams currently.



Overview of the Fresno alignment

The alignment enters the city from the north on an elevated guideway, crossing the San Joaquin River on a bridge structure, then coming to roughly parallel with Highway 99 and following a narrow corridor on straddle bent structures and single piers until finally touching down to an at-grade alignment near Veteran's Boulevard. From there, the remaining alignment is mostly at-grade through the rest of the city. At one section, from approximately Olive Avenue to SR 180, the alignment dips below grade, then returns to grade just north of the Stanislaus Viaduct. The alignment continues through downtown, then transitions back to an elevated guideway as it leaves Fresno.

The elevated guideway is normally a simple, double-track structure on single flared piers with a solid parapet-type edge barrier and twin, side-mounted Overhead Catenary (OCS) Poles.

The at-grade sections generally include a heavy duty track bed flanked by robust fencing, twin OCS poles and, where freight rail is near, a substantial concrete crash barrier for separation. In some locations, a solid concrete sound wall is also included.

The segment that is below grade is generally in an open trench with side retaining walls and a minor tunnel under Highway 180 itself.

A major, at-grade, station is planned for Downtown Fresno with overhead passenger connections to twin side platforms.

All existing street crossings will be converted to either overcrossings, undercrossings or the street will be dead-ended. There will be no surface crossings due to safety.

INTRODUCTION

Continued

Areas of concern in the current design

Without a City design requirements for crossings, the Conceptual Engineering documents have naturally relied on Caltrans highway design standards. This includes radii, shoulders, crash barriers and pedestrian and bicycle facilities related to busy arterial streets or highways. Concurrent with the development of HSR, the City of Fresno, in the last five years, has developed two major planning efforts that aim to redirect Fresno's future growth back towards the city center with an emphasis on mixed use, urban density and pedestrian, bicycle and transit mobility. The infrastructure for pedestrians and bicyclists at many of the existing crossings of freight rail in the same vicinity, are minimal and inadequate to truly attract a bigger share of users. The construction of new crossings represents an opportunity to physically connect the east and west sides of Fresno for all modes in a way that they haven't been connected historically. If this opportunity is missed and the crossings offer very minimal accommodations for pedestrians and bicyclists, HSR will merely reinforce a barrier down the middle of Fresno today.

Recommendation: increase the space devoted to pedestrian/bicycle travel on all overcrossings and undercrossings associated with HSR in Fresno. Provide 14' minimum space on both sides; where space is limited, provide 14'-16' on one side with a smaller emergency sidewalk on the opposite side. Design the pedestrian-bicycle space for shared use with color or texture differentiation for each mode.

Concept Approach to HSR Design

High-speed rail is a 21st century mode, will represent our best technology and will provide a very convenient alternative for intrastate travel. Its vehicles will be streamlined for speed and efficiency. There is great potential for the fixed infrastructure to express this characteristic in form by being smooth, monolithic (without small scale details), aerodynamic and visually "light" as it steps across the California landscape. CHSRA's general guidelines propose a guideway design that is consistent with this approach with smooth deck sides and flared, round piers. The independent design team adopts this direction and our recommendations in this report are intended to advance that design aesthetic.

Some of the proposed treatments of HSR corridor edges (Walls, Fences, Berms) need to be more context responsive. There should be variation in treatment next to industrial, residential, parks and historic structures while still staying within the unified family of elements. In general discussions with the City, the following concept refinement emerged:

- Overcrossings should embrace the HSR design aesthetic of smooth, monolithic/aerodynamic forms.
- The inner Downtown section from approximately SR 180 to SR 41 – undercrossings, fences and barriers can take on additional design treatments that are more conducive to an established urban context with more density of pedestrians, including smaller scale detail that can be appreciated at slower speeds and close distance. This is intended as minor variation within the unified family of elements.

Subsequent pages will address more detailed recommendations for individual components.

Recommendation: employ the modern, aerodynamic aesthetic design to all major HDR elements.

