

## 1.2 Purpose and Need

### 1.2.1 Project Purpose

The purpose of the project is to reduce traffic congestion, improve operational deficiencies, and comply with legislative requirements on eastbound SR-91 between SR-241 and SR-71, consistent with Caltrans design standards. The objectives of the project are to:

- Relieve the chokepoint at the merge of northbound SR-241 and eastbound SR-91
- Reduce eastbound lane weaving and improve ramp merge/diverge between the SR-91/SR-241 and the SR-91/SR-71 interchanges
- Minimize right-of-way acquisition
- Conform to State, regional, and local plans and policies

### 1.2.2 Project Need

Currently, eastbound SR-91 in the project area experiences heavy peak-hour congestion and traffic delays due to high traffic volumes, chokepoints, lane weaving, and merging/diverging. Lane weaving and merging/diverging occur when vehicles merging onto the freeway are accessing inside lanes while vehicles are exiting the freeway or are changing from toll/HOV lanes to general-purpose lanes. High traffic volumes, chokepoints, and lane weaving have affected both traffic operations and safety in the area.

#### 1.2.2.1 Capacity and Transportation Demand

At the junction of northbound SR-241 and eastbound SR-91, the five lanes on SR-91 are reduced to four lanes after a distance of approximately 1.6 km (1 mi) near Coal Canyon Road. In effect, the right lane on this segment acts as a long merge lane. At the beginning of the p.m. peak traffic period, traffic accumulates at this chokepoint, causing eastbound SR-91 to become congested.

The daily number of vehicles traveling on eastbound SR-91 is forecast to increase over time (Table 1.2), which will increase traffic congestion in the project area (Table 1.3). The quality of traffic flow can be defined in terms of level of service (LOS), from A to F. LOS range from LOS A (free traffic flow with low volumes and high speeds resulting in low densities) to LOS F (traffic volumes exceed capacity and result in forced flow operations at low speeds, resulting in high densities). Figure 1-3 illustrates these LOS. The 2005 and 2030 peak-hour traffic volumes and LOS at ramp junctions and for freeway segments for the eastbound segment of SR-91 in the project area are presented in Table 1.4. As shown in Table 1.4, without any improvements to

3.658 m (12.0 ft) lane, 1.524 m (5.0 ft) inside shoulder, and 3.048 m (10.0 ft) outside shoulder.

Infrastructure and project components are shown in Figure 1-4 and are described below.

### **1.3.3.1 Permanent Project Components**

#### ***Bridges***

As part of the proposed project, the following five bridges would also be widened: Coal Canyon Undercrossing, County Line Culvert, West Prado Overhead (over the Burlington Northern Santa Fe [BNSF] railroad), Route 91/71 Separation, and West Connector Undercrossing.

#### ***Retaining Walls***

A series of slope retaining walls with multiple footings would be constructed on the south side of SR-91. Most of the retaining walls are located adjacent to the freeway. However, one proposed retaining wall is west of the SR-91/SR-71 interchange near Fresno Canyon/Wardlow Wash, and another wall is adjacent to an existing private access road.

#### ***Sound Walls***

The proposed project includes construction of four sound walls to reduce traffic noise associated with the proposed project. A sound wall with a maximum height of 4.28 m (14.0 ft) is proposed adjacent to the westbound lanes on the north side of SR-91 west of the Green River Drive interchange and would extend for a distance of approximately 0.8 km (0.5 mi) to west of Green River Drive. Three other sound walls with a maximum height of 2.44 m (8.0 ft) may be constructed on the top of the slopes south of SR-91 outside of Caltrans right-of-way adjacent to the Green River Kindercare facility and behind single-family homes on Manor Way and Highland View Drive/Meridian Circle.

These proposed sound walls are considered reasonable on the basis of cost and effectiveness. Additional input from affected property owners would be obtained before the start of final design to confirm whether the walls outside of Caltrans right-of-way would be constructed.

### **Major Drainage Facilities**

A total of eight existing reinforced concrete pipe (RCP) or reinforced concrete box (RCB) culverts carry storm water beneath SR-91 within the project limits. Six of these culverts would be extended or modified to accommodate the proposed project. The volumes of the existing collection basins would be retained by regrading these areas at the inlets to the culverts. Existing hillside drainage would be intercepted in new concrete ditches that would run behind the proposed retaining walls and convey drainage to the existing culverts.

Wherever feasible, construction of permanent water quality treatment best management practices (BMPs) would be included during design. These could include biofiltration swales at the toe of the fills on the south side of SR-91 in combination with detention or infiltration basins at the current collection basin locations.

### **Utilities**

An underground crude oil pipeline, deemed to be a high-risk facility, should be “potholed” during final design of the proposed project to determine whether any relocation of this pipeline would be required. It is anticipated that construction activities for relocation of this facility would occur within the anticipated disturbance limits for the proposed project. No other utilities would need to be relocated.

### **Intelligent Transportation System (ITS) Facilities**

The existing Caltrans fiber optic backbone line used in conjunction with the closed-circuit television cameras that observe the traffic conditions on SR-91 would need to be relocated farther south from its existing location or would be replaced with new facilities within the project limits.

New inductive loop detectors, which collect traffic data, would be installed in all eastbound lanes to maximize the service life of the system. The loop detectors on the ramps and connectors would need to be modified. The modification to the ramp meters and vehicle detection systems would occur within the project limits and will be detailed during final design.

The OCTA-owned vaults and cabinets that monitor the SR-91 Express Lanes would need to be relocated within the project limits to accommodate the widening.

### **Access Road Relocation**

The existing private access road traveling under and immediately south of SR-91 in Riverside County from near the Riverside/Orange County line to approximately 3 km

(1.8 mi) west of Green River Village would need to be lengthened and shifted south to accommodate the proposed freeway widening.

### **Soil Balance**

The addition of the eastbound lane would require the modification of existing slopes on the south side of SR-91 and the installation of retaining walls. The existing slopes may be cut back up to 9 m (29.5 ft), resulting in an approximate excavation of 29,500 cubic meters (cm) (1,041,645 cubic feet [cf]) of soil. The material excavated from these locations would be used in other areas within the project limits. An estimated additional 66,000 cm (2,330,460 cf) would be imported and used to construct the project.

### **Landscaping and Irrigation Systems**

Planting plans would be included in the final design for the proposed project. The planting plan would consist of replacement planting for existing trees, shrubs, and ground cover and/or hydroseed that would be appropriate to the area and enhance the existing indigenous species and plant communities.

Irrigation work would consist of new irrigation systems as required for establishment of the replacement planting. New irrigation systems would be designed to use reclaimed water (if available). Irrigation crossovers would be provided for all ramps and overcrossing abutments.

### **Right-of-Way Acquisition**

The proposed project would require acquisition of limited property outside the existing Caltrans right-of-way. Specifically, a 3 to 9 m (9.8 to 29.5 ft) wide strip of additional right-of-way (from Station 1 to Station 6) would be acquired for relocation of the private access road in Riverside County. A replacement ingress/egress easement may be required for shifting the access road. Permanent easements would be required between Stations 174+20 to 175+20 in Orange County and between Stations 4+35 to 6+10 and 6+45 to 7+45 in Riverside County in order to access the basins and retaining walls for maintenance. An aerial easement would be required over the BNSF railroad for widening of the West Prado Overhead over the BNSF railroad right-of-way between Stations 19+10 and 20+60 in Riverside County.

### **Railroad**

A Railroad Agreement would need to be negotiated between Caltrans and the BNSF for widening of the West Prado Overhead, including an aerial easement over the BNSF railroad right-of-way. Falsework posts would need to be located within BNSF

right-of-way line. The structure type has been configured to minimize the effect on the railroad.

### **1.3.3.2 Temporary Project Components**

#### ***Construction***

Staged construction would be required for all ramp reconstruction and freeway widening. The number of through lanes would be maintained by restriping existing lanes. However, full closure of eastbound SR-91 and northbound SR-71 is not anticipated. The eastbound SR-91 off-ramp to Green River Drive and the SR-91 eastbound to SR-71 northbound connector would be closed periodically during construction. In addition, the Green River Drive on-ramp to eastbound SR-91 and a single eastbound general purpose lane may need to be closed during construction. All closures would be limited to weekends and night time only.

#### ***Construction Vehicle Access and Material Staging***

Construction vehicle access and staging of construction materials would occur within disturbed or developed areas inside the existing Caltrans right-of-way or the proposed additional right-of-way. Vehicle access and materials staging during construction of the sound walls outside of Caltrans right-of-way would occur in approved designated areas. Equipment maintenance and staging would be in designated areas away from wildlife corridor entrances. All construction vehicle access, materials staging and storage, and other construction activities would occur within the defined disturbance limits for the proposed project.

#### ***Construction Lighting***

The proposed project would require nighttime construction activities in some parts of the project area. If work is done at night, lighting would be directed away from wildlife corridors and land uses outside the freeway right-of-way.

The hours of construction would be limited to daylight hours at Coal Canyon, Fresno Canyon, and Wardlow Wash to avoid adverse lighting impacts to existing wildlife corridors in these areas.

There would be no permanent changes to lighting.

### **1.3.3.3 Value Analysis**

A Value Analysis (VA) was performed by Value Management Strategies, Inc. for the proposed project. The Project Development Team accepted one VA alternative and conditionally accepted two others. The accepted VA alternative is to implement van