

3.0 PROJECT DESCRIPTION

3.1 INTRODUCTION

The City of Sunnyvale (City) proposes to rehabilitate the Fair Oaks Overhead Bridge (bridge). The bridge is located on Fair Oaks Avenue between Kifer Road and Evelyn Avenue. The bridge crosses over Hendy Avenue, the railroad tracks owned by the Peninsula Corridor Joint Powers Board (Caltrain), and through an apartment community. The Fair Oaks Avenue Overhead Bridge Rehabilitation Project (project) would rehabilitate the bridge to address several identified structural deficiencies while at the same time expanding bicycle and pedestrian amenities. The rehabilitated bridge would maintain its current automobile capacity - two travel lanes in each direction.

3.2 PROJECT SETTING AND LOCATION

Figure 3-1 shows the project location. Fair Oaks Avenue is an urban arterial street located in south-central Sunnyvale. The project site is surrounded by a variety of private properties in a mix of residential, commercial, and industrial uses.

Moving from north to south, the eastern side of the project site includes a Home Depot retail store, the Caltrain railroad tracks, the eastern half of an apartment community (Heritage Park) and a sports bar (the Blue Bonnet). In addition, to the immediate east of the bridge is a separate pedestrian overcrossing structure (POC). The two pedestrian access points to the POC are 1) adjacent to the Home Depot parking lot and 2) at the northern edge of the Heritage Park community.

To the west of the project site, again from north to south, uses include an industrial campus (Northop Grumman), Hendy Avenue, the Caltrain tracks, and the western half of the Heritage Park community. Beneath the bridge, uses from north to south are Hendy Avenue, the Caltrain tracks, and a parking area bisecting the Heritage Park community.¹

¹ The parking area beneath the bridge is owned by the City and in the past has been leased to the Heritage Park community.

The bridge and the adjacent intersections of Fair Oaks Avenue with Kifer Road and Evelyn Avenue comprise a project site with a linear length of about 1,400 feet, or about a quarter of a mile. The project site also includes the adjacent POC.

3.3 BACKGROUND

The City constructed the bridge in 1967 and undertook seismic retrofit projects in both 1981 and 1993. Caltrans regularly inspects the bridge, evaluating its structural integrity and functionality with a set of specialized federal criteria. These criteria are set forth by the Federal Highway Administration (FHWA) to provide quantitative and objective information to establish whether a particular bridge is eligible for federal funding assistance through FHWA's Highway Bridge Program (HPB). Factors considered in the criteria include:

- The condition of the bridge deck, its substructures and/or superstructures
- The overall structural condition
- The geometry of existing features (including lane widths, underclearances, and approach roadway alignments).

The bridge inspection process yields three main determinations:

- Structural deficiency
- Functional obsolescence
- Sufficiency rating

"Structural deficiency" is defined as a bridge with routine maintenance concerns that do not pose a safety risk. Bridges that are found to pose an acute safety hazard would be closed or their use curtailed.

"Functional obsolescence" means aspects of a bridge do not meet current standards, such as inadequate lane or shoulder widths or other similar concerns.

The "sufficiency rating" is an overall measure of a bridge's health.

As of May 2013, Caltrans records indicate that the bridge is "structurally deficient" owing primarily to a low condition rating of the deck. The records indicate fewer problems with the bridge's substructure (the columns and abutments that support the superstructure and bridge deck). The bridge was not found to be unsafe to continue regular operations.

Overall, Caltrans assigned the bridge a sufficiency rating of 69.4. Per Caltrans guidance, a sufficiency rating below 80 leads to a classification of the bridge as “deficient” and elevates the bridge for rehabilitation work through the state’s administration of federal HBP funds.

Given all the above, the bridge was included on FHWA’s “Eligible Bridge List” (EBL), a list of projects qualifying for federal rehabilitation funds.

3.4 SITE CHARACTERISTICS

As shown in **Figure 3-2**, the bridge structure spans just over 905 feet in length and is about 65 feet in width. The width of the paved roadway is about 58 feet. The bridge consists of 10 spans of reinforced concrete box girders, supported on 2-column bents with separate spread footing foundations. **Figure 3-3** provides an illustrative diagram of some of these specialized bridge terms.

As noted, the northern portion of the bridge passes over a section of Hendy Avenue. This Hendy Avenue “underpass” area is notable for the presence of the bridge columns on either side of the roadway.

The POC consists of a reinforced concrete single-cell box girder bridge supported on single column bents with spread footing foundations. The two switchback access towers consist of concrete slabs cantilevered from two reinforced concrete columns.

3.5 PROJECT COMPONENTS

Design Components

The project incorporates the design components listed below. **Figure 3-3** illustrates and helps define some of the special terms used below. Please refer to **Appendix B** for detailed project plans.

Substructure Improvements

The following improvements all relate to the elements of the bridge that help support the bridge superstructure (consisting of the deck, railings, and walls):

- Retrofits of anchor pile and restrainers at north and south abutments²
- Retrofit of existing bridge footings³
- Remove/relocate three existing columns - the eastern columns at bents 7,8, and 9⁴
- Retrofit of all bent caps⁵

Superstructure Improvements

Each of the following elements relates to the upper portion of the bridge - portions supported by the bridge substructure:

- **Widening of the bridge deck** from an existing 65 feet to a proposed 71.5 feet (6 feet, 4 inches of deck widening) to allow for sufficient room for expanded pedestrian and bicycle facilities as well as to correct deficiencies in roadway geometrics. The widening of the bridge deck would occur entirely on the east side of the bridge. The western edge of the bridge deck would remain in its current location.
- **Reallocation of the bridge roadway** as follows:
 - Retention of two auto travel lanes in each direction, with each lane about 12 feet in width (same as current width)
 - Provision of a 2 foot raised median
 - Retention of two bicycle lanes in each direction, but widened from 5 feet to 6 feet
 - Provision of a separated, 6-foot 10-inches wide sidewalk on the east side of the bridge, in place of existing 2 -3 foot wide curb
 - Provision of a 1-foot wide barrier

² The north and south ends of the bridge are supported by abutments, which consist essentially of retaining walls on which the bridge deck rests. The abutments are in turn supported below ground by anchor piles that were driven into the ground when the bridge was constructed.

³ See **Figure 3-3**. Footings are portions of the substructure that rest directly on underlying soils, bedrock, or piles. Footings may also be thought of as the bottoms of the bridge columns.

⁴ The bridge has a total of 10 bents, each of which is supported by 2 columns. Bents are part of a bridge's substructure. Bents are a rigid frame commonly made of reinforced concrete or steel that supports a vertical load and is placed transverse to the length of a bridge structure. Bents are commonly used to support beams and girders. Here, the vertical members of the bent are called columns; the horizontal member resting on top of the columns is a bent cap.

⁵ See note 3 above.

- **Strengthening of the superstructure** at bents 2, 5, 7, and 10
- **Repair** of existing spalls⁶, exposed deck reinforcing, and sealing of cracks
- **Resurfacing of the bridge deck** with new pavement (polyester concrete overlay)
- **Replacement** of existing joint seals
- **Replacement of existing streetlights and guardrails** on bridge deck

Other Improvements

The project would also include the following improvements:

- Hendy Avenue underpass area improvements
 - Realignment of Hendy Avenue to improve horizontal clearance - facilitated by the proposed relocation of the three eastern columns at bents 7, 8, and 9
 - Extension of bicycle lanes, streetlights, and other related improvements currently being constructed on portions of Hendy Avenue west of the bridge
- Adjacent Intersection Improvements (conceptually illustrated in **Figure 3-4**; also see **Appendix B**):
 - Both the Kifer Road and Evelyn Avenue intersections are signalized and would remain so with project improvements.
 - At Kifer Road, northbound Fair Oaks Avenue would have the existing free right turn lane removed and the sidewalk widened, so as to reduce the pedestrian crossing width of Kifer Road. Cars turning north on Kifer would turn from the right-hand lane.
 - There would be no changes to the southbound Kifer Road intersection.
 - At Evelyn Avenue, the existing free right turn lane onto northbound Fair Oaks Avenue would be removed and the sidewalk widened, effectively reducing the pedestrian crossing width of both Evelyn and Fair Oaks Avenues.
 - Also at Evelyn Avenue intersection, the existing double-left turn lane from southbound Fair Oaks Avenue would be reduced to a single left-turn lane.

⁶ A spall is defined as a cracking or fragment of a concrete surface.

- Removal of the POC structure over the Caltrain tracks. The existing POC will remain in service during construction at least until such time that pedestrian access can be provided on the bridge structure itself.

3.6 PROJECT CONSTRUCTION - PHASING

Because the completed bridge will be nearly identical to the existing bridge in terms of traffic operations, the City anticipates that the construction period holds the greatest potential for environmental effects to occur.

The project will require construction on and immediately adjacent to the bridge, including intersections of Fair Oaks Avenue with Kifer Road and Evelyn Avenue as well as the underpass portion of Hendy Avenue. Estimated construction time is approximately 16 months.

As a way to expedite the overall construction period, the City proposes temporary closure of the Hendy Avenue underpass area - specifically, the portion of Hendy Avenue between the driveway to Home Depot and Kifer Road. This area includes the three eastern columns at bents 7, 8, and 9 that the project would relocate. The alignment of Hendy Avenue will shift as a result of the column relocation. These improvements can be completed more expeditiously if work can occur without need to maintain through traffic on the affected portion of Hendy Avenue. As further detailed below, the temporary closure of this portion of Hendy Avenue will occur early in the overall construction process. This portion of Hendy Avenue will be reopened as quickly as construction permits.

To better understand the potential for environmental effects to occur, the City's engineers have developed a preliminary construction staging plan consisting of five stages. For purposes of this environmental review, it is assumed that a given stage would be completed before moving on to the next stage. Such an approach offers a more conservative analysis of environmental impacts insofar as it posits the longest possible construction timeframe. Construction-related effects are generally considered more impactful the longer their duration.

Notwithstanding, the City's engineers have identified several opportunities where these phases may be able to run concurrently. Running phases concurrently would result in a shorter construction timeframe, meaning less overall time during which heavy equipment would be used and associated environmental effects (noise, air pollutant emissions, etc.) would occur.

For the purposes of this analysis, however, no concurrent phasing is assumed. This approach is appropriate for environmental analysis in that it contemplates a “worst-case” scenario in terms of the duration of construction activity and associated impacts.

Figures 3-5 through 3-9 illustrate proposed construction phasing and estimated timeframes. Activities associated with each stage are summarized below.

Stage 1: Duration of Approximately 4 to 8 weeks

Construction Activities

- Remove existing median
- Construct portion of abutment 1 and 11 retrofits
- Construct bent footing retrofits
- Relocate utilities, storm drain and sewer systems, and water system

Stage 1 Traffic Handling

Fair Oaks Avenue

Northbound (NB): one vehicle lane (11') and one bicycle lane (5') open

Southbound (SB): one vehicle lane (11') and one bicycle lane (5') open

Hendy Avenue

Closed between Kifer Road and Home Depot west driveway

Evelyn Avenue

No changes westbound (WB) or eastbound (EB)

Kifer Road

WB: one left turn and one right turn lane open

EB: no changes

Stage 2: Duration of Approximately 19-23 weeks*Construction Activities*

- Construct west bridge railing replacement (west side)
- Construct portion of abutment 1 and 11 retrofits
- Continue utility relocations
- Continue bent footing retrofits
- Begin bent cap retrofits
- Construct new footings/columns at bents 7, 8, and 9

Stage 2 Traffic Handling

Fair Oaks Avenue

NB: one vehicle lane (11') and one bicycle lane (5') open

SB: one vehicle lane (11') and one bicycle lane (5') open

Hendy Avenue

Closed between Kifer Road and Home Depot west driveway

Evelyn Avenue

No changes WB or EB

Kifer Road

WB: one left turn and one right turn lane open

EB: no changes

Stage 3: Duration of Approximately 34 weeks*Construction Activities*

- Construct sidewalk, curb, gutter, and retaining wall
- Construct portion of abutment 1 retrofit and widening
- Construct portion of abutment 11 retrofit
- Continue bent cap retrofits
- Construct infill wall at bent 6
- Widen bridge on eastern side
- Construct sidewalk, curb, and gutter and curb ramp at Kifer Road

- Remove easterly columns at bents 7, 8, and 9
- Construct Hendy Avenue, Fair Oaks Avenue, and Evelyn Avenue; sidewalks, curbs, curb ramps, and gutters
- Restore Home Depot and Heritage Park Apartment parking areas

Stage 3 Traffic Handling

Fair Oaks Avenue

NB: one vehicle lane (11') and one bicycle lane (5') open

SB: one vehicle lane (11') and one bicycle lane (5') open

Hendy Avenue

Closed between Kifer Road and Home Depot west driveway

Evelyn Avenue

WB: one lane open

EB: no changes

Kifer Road

WB: one left turn and one right turn lane open

EB: one lane open

Stage 4: Duration of Approximately 5-9 weeks

Construction Activities

- Continue sidewalk, curb, gutter, and curb ramp along Evelyn Avenue
- Continue sidewalk, curb, gutter, and curb ramps along Fair Oaks Avenue and Kifer Road.
- Construct median along Fair Oaks Avenue
- Remove existing pedestrian overcrossing
- Replace bridge joint seals
- Construct polyester concrete overlay of Fair Oaks

Stage 4 Traffic Handling

Fair Oaks Avenue

NB: one vehicle lane (11') and one bicycle lane (5') open (typical)

SB: one vehicle lane (11') and one bicycle lane (5') open (typical)

(temporary closures during polyester concrete overlays)

Hendy Avenue

Open to two-way traffic

Evelyn Avenue

WB: two lanes open (free-right turn eliminated)

EB: one lane open

Kifer Road

WB: one lane open

EB: two lanes open

Stage 5: Duration of Approximately 6-8 weeks

Construction Activities

- Continue sidewalk, curb, gutter, and curb ramp construction along Evelyn Avenue
- Reconstruct the portion of the median at Evelyn Avenue/Fair Oaks Intersection and at Kifer Road/Fair Oaks Avenue Intersection
- Reconstruct new curb ramp at Kifer Road/Fair Oaks Avenue Intersection

Stage 5 Traffic Handling

Fair Oaks Avenue

NB: two vehicle lanes (12') and one bicycle lane (6') open

SB: two vehicle lanes (12') and one bicycle lane (6') open

Hendy Avenue

Open in both directions

Evelyn Avenue

WB and EB: two lanes open in each direction

Kifer Road

WB and EB: two lanes open in each direction

Construction Methods

Abutment retrofits: The project will retrofit the abutments located beneath bents 1 and 11. This will entail a drill rig parked atop the bridge approaches that

would drill vertically into the ground approximately 80 feet below ground surface. Drilling and retrofit work will be divided into three stages for each abutment (construction stages 1-3 above). The first stage will entail drilling and casting the central portion of the abutments; then the west sides and then the east sides.

Footing retrofits: One of the existing bridge footings per bent will be improved. This will entail excavation at each bridge column down to the level of the existing footing so that the retrofit work can widen and overlay the existing footings.

Column relocations: The eastern columns at bents 7, 8, and 9 will be relocated to accommodate the bridge widening as well as to improve operations of the Hendy Avenue underpass area. This work will require excavating to a depth of about 14 feet to create a new footing for each column.

Falsework: Falsework will be required for construction of the bridge widening. The falsework will have openings over the Caltrain tracks with minimum vertical clearances of 22.5 feet and minimum horizontal clearance of 20 feet, per preliminary discussions with Caltrain. Falsework at select locations within the Heritage Park Apartments complex parking lot, with a minimum temporary vertical clearance of 15 feet and a minimum temporary horizontal clearance of 32 feet, will also be necessary to maintain existing traffic patterns.

Contractor Lay Down Areas

Contractor material and equipment lay down areas are anticipated to be limited to the area underneath the existing bridge at the Heritage Oaks Apartments and along closed portions of Hendy Avenue. Limited areas of the Home Depot parking lot are also anticipated to be required for contractor materials and equipment.

Utility Relocations

Numerous underground utilities are located within the project vicinity. The City has identified underground gas, water, stormwater, electricity, and communications transmission facilities parallel the bridge and the Caltrain tracks.

Some of the utilities are in particularly close proximity to the existing bridge footings. Proposed footing retrofit work has the potential to conflict with some of the utilities running beneath the bridge/Hendy Avenue north of the Caltrain tracks.

Accordingly, the project includes the relocation and/or protection in place of all potentially affected utilities. The project includes new proposed public utility easements to run alongside the bridge. These easements are located within the anticipated area of project disturbance. Utility relocation work is anticipated to occur within Stages 1 and 3 of construction.

3.7 PROJECT OBJECTIVES

The underlying purpose of the project is to enhance public safety by rehabilitating the bridge and removing it from the EBL while providing for enhanced pedestrian and bicycle movement through the area. The City has developed the following primary objectives to satisfy the requirements of the California Environmental Quality Act (CEQA) Statute and Guidelines Section 15124(b).

- Ensure the long-term viability and ongoing safe use of the bridge
- Address known deficiencies so that the bridge can be removed from the EBL
- Improve pedestrian accessibility and safety through this portion of Fair Oaks Avenue in compliance with all pertinent federal and local standards
- Enhance bicycle mobility through this portion of Fair Oaks Avenue
- Improve currently substandard geometrics at the intersections of Fair Oaks Avenue with Kifer Road and Evelyn Avenue
- Implement the above objectives while minimizing the take of private property, the removal of established trees, and the relocation of underground utilities.

3.8 INTENDED USES OF THIS DRAFT EIR

This Draft EIR identifies the environmental impacts that would occur if the project were approved and implemented. The Draft EIR does not recommend approval or denial of a project.

The City is the Lead Agency under CEQA and is responsible for review and certification of the Draft EIR. The Lead Agency is required to consider the information in this Draft EIR, along with any other relevant information, in approving or denying the project.

The environmental review and certification process includes:

- Publication and circulation of the Draft EIR for a 45-day public review period;
- Preparation of a Final EIR that includes written responses to comments received on the Draft EIR, and any errata or revisions to the Draft EIR.

The City must certify the Final EIR before taking any action to approve or deny the project. The project will require approvals from the City and other agencies, as shown in **Table 3-1** below. Caltrans is expected to adopt a NEPA categorical exclusion for the project in September 2014.

3.9 PERMITS AND APPROVALS

The City will fund the rehabilitation project with a combination of federal grants and local matching funds.⁷ The City is the lead agency for preparing the environmental document under CEQA and Caltrans is the lead agency for compliance with the National Environmental Protection Act (NEPA). As a local agency federal-aid project on a non-State highway system, the Caltrans Office of Local Assistance (OLA) will be responsible for NEPA compliance.

Table 3-1 identifies the permits/approvals that would be required for project construction.

Table 3-1 Agency Permits and Approvals

Public Agency	Permit, Approval or Review
City of Sunnyvale	Approval of Project Plans Encroachment Permit Acquisition of new permanent right-of-way Securing of temporary access/temporary construction easements on private property Tree Removal Permit
Peninsula Corridor Joint Powers Board (Caltrain)	Encroachment permit for construction and demolition activities above Caltrain track area

⁷ Federal Highway Administration Highway Bridge Program; City of Sunnyvale Capital Project No. 825610.

Public Agency	Permit, Approval or Review
Bay Area Air Quality Management District	Demolition permit (for removal of POC and any portions of Fair Oaks Overhead bridge)

Figure 3-1 Project Location

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Figure 3-2 Bridge Structure

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Figure 3-3 Typical Bridge Features

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Figure 3-4 Proposed Intersection Improvements

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Figure 3-5 Construction Staging 1

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Figure 3-6 Construction Staging 2

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Figure 3-7 Construction Staging 3

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Figure 3-8 Construction Staging 4

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Figure 3-9 Construction Staging 5

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