

I-405 Sepulveda Pass Improvements Project

Sunset Segment Improvements Fact Sheet



Metro



Overview

To reduce congestion, improve mobility and increase safety, the I-405 Sepulveda Pass Improvements Project will add a High Occupancy Vehicle (HOV) lane, standardize traffic lanes and improve on- and off-ramps along a 10-mile-long stretch of the freeway between the I-10 (Santa Monica Freeway) and U.S. 101 (Ventura Freeway).

Widening this crucial but congested highway requires rebuilding three overpasses (Sunset Bl, Skirball Center Dr and Mulholland Dr) and widening several undercrossings. For example, in the Sunset Segment the following undercrossings will be widened:

- > Montana Av
- > Church Ln
- > Getty Center Dr
- > Sepulveda Bl

Underground Utility Movement

Before any widening can take place, dozens of underground and overhead utilities must be moved out of the way of the new structures. Sometimes temporary relocation is necessary before permanent relocation. In the Sunset Segment the following utilities will be relocated:

Chevron lines	Shell lines
Exxon Mobil lines	Sewer lines
Fire hydrants	Storm drains
Fiber optic lines	Telecommunication lines
Gasoline lines	Time Warner lines
Methane gas lines	Underground electrical lines
Natural gas lines	Water lines

Overhead power lines moved underground

Sunset Segment Undercrossings Widening

The I-405 roadway, along with all the bridges along the project, must be widened in order to accommodate the new HOV lane.

For the Sunset Bl Bridge, widening means complete replacement. To reduce reconstruction's effect on traffic flow, the bridge will be demolished and rebuilt in two phases.

After demolition, bridge widening begins with pile driving. The piles are H-shaped (when viewed from above) beams approximately 70-feet long. They are driven into the ground vertically, under the columns that support the bridge, to provide support to the new, widened portion of the freeway. This operation is routinely one of the loudest phases of reconstruction. There are approximately 20 beams under each bridge column.

Next, a foundation is formed by laying steel bars over the top of the vertical piles. Concrete is then poured over these horizontal steel bars, creating a giant concrete table.

Now, for bridges such as Sunset Bl and Sepulveda Bl, columns are built, forming the legs of the concrete table. Columns are round concrete-and-steel structures that support the bridge's deck structure. Although the columns appear to be solid concrete, beneath the surface the columns are actually a marriage of steel rebar and concrete.

Round "cages" shaped from rebar are fabricated offsite and transported to the construction area. Wood forms are built around the finished cages and workers pump concrete around and through the rebar. The new column hardens or "cures" for approximately one week. Then the form around the column is removed and reused. Finally, another wood form is placed around the concrete deck atop the columns. Workers now fill the form with concrete, fabricating the bridge's traveling surface.

Then, walls and abutments are formed on top of the foundation, serving as support to the future bridge deck and retaining dirt behind the walls. The compacted dirt behind the walls will be as high as the freeway, becoming the new road bed and forming the approaches to the bridge.

To build the bridge's supporting infrastructure, large temporary panels, typically made of wood or steel, are used to create a temporary container in which the concrete is poured. This form will hold the concrete in the right shape until it becomes hard or "cured." In a few days, the concrete will cure sufficiently to allow the forms to be removed. In most cases walls and abutments are poured individually, and the forms are reused several times until the bridge walls are complete.

When the concrete has cured, the bridge's weight is transferred to the horizontal bars and their supports—the vertical piles anchored in the ground. In this way the massive piles bear the pressure of the new bridge and the deck that will soon contain thousands of vehicles daily.

Diaphragms are inserted between the horizontal bars to tie the bars in a single unit. Next the concrete deck must cure, a process that requires one month. When the concrete is cured, it will have a roughened surface to reduce vehicle hydroplaning in the rain. A barrier rail and sound wall will also be built, but this may occur later in the project. If any utilities will cross the bridge, they are placed before workers pour the concrete deck.



These round "cages," when surrounded in concrete, will become the center columns supporting Sunset Bl Bridge.



Workers install rebar to form the east abutment of Sunset Bl Bridge. A line of yellow impalement caps, seen behind the crane arm, protects workers.



The newly poured west abutment of Sunset Bl Bridge. The area behind the wood supports will be backfilled with soil.

Reconstruction Timeline

The time required for bridge reconstruction varies depending on the size of the structure. For example, the Montana Av widening is anticipated to last approximately eight months, while the Sunset Bl Bridge reconstruction is approximately two years.

Bridge reconstruction proceeds in this order:

- > Abutments, including piles and walls
- > Columns, including piles, footing and columns
- > Superstructure, including girders supporting the bridge deck and then the deck itself
- > Utilities inserted into the complete superstructure

Work schedules depend on the type of activity scheduled.

For example, some operations require additional space, such as moving wall forms with a crane, pumping concrete, or setting concrete beams. For these activities the contractor will need to close some lanes of Sepulveda Bl, Montana Av and the freeway. To avoid significant traffic delays, perform a full-day of work, and provide a safe work area, closures in these high-traffic areas can only occur at night. Daytime work will also be scheduled. Other activities, such as utility relocation, may also be scheduled at the same time the bridge work takes place.

Sunset Segment Utilities Relocation

Utility work is a major task in any construction project; it is especially complex in major capital projects such as this one, built in a dense urban environment.

Accommodating the Noodle Bowl

Before widening a bridge or freeway to accommodate the new HOV lane, underground utilities must be moved out of the way. In the Sunset Segment, Sepulveda Bl is known by the construction team as “the noodle bowl.” This term arose from the multiple utility lines under Sepulveda Bl. Through the referencing of as-built drawings, communication with utility owners and the use of ground-penetrating radar during potholing operations, the contractor has identified multiple utilities for relocation, many at overlapping locations and at various depths.

For example, Chevron, Exxon Mobil and Shell have oil pipelines through the Sepulveda Pass. SCS Energy has a natural gas pipeline. There are fiber optic lines. The Department of Water and Power has mammoth water lines running under the streets. Southern California Gas Company and Southern California Edison bring gas and electricity to their customers through the pass.

Verizon and AT&T connect residences and businesses via the Sepulveda Pass, and the Metropolitan Water District has a 96-inch-diameter water line under Sepulveda Bl.

Some of those utilities run along and through the three bridges to be replaced—Sunset Bl, Skirball Center Dr and Mulholland Dr—complicating their demolition and reconstruction. Here too, utility relocation must take place first for work to advance.

Relocation Duration

The time required for relocation varies per utility, given that some are only four to six feet underground, while others, such as storm drains, require excavation as deep as 20 feet. As an example, utility relocation between Constitution Av and Church Ln/Ovada Pl will take approximately 20 months to complete. Duration also depends on optimal underground conditions, an unpredictable occurrence. No one really knows what is underground, until excavation of the roadway takes place. Individual line relocation may take anywhere from three weeks to four-to-six months.

Traffic Management Plan

A traffic management plan is put together once a line is identified for relocation. The plan must allow sufficient space for equipment setup and a safe work zone. Traffic reconfiguration becomes especially tricky in a high-traffic area when utilities, such as storm drains, are located in the middle of the Sepulveda Bl roadway.

To minimize impact to traffic and perform a full-day's worth of work, much of this work must be done at night, maintaining at least one lane of traffic in each direction. Daytime work will also be scheduled.

Crew Safety

Safety of the crew and the vicinity around the work area is a top priority. In relocating specialized utilities, such as petroleum products, natural gas, and high voltage electrical, utility owners use their own crews to move their utility lines, relying on a specialized work force experienced with these utilities. Each utility line relocated is inspected by the appropriate inspector, ensuring compliance with all safety measures. An additional benefit of utility relocation is that each time a line is relocated, the project replaces the old line with a new one, prolonging its life and upgrading subsurface infrastructures.



Looking south on Sepulveda Bl, this photograph captures the rebar that will become the extended support of the widened Montana Av bridge.



This crew cuts through the concrete of Ohio Av to pinpoint the location of underground electrical lines. The water on the street cools the saw and is vacuumed up later.

How to reach us and stay involved

Do you have a question about the freeway improvements, want more information or wish to be added to our mailing list? Here's how you can reach us:

EMAIL

l405@metro.net

PHONE

You can also leave your questions or comments on our project phone line by calling **213.922.3665**. Phone messages are retrieved at least once every business day.

FACEBOOK

Be sure to visit us on Facebook at facebook.com/405project

TWITTER

twitter.com/l_405

