



Sixth Street Viaduct Replacement Project

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**THE
ROOKIE
FEDS**



Old Viaduct

- Constructed in 1932
- 3,500 feet in length
- 46 feet wide, 2 lanes in each direction
- Spans 17 railroad tracks, 101 Freeway, and the LA River
- Designed with Art Deco features by Merrill Butler, Louis L. Huot, and Louis Blume.

Why Did The Viaduct Need to be Replaced?

1932

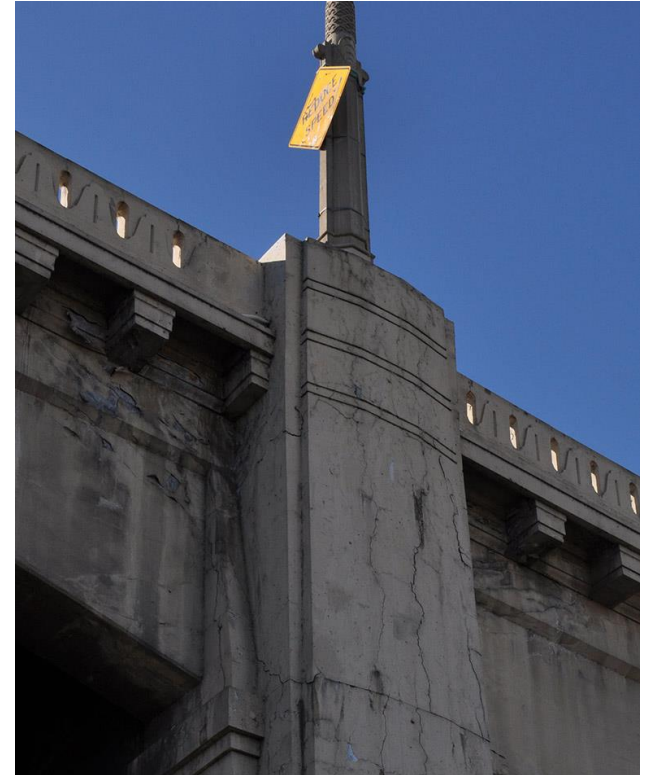
In 1932, the Sixth Street Viaduct was constructed of concrete containing an alkali silica mix. It was later discovered the mix was breaking down the viaduct structure.

2004

A seismic vulnerability study, completed in 2004, concluded that the viaduct deterioration had reduced its capacity to withstand earthquakes and needed to be replaced.

The viaduct was retrofitted in 1995.

1995





Demolition over US-101 Freeway

February 2016 – “101 Slow Jam”

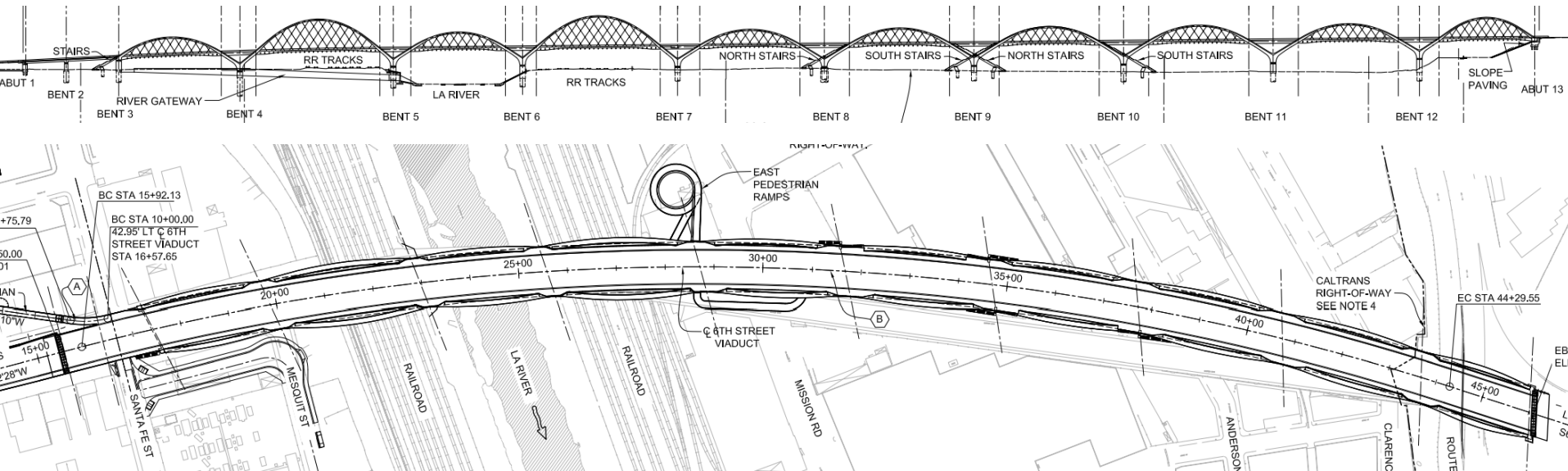


New Sixth Street Viaduct Design

The design of the bridge, known as “The Ribbon of Light”, was created by Los Angeles architect Michael Maltzan, winner of the City’s international design contest in 2012.

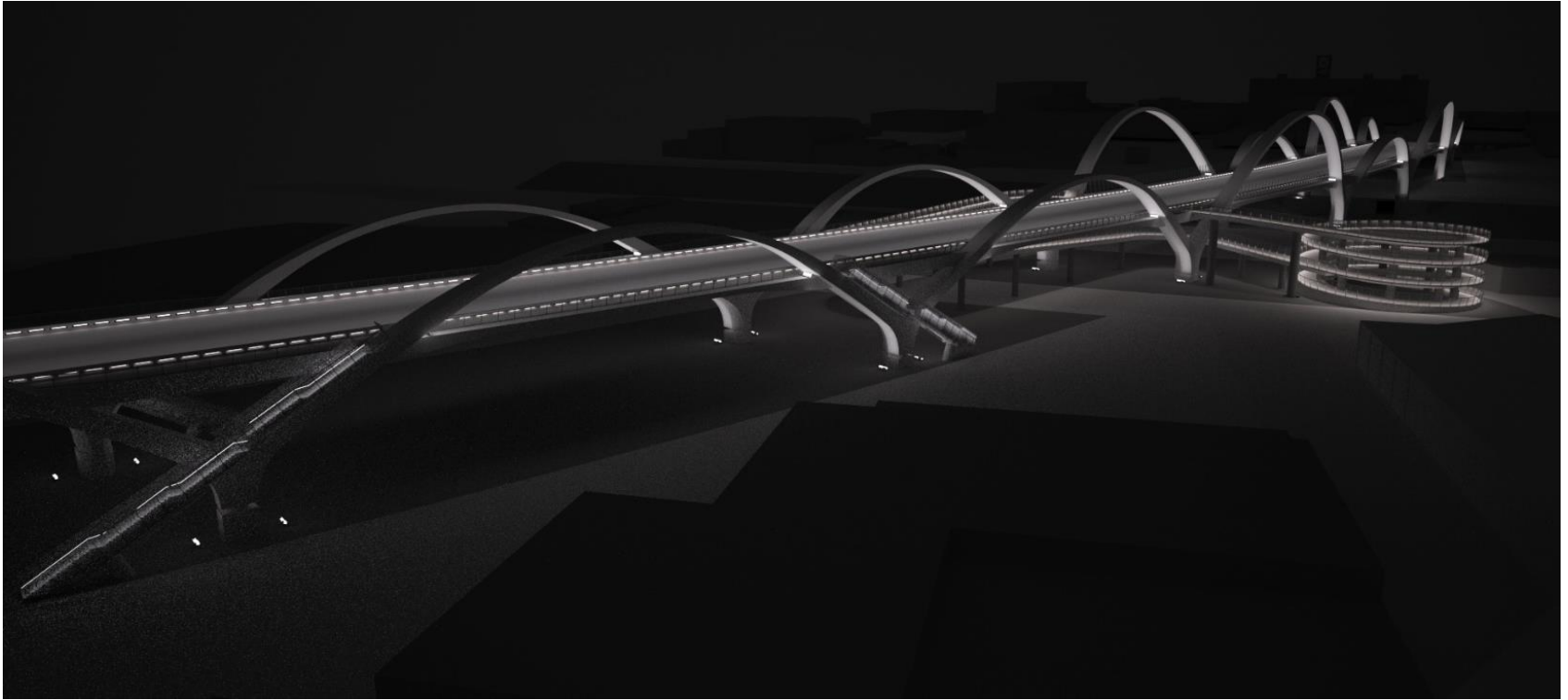
Design Highlights

3,060 foot long
Network Tied Arch Bridge



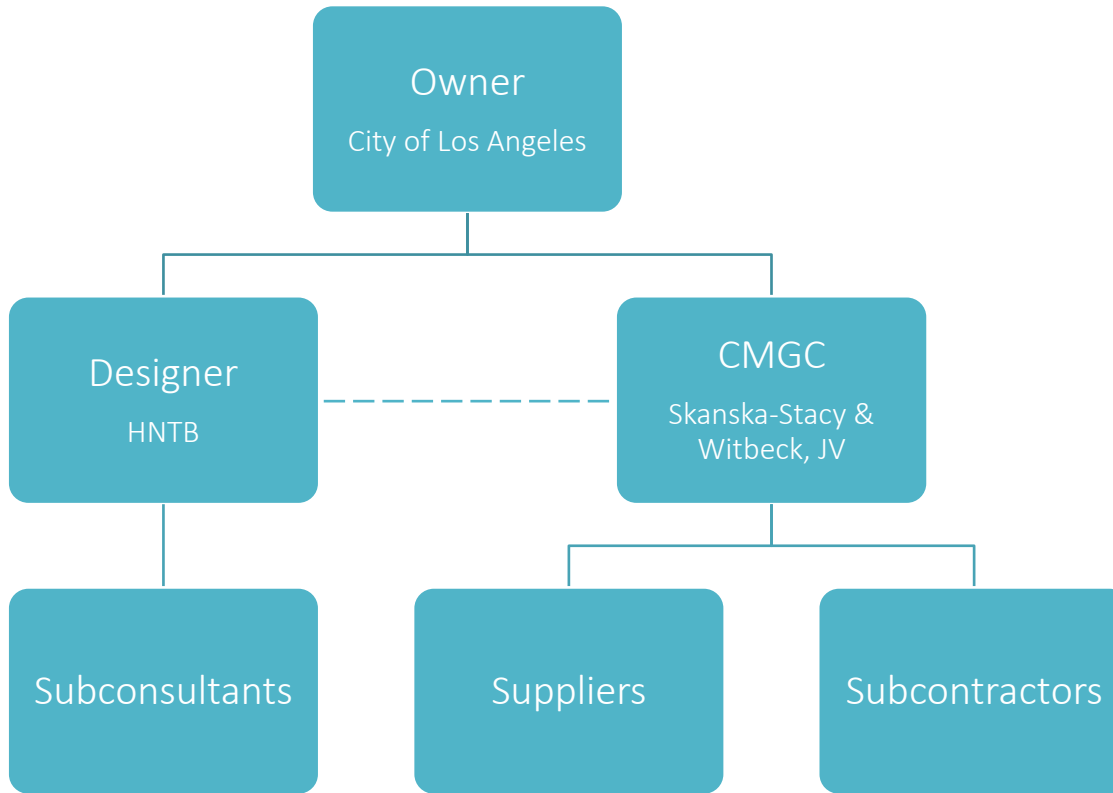
- Alignment is on a horizontal curve, and the individual elements have various radial, parabolic, and elliptical shapes
- Ten arches are canted out 9° from the deck level up
 - Tallest pair of arches (60 ft) accents the LA River, where the original viaduct's arches stood
 - The second tallest pair (40 ft) arc above U.S. 101 Highway, serving as a gateway to the east
 - All other arch pairs are 30 feet tall

Design Highlights



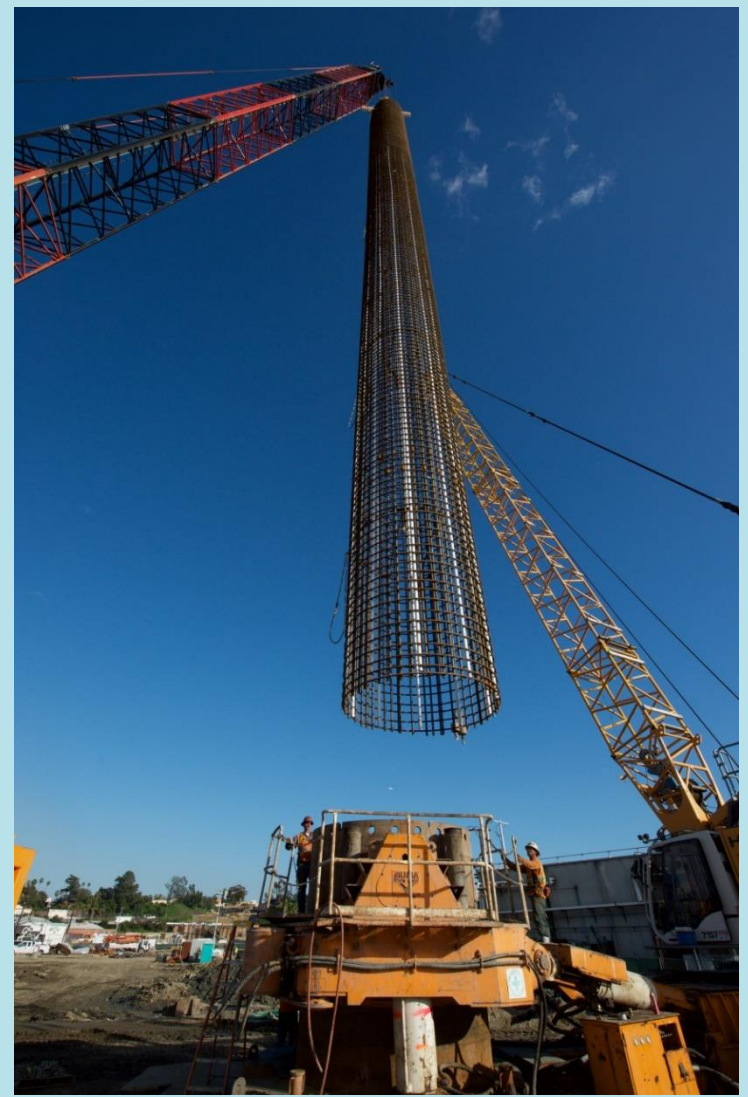
- Barrier Mounted Lighting: there are no light poles on bridge deck
- A total of four color changing, programable lights illuminate each arch from the ground and deck
- Stairway access and pedestrian ramps provide access below to the ground level – site of a future 12-acre park currently under construction

Construction Manager General Contractor Delivery Method



Benefits

- Building demolition, detour establishment, test pile and utility relocation occurred in advance of final viaduct design
- Contractor participated in Caltrans/FHWA Coordination, right-of-way acquisition, railroad coordination, constructability review comments
- Contractor's proposed means and methods and construction sequencing were implemented in the design model
- Contractor continually reviewed plans, provided estimates, and further built full-size mock-up to aid in constructability

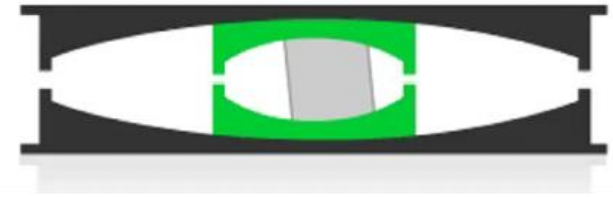


New Viaduct Foundations

22 piles, 10-foot diameter

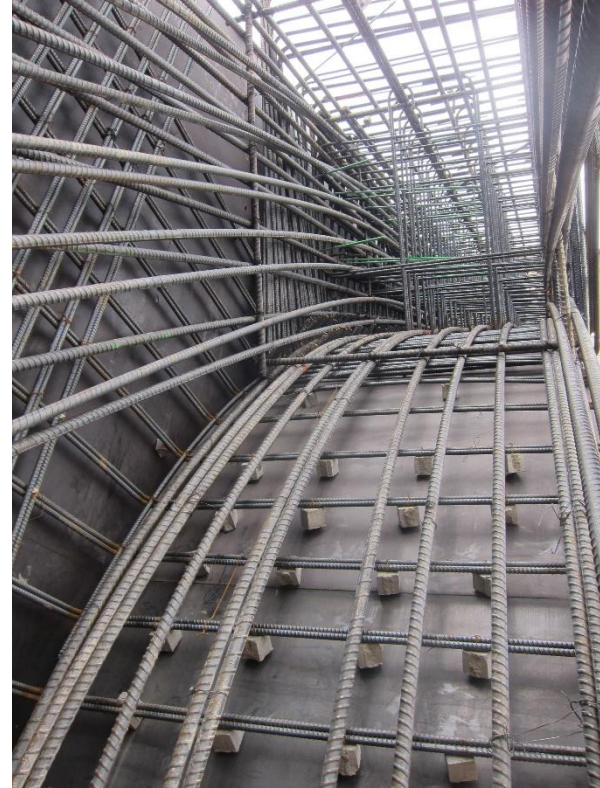
Average Depth = 135', Maximum Depth = 164.5'

Triple Friction Pendulum Bearing Base Isolation



First bridge in the world to use next-generation triple-pendulum friction-bearing technology, developed for this project to stiffen at a predetermined displacement

Y-Bent Installation





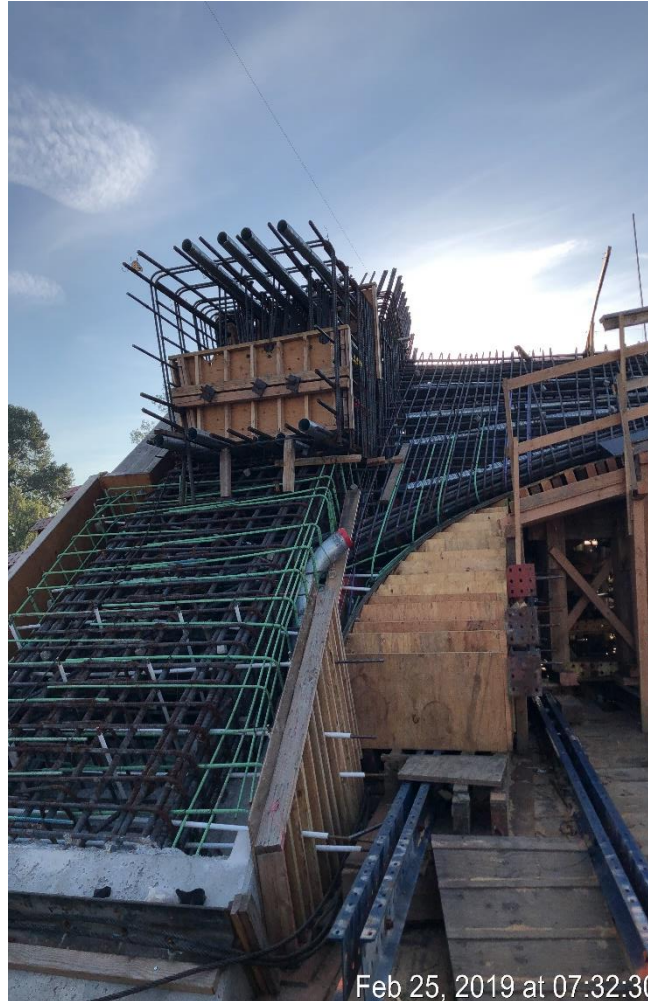
Completed Y-Bent

Bent 11 – April 2017

SCC Knuckle Construction

Used at the hinges or bent cap in bridges at the highly congested elements

- Highly flowable
- No consolidation required
- Moisture tight form
- Intensive QA/QC required
- High unstable mix

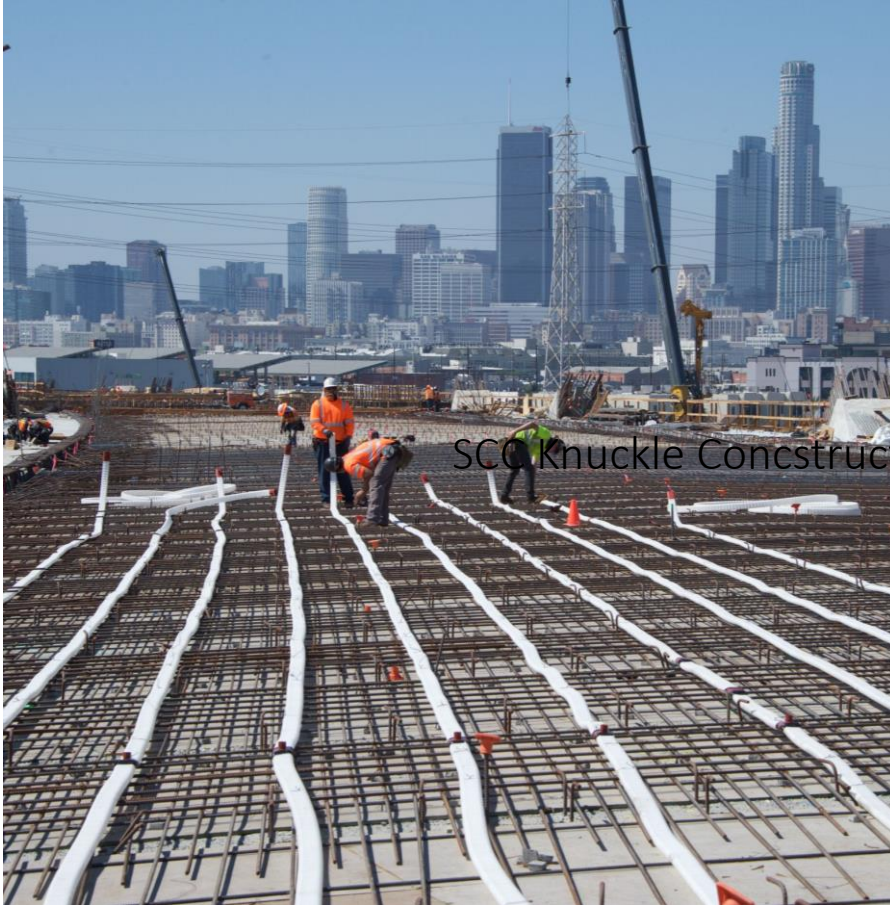




Mass Concrete Cooling

Liquid nitrogen was injected into the concrete mix before placement to decrease the temperature of the concrete to counteract the effects of mass concrete.

Deck Reinforcement



SCC Knuckle Construction



Pouring the Deck

Per Project Special Provisions
concrete mix with fiber used.



Arches Falsework and Construction

Dec 17, 2020 at 1:52:53 PM
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