

Sixth Street Viaduct Los Angeles, California

Triple Pendulum™ Isolators Designed for Continued Post-Earthquake Functionality of Viaduct and Unique Architectural Complexities

The \$600 million replacement viaduct connecting Downtown LA to remote LA neighborhoods and spanning across numerous railway tracks, highways, and local streets, was completed in 2022 to become one of LA's main transportation arteries and most iconic architectural landmarks.

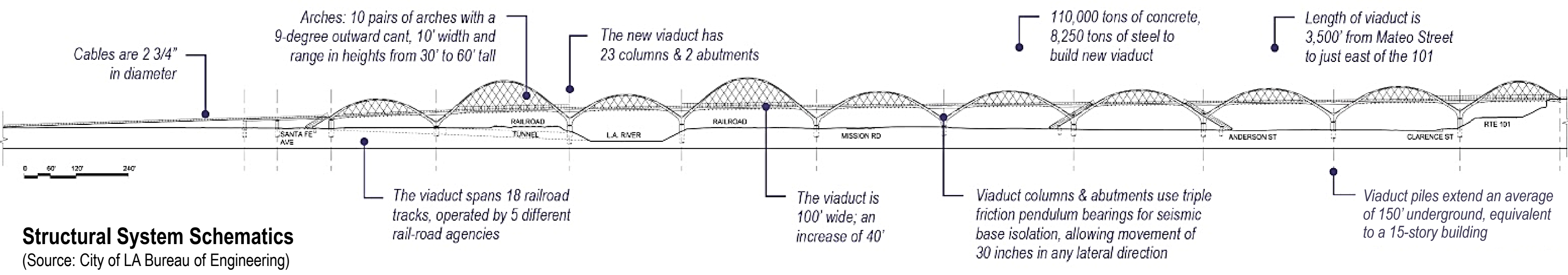
The massive, 3,600-ft-long (1,100 m) viaduct consists of 10 pairs of canted, thin-profiled concrete arches, seismically protected through 28 large Triple Pendulum™ isolators by Earthquake Protection Systems, Inc. with over 42 in. (1.0 m) displacement capacity, 5 sec. isolated period, and 10,000 kip (45 MN) bearing capacity.

Special design parameters and safety features of these large and long-term reliable isolation devices placed within each Y-bent pier enabled the complex architectural layout of the viaduct using a single span superstructure with no intermediate expansion joints, as well as its seismic-resilient and continued functionality design under extremely high earthquake hazard.



(Courtesy of Core Visual/HNTB)

(Courtesy of Iwan Baan/MMMaltzan)



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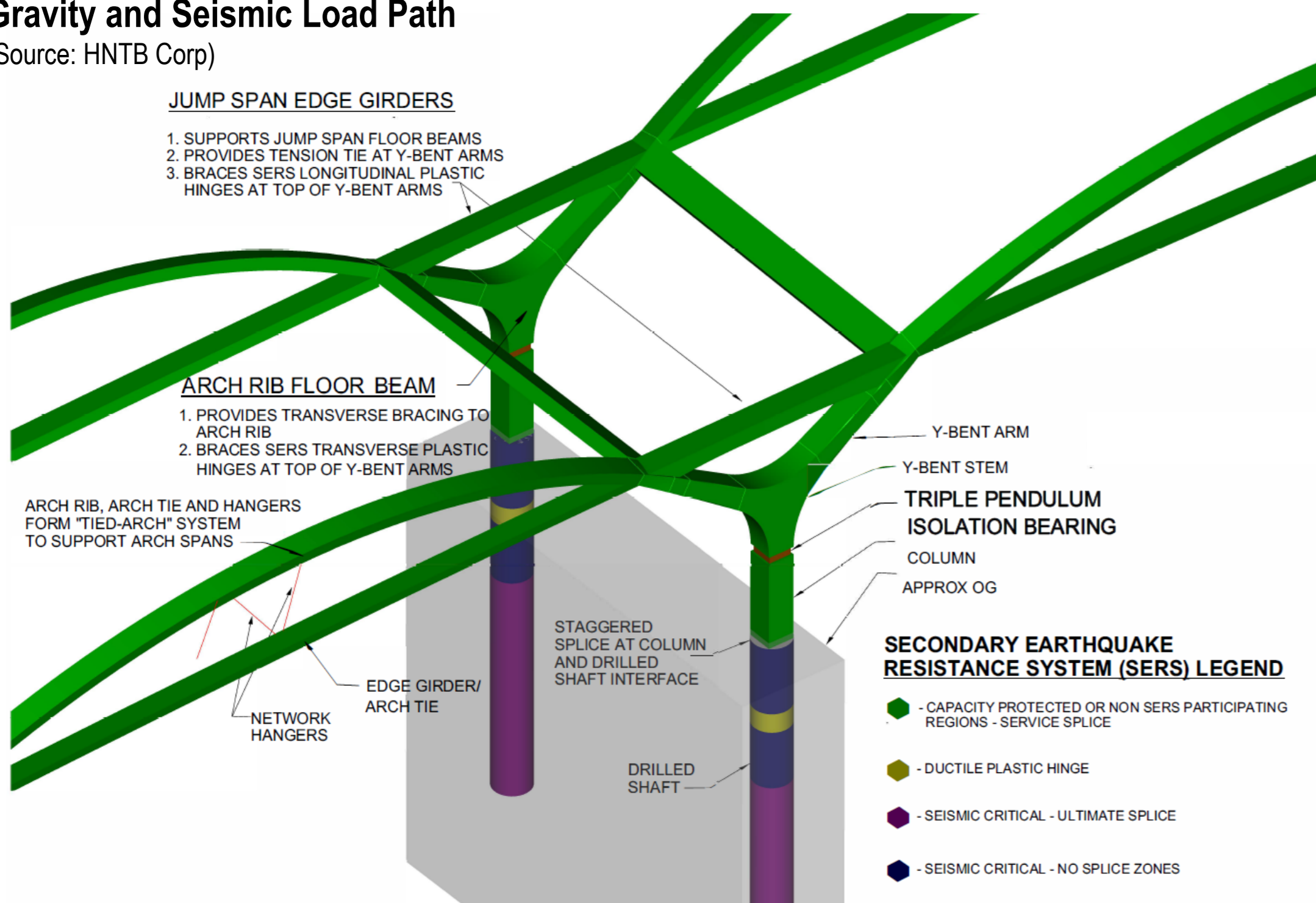
(Courtesy of Iwan Baan/MMMaltzan)



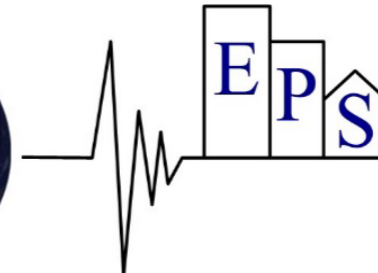
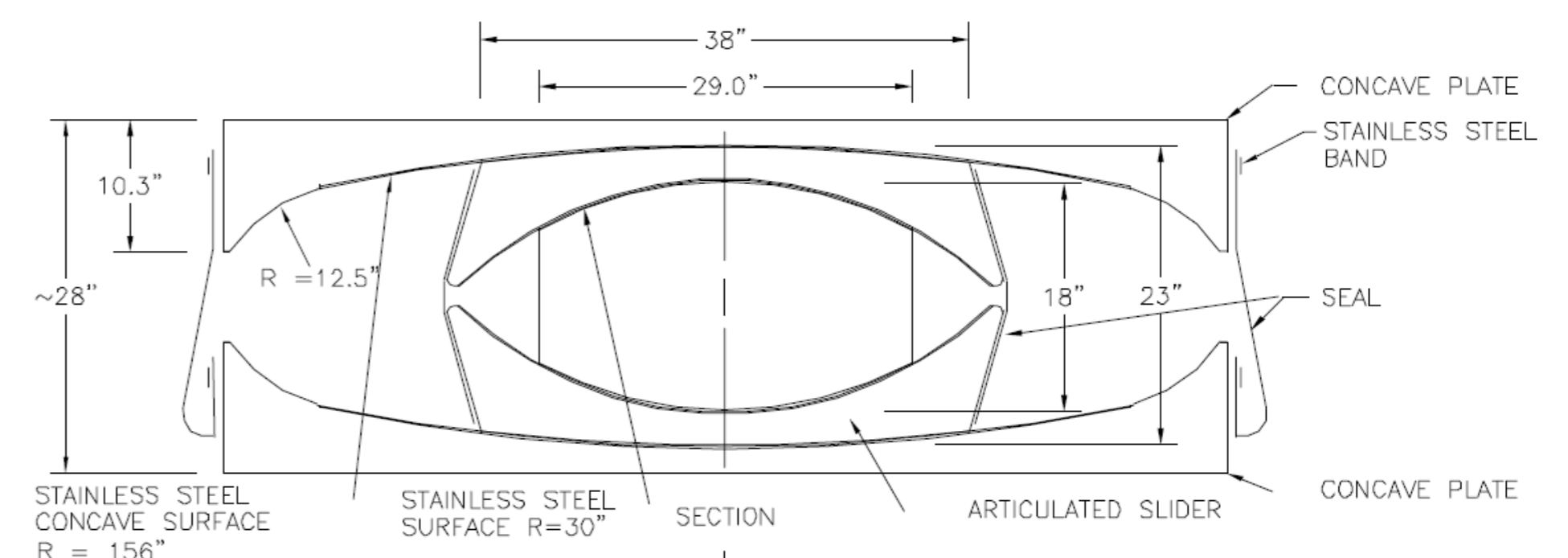
(Courtesy of Hargreaves Jones)

Gravity and Seismic Load Path

(Source: HNTB Corp)



Several Triple Pendulum™ isolator models were used for the construction of the viaduct and bicycle ramp designed to fit within the dimensional constraints of the piers, provide ample displacement capacity, and develop a shear strength capacity that can exceed the fully plastic capacity of the piers. Isolator Prototype Tests were conducted at a displacement 33% larger than the minimum 2010 AASHTO requirements.



Earthquake Protection Systems

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