

# BRIDGES



**70!**  
ANNIVERSARY

**miyamoto.** EARTHQUAKE +  
STRUCTURAL  
ENGINEERS



# miyamoto.

save lives, impact economies

Miyamoto International is a global earthquake + structural engineering and project management company providing critical services that sustain industries and safeguard communities around the world.

We are experts in high-performance engineering that reduces lifecycle costs and produces a positive net impact on a structure's operation. We assess the performance of structures to identify specific vulnerabilities, and prioritize solutions that limit business interruption and reduce property damage.

Built on decades of earthquake and structural engineering experience in the field, our expertise supports how clients address the economic, political, social, sustainability and resiliency challenges in earthquake risk reduction and post-disaster recovery and reconstruction.

Miyamoto offices are strategically located worldwide in earthquake-hazard regions to positively impact economies and save lives.

Sacramento  
San Francisco  
San Jose  
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Orange County  
San Diego  
Reno  
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Mexico  
Costa Rica  
Colombia  
Haiti  
Liberia  
Italy  
Turkey  
India  
Nepal  
Japan  
New Zealand

**make the world a better, safer place.**



The Universal Pedestrian Bridge is the fulfillment of a decades-long quest by Metro and NBC Universal to provide a grade-separated path of travel between the Universal Studios Theme Park and the Universal City Red Line Station. The L-shaped, 400-foot bridge spans over both Lankershim Boulevard and Universal Hollywood Drive, and serves as a high-profile gateway to the Theme Park. The structure of this unique bridge consists of an exposed V-section steel through-truss supported on four tubular steel columns,

with a maximum span of nearly 150 feet across Lankershim Boulevard. Wind and seismic forces are resisted by steel buckling-restrained braced frames in the three elevator shafts and in the middle staircase. Extensive 3-D dynamic modeling of the structure was needed to ensure that it performed well under seismic, wind, vehicle collision and pedestrian loading. Miyamoto served as the design lead for the project and managed a full team of design professionals, including architects and civil, MEP, geotechnical and traffic engineers.

## Metro, Universal Pedestrian Bridge

**LOCATION:**  
Universal City, CA

**YEAR:**  
2016

**CLIENT:**  
Los Angeles County Metropolitan Transportation Authority, Griffith Company

**DESIGN TEAM:**  
Miyamoto International (Prime, Structural), Structural Integrity Systems (Bridge Design Consultant), Gruen Associates (Architecture), Moffatt & Nichol (Civil), Glumac (MEP), Diaz Yourman Associates (Geotechnical), Intueor (Traffic)

**CONSTRUCTION COST:**  
\$22 Million

**SCALE:**  
400-Foot Bridge

**AWARD:**  
ASCE OUTSTANDING BRIDGE PROJECT OF THE YEAR



The C3 parking structure is a new 9-level, 1,010-stall high-rise parking structure designed by Miyamoto engineers to serve a new 7-story commercial office building. Due to a very tight site, the structure had to share foundations with an existing 8-level parking structure constructed in the mid-1980s. Though the original structure was designed for a future expansion, changes in building

codes and ownership of the different properties demanded creative foundation solutions from Miyamoto. The structure is post-tensioned slabs and long-span Cunningham beams. The office building connects to the parking structure at two levels with 130-foot-span pedestrian bridges that also are seismically supported in the parking structure.

## C3 Office Parking Structure

**LOCATION:**  
Culver City, CA

**YEAR:**  
2017

**CLIENT:**  
KPRS

**CONSTRUCTION COST:**  
\$14.7 Million

**SCALE:**  
360,000 SF  
1010 stalls  
9 stories  
2 bridges

**AWARDS:**  
2017 OUTSTANDING ACHIEVEMENT AND EXCELLENCE IN CONCRETE CONSTRUCTION, SOUTHERN CALIFORNIA CHAPTER OF AMERICAN CONCRETE INSTITUTE



## Port of Los Angeles Berth 136-139 TraPac Terminal Expansion

**LOCATION:**

San Pedro, CA

**YEAR:**

2012

**OWNER:**

The Port of Los Angeles

**CONSTRUCTION COST:**

\$50 million

**SCALE:**

21,170 SF Administration Building  
5,665 SF Yard Operations Building  
2,188 SF Pedestrian Bridge (including 2 towers)

Miyamoto International provided peer review, final design and detailing assistance, and design services during construction for the Port of Los Angeles Berth 136-139 TraPac Terminal expansion. The project consists of nine structures: a five-story Administration Building, one-story Yard Operations Building and Driver Services Buildings, four canopy structures, a guard house, and the signature steel pedestrian bridge. We reviewed the structural construction documents and specifications for overall design intent, conformance to

current codes and industry standards, appropriate level of completeness, and coordination with other disciplines. For the pedestrian bridge, our services included independent analysis and structural calculations, review of Structural Engineer of Record design documents, detailing and CAD support. During construction, our work included reviewing contractor submittals and responding to questions from the field, coordinating foundations with existing utilities and providing structural field observation.



## Bob Hope Airport, Regional Intermodal Transportation Center, Elevated Walkway

**LOCATION:**  
Burbank, CA

**YEAR:**  
2015

**CLIENT:**  
Burbank-Glendale-Pasadena Airport  
Authority (Owner)  
PGAL (Prime)

Miyamoto International was the design structural engineer for Bob Hope Airport's Regional Intermodal Transportation Center, also known as RITC. The heart of the project is a three level, 300,000-SF signature structure with a consolidated rental car facility, terminals for airport shuttle and transit

bus services and visitor parking. For egress and pedestrian safety, a 1400-foot-long elevated covered walkway with a people mover was constructed. The walkway provides a dedicated passageway from the consolidated rental car facility and ground transportation center to the central terminal area.



These viaducts were as important as the bridge itself since they connect the bridge to the No.1 Peripheral Road. Built in 1973, these viaducts had also suffered the corrosive effects of time and therefore need to be retrofitted. The reinforcement project was finished in 2008 and now these viaducts are capable of withstanding the earthquake which is expected to take place in a few decades. Services

provided by Miyamoto Turkey included quality control, project management, construction supervision services, the rearrangement of design and erection documents according to local conditions for installation of a falling-down prevention device, replacement of the elastomer bearing, replacement of an expansion joint and the replacement of bearings.

## Seismic Reinforcement Project for First Bosphorus Bridge Approach Viaducts

**LOCATION:**  
Istanbul, Turkey

**CLIENT:**  
IHI Corporation

**SCALE:**  
225 m and 231 m long, 33.4m wide, steel box girder viaducts





The Second Bosphorus Bridge was on the No. 2 Peripheral road connecting the two sides of Istanbul to each other and used by approximately 200,000 vehicles every day. As the First Bosphorus Bridge was closed to truck traffic, this bridge had a major importance especially for the economy of Istanbul. Therefore, this bridge needed to be kept operational

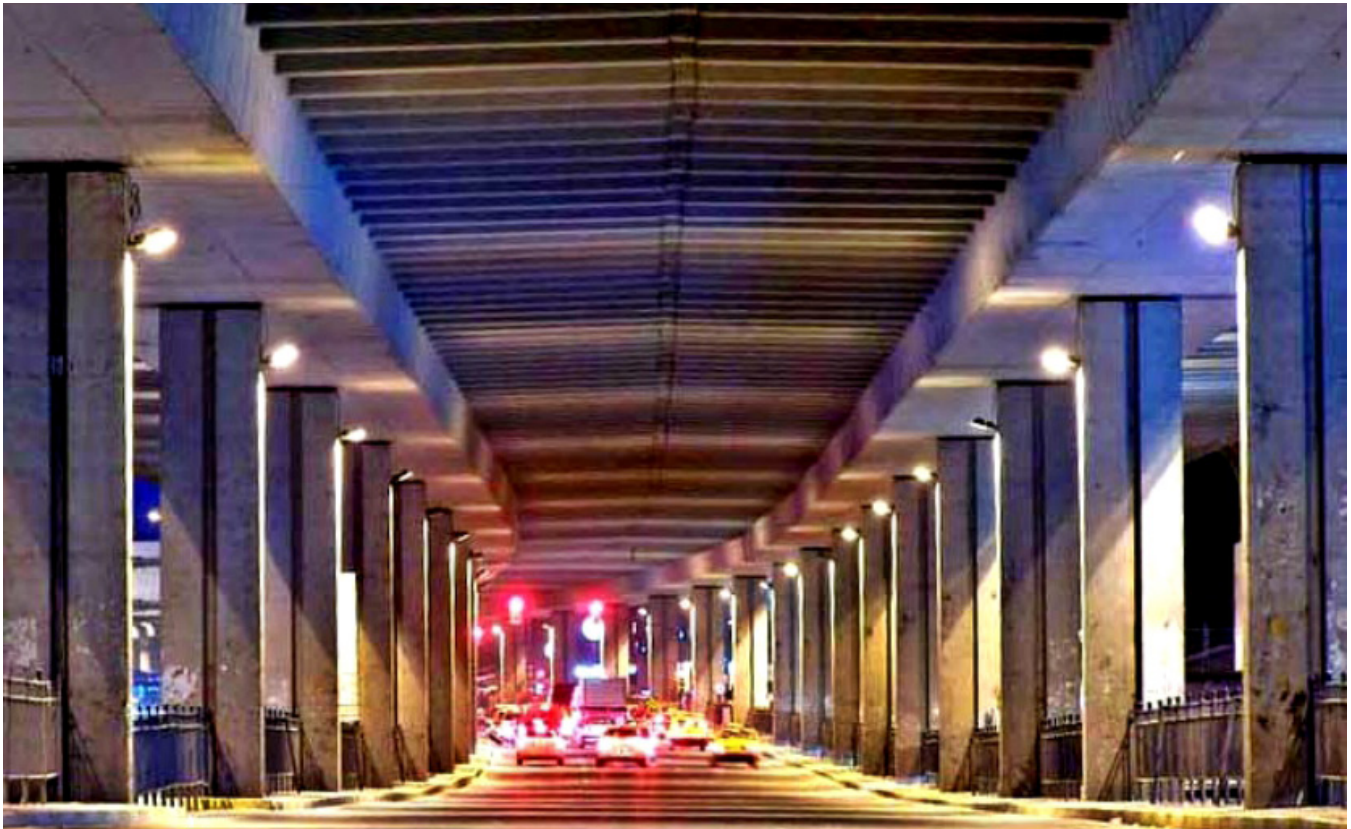
under any circumstances. Services provided by Miyamoto Turkey included quality control, project management, construction supervision services, and the rearrangement of design and erection documents according to local conditions for tower reinforcement in order to prevent a collision between tower and deck.

## Seismic Reinforcement Project for Second Bosphorus Bridge

**LOCATION:**  
Istanbul, Turkey

**CLIENT:**  
IHI Corporation

**SCALE:**  
1.090 m long, 39,4 m wide,  
suspension highway bridge



The Mecidiyeköy Viaduct in Turkey is located on the “Circular Road,” Highway E-5, which is one of the most used roads for traffic flow, both for Istanbul City and the nation. The road is a vital link in case of earthquakes and other natural disasters, both for emergency vehicles and relief teams. Miyamoto provided quality

control, project management, construction-supervision services and rearrangement of design and erection documents, following local standards for steel jacking of the piers, RC lining reinforcement at the pier bottoms and placement of damping devices such as isolation bearings on pier tops.

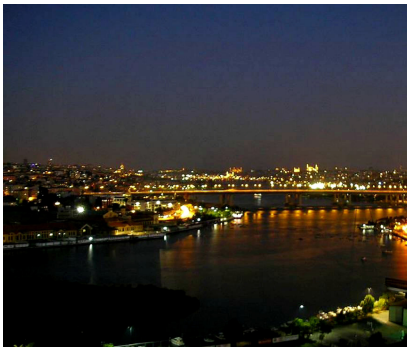
## Mecidiyeköy Viaduct

**LOCATION:**  
Istanbul, Turkey

**COMPLETION DATE:**  
2010

**COST**  
\$1.9 Million

**SCALE:**  
152 and 90.7 m long, 11 and 5 m wide,  
precast I-beam girder viaducts



## Seismic Reinforcement Project for New Golden Horn Bridge (A,B)

**LOCATION:**  
Istanbul, Turkey

**CLIENT:**  
IHI Corporation

**SCALE:**  
822.2 m long, 11 m wide, steel box girder highway bridges

The New Golden Horn Bridge was built in 1998 to reduce the traffic load of the Old Golden Horn Bridge. As this bridge forms a crucial connection for Circular Road (Çevreyolu/E5), its importance would be even greater in case of an emergency situation in Istanbul. Services provided by Miyamoto Turkey included quality control, project management, construction supervision

services, the rearrangement of design and erection documents according to local conditions for reinforcement of piers, replacement of the elastomer bearing and an expansion joint, installation of falling-down prevention device and a transverse displacement restriction device and the expansion of pier foundations.



## New Golden Horn Bridge Approach Viaducts

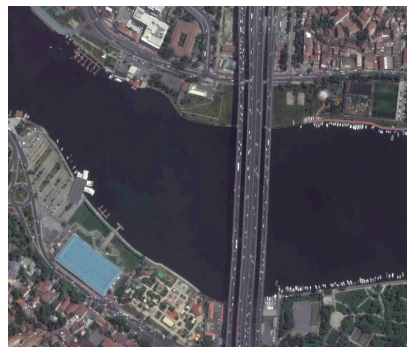
**LOCATION:**  
Istanbul, Turkey

**CLIENT:**  
IHI Corporation

**SCALE:**  
152 and 90.7 m long, 11 and 5 m wide,  
precast I-beam girder viaducts

Being that they protect the people's lives and property, as well as the functions of the City of Istanbul as both the country's economic center and the "bridge" between the West and the East, the approach viaducts of the New Golden Horn Bridge had as much importance as other large scale bridges. For this reason, the viaducts were retrofitted as the others and were not expected to be out of service in

case of a major earthquake. Services provided by Miyamoto Turkey included quality control, project management, construction supervision services, the rearrangement of design and erection documents according to local conditions for reinforcement of piers, installation of a falling-down prevention device and the expansion of pier foundations.



## Seismic Reinforcement Project for Old Golden Horn Bridge Approach Viaduct

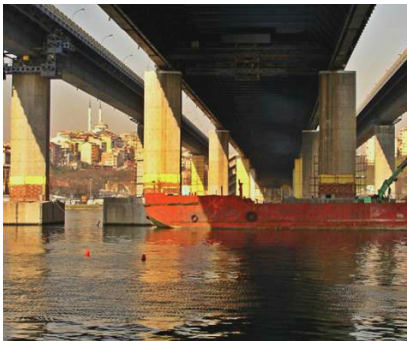
**LOCATION:**  
Istanbul, Turkey

**CLIENT:**  
IHI Corporation

**SCALE:**  
152 m long, 31.2 m wide, precast box slab viaduct

Regarding the Seismic Reinforcement Project for Large Scale Bridges in Istanbul, viaducts of the Old Golden Horn bridge were retrofitted properly to sustain their functionality even after a big earthquake. Services provided by Miyamoto Turkey included quality control, project management, construction supervision services,

the rearrangement of design and erection documents according to local conditions for reinforcement of piers, replacement of the elastomer bearing, expansion joint and parapet, installation of a falling-down prevention device and damper and expansion of pier foundations.



The Old Golden Horn Bridge was built in 1974 and it formed part of a long-distance expressway network connecting Asia and Europe. At the same time, it played an important role in connecting the old city and new city of Istanbul. Increased traffic volume and vehicle weight caused damage on the members of the bridge and made them vulnerable against the expected earthquake in the Marmara region. Services provided by Miyamoto

Turkey included quality control, project management, construction supervision services, the rearrangement of design and erection documents according to local conditions for reinforcement of piers and beams, replacement of the elastomer bearing, installation of a falling-down prevention device and a transverse displacement restriction device, replacement of expansion joint and the expansion of pier foundations.

## Seismic Reinforcement Project for First Bosphorus Bridge Approach Viaducts

**LOCATION:**  
Istanbul, Turkey

**CLIENT:**  
IHI Corporation

**SCALE:**  
822.2 m long, 31,2 m wide, continuous steel girder with orthotropic slab highway bridge



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