

# A Bridge to the World

## A TRIBUTE TO THE GERALD DESMOND BRIDGE REPLACEMENT

Located in the heart of the largest seaport complex in the United States, the cable-stayed replacement for the Gerald Desmond Bridge in Long Beach serves as both a vital conduit for the nation's trade and the region's commuters. The new bridge opened to traffic on Oct. 5, 2020.



## *The Bridge to Everywhere: The Port of Long Beach Completes \$1.5 Billion Critical Transit Link*

A very tall addition to the Southern California skyline is creating positive reviews for its unique and striking appearance as well as fulfilling a priority for California transportation officials.

The massive new bridge at the Port of Long Beach accomplishes a key goal – improving the flow of international cargo through the country's largest port complex and improving overall traffic flow along one of Southern California's key commuter routes.

The six-lane, nearly two-mile-long bridge opened to traffic in October 2020, marking the end of a nearly 10-year, \$1.47 billion effort to replace the 52-year-old Gerald Desmond Bridge, which was too narrow and too low to accommodate today's roadway cargo traffic demands and the larger cargo ships that began arriving at the Port of Long Beach years ago.

On opening day and since, semi-trucks have made good use of the smoother transitions connecting the bridge to the 710 Freeway at its eastern end, and from the similar improvements at the western end of the bridge where it connects

to Terminal Island and State Route 47. One feature at the western end of the bridge is a first for California – a “Texas U-turn,” a non-signalized undercrossing that enables continuous travel for trucks and cars. This innovation for the state accelerates goods movement through the area.

Vehicle flow over the bridge benefits from the extra lanes and a lesser grade. The old Gerald Desmond Bridge narrowed from three ascending lanes to two at its apex, causing weaving and merging – and without emergency lanes, an accident or truck breakdown could create significant traffic jams. The new bridge features three lanes in each direction, plus emergency shoulders on both sides. And, although the main span of the new bridge is more than 50 feet higher, the actual grade is about one to two percent less because the starting points at each end are extended farther.

Improving the flow of cargo is part of ongoing efforts by the Port of Long Beach to remain internationally competitive. More than 2.5 million jobs throughout the U.S. are generated by the trade moving through the Port. Each year, the Port

handles cargo valued at more than \$170 billion. A better bridge – one that could reliably handle vehicle and cargo needs for the next several decades – was essential given that more than 15 percent of the nation's imported container cargo travels over this route.

Mario Cordero, executive director of the Port of Long Beach, said the new bridge “is much more than a convenient roadway. It is a critical link in the global movement of cargo. It is a bridge to everywhere.”

A taller bridge also will ensure improved passage of cargo ships entering the Port of Long Beach's inner harbor berths. The Port is already “big ship ready” and has seen some of the world's largest container ships arrive at its outer harbor berths. The old Gerald Desmond Bridge, completed in the 1960s when cargo ships were about one-sixth the size they are today, will be taken down. Demolition is expected to be completed by 2022.

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## A BRIDGE TO THE WORLD

# The Bridge to Everywhere



The replacement for the old Gerald Desmond Bridge includes a cable-stayed main span constructed with two 515-high towers holding up 2,000 feet of main span with 80 cables.

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## MANY FIRSTS

The new bridge, a joint effort by the Port of Long Beach and Caltrans, ushered in several firsts for California. In addition to the “Texas U-Turn,” the new bridge is the state’s first cable-stayed span for vehicular traffic. Cable-stayed bridges feature one or more towers from which cables support the bridge deck. They differ from suspension bridges, such as the Vincent Thomas Bridge in San Pedro or the Golden Gate Bridge in San Francisco, in which cables supporting the deck are suspended vertically from a main cable, anchored at both ends of the bridge and running between the towers. Cable-stayed bridges are ideal for

shorter bridge lengths, and are generally less expensive to build and maintain. There are a few cable-stayed spans in California, but they are smaller ones for pedestrian and bicycle traffic only.

Another first utilized by bridge contractor SFI was the use of a movable scaffolding system (MSS) to construct the long approaches to the main span. Two custom-designed machines, each weighing about 3.1 million pounds, were raised at opposite ends of the bridge project and attached to the support columns, allowing for a rapid, efficient and safe construction of the roadway. As one 250-foot section of roadway was completed, the self-propelled MSS would travel to the next set of columns to start again the process of

laying rebar and placing concrete.

Center span construction was different. After completion of the two signature towers that reach 515 feet into the air, crews lifted pre-assembled steel frames (called pier tables) to attach to the first set of four cables at each tower. Cranes would then extend the road decks in a process that connected 140-foot-wide steel floor beams to edge girders then layered with pre-cast concrete panels that were stitched together to create the road deck.

## SEISMIC FEATURES

The new bridge, which also received funding from the U.S. Department of Transportation and Los Angeles County Metropolitan Transportation Authority (Metro), has some of the world’s most advanced seismic designs and features. Akin to tall buildings in Los Angeles, the bridge is designed to move with the ground. The deep piles are specially designed to absorb a quake’s energy, and giant shock absorbers – called dampers – will help reduce impacts. The towers and most of the 100 support columns are hollow, which provide flexibility in a strong earthquake.

## ADDITIONAL FEATURES

The new bridge, which will be named later through state legislation, will eventually include a bicycle and walking path that brings visitors to a 205-foot-high view of the Southern California coastline. Announcements on the expected opening of the Mark Bixby Memorial Bicycle Pedestrian Path, named in honor of a late local bicycle advocate, will be made at a later time.

LED lights that change colors light up the cables and two towers, making this bridge a very visible structure at night from many points across Los Angeles and Orange counties.

To learn more about the new bridge, visit [newgdbridge.com](http://newgdbridge.com).



In June 2020, longshore workers at Total Terminals International in the Port of Long Beach set a North American record for highest volume of container movements during a single call, while working the MSC Sveva. Workers transferred 17,080 containers – the equivalent of 30,744 TEUs, or twenty-foot equivalent units.

## State of the Port Virtual Address Recaps a Historic 2020

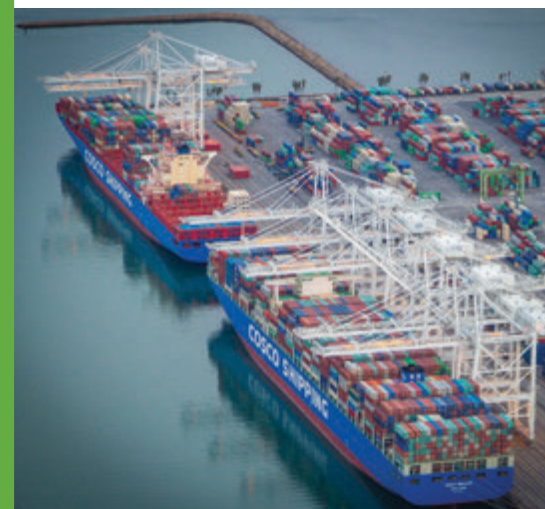
The Port of Long Beach’s annual State of the Port address this year tells the story of how the Port of Long Beach mobilized to overcome the challenges of the global pandemic to record its best year ever, moving ahead with ambitious environmental initiatives and opening an iconic West Coast bridge.

Available on demand at [www.polb.com/stateoftheport](http://www.polb.com/stateoftheport), the virtual address features Long Beach Mayor Robert Garcia, Port of Long Beach Executive Director Mario Cordero and Long Beach Harbor Commission President Frank Colonna.

Last year proved to be a year like no other. The Port – along with its many partners – faced and overcame many challenges. Shipments dropped in the first half of the year only to rise to record levels in the second half. The Port expedited shipments of medical supplies, distributed PPE, and opened a COVID-19 testing center right in the Harbor District. The Port opened a massive new bridge, welcome the world’s biggest ships and brought in new business.

Watch the 2021 State of the Port to experience the full story.

The Port of Long Beach is one of the world’s premier seaports, a gateway for trans-Pacific trade and a trailblazer in goods movement and environmental stewardship. With 175 shipping lines connecting Long Beach to 217 seaports, the Port handles \$170 billion in trade annually, supporting more than 575,000 Southern California jobs.



Two Cosco Shipping vessels are unloaded at Pacific Container Terminal in the Port of Long Beach. The Port set a new record for cargo volume in 2020, with more than 8.1 million container units moved.



# Premier West Coast Port

The Port of Long Beach continues to build and thrive. Operational excellence and reliability make us the Port of Choice.



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A BRIDGE TO THE WORLD

# Bridge’s Innovative Lighting System Brings New Beauty to Long Beach



The new bridge in the Port of Long Beach features an iconic design with two 515-foot-high towers and 80 cable stays. During the day, the bridge is visible for many miles across Southern California. The addition of 192 energy-efficient LED (light-emitting diode) lights across the main span means that the new bridge will be visible at the night. The cable-stays will be lit by 120 lights; some of the longer cable spans need two lights for full coverage. Each tower will have 36 lights to bathe its full height in multiple colors.

The bridge lighting system can accommodate a few dozen multi-color lighting scenes, or preset combinations. They will commemorate known events / holidays during the year,

awareness events, a Port of Long Beach theme based on its brand colors, and anticipated special occasions (e.g., sports championships, the upcoming Olympics, etc.). Some of these preset combinations repeat themselves, since some of the scenes serve more than one event (e.g., red, white, and blue).

The bridge lighting system enables the Port of Long Beach to program these commemorative preset combinations, scheduling them years in advance. The following list details each event during 2021, including its color combination, the start date of the scene and its duration. Between events, the default combination will be the Port of Long Beach’s colors (turquoise, navy blue and white).

<div><div></div><div></div><div></div></div>	Valentine's Day	1 night	Feb. 14
<div><div></div><div></div><div></div></div>	President's Day	R1 night	Feb. 15
<div><div></div><div></div><div></div></div>	Black History Month Cont.	13 nights	Feb. 16
<div><div></div><div></div><div></div></div>	Default Setting (Port colors)	16 nights	Mar. 1
<div><div></div><div></div><div></div></div>	St. Patrick's Day	1 night	Mar. 17
<div><div></div><div></div><div></div></div>	Default Setting (Port colors)	13 nights	Mar. 18
<div><div></div><div></div><div></div></div>	Cesar Chavez Day	1 night	Mar. 31
<div><div></div><div></div><div></div></div>	Default Setting (Port colors)	3 nights	Apr. 1
<div><div></div><div></div><div></div></div>	Easter	1 night	Apr. 4
<div><div></div><div></div><div></div></div>	Default Setting (Port colors)	17 nights	Apr. 5
<div><div></div><div></div><div></div></div>	Earth Day	1 night	Apr. 22
<div><div></div><div></div><div></div></div>	Default Setting (Port colors)	24 nights	Apr. 23
<div><div></div><div></div><div></div></div>	LB Pride Week (May 16-22)	7 nights	May 16
<div><div></div><div></div><div></div></div>	Default Setting (Port colors)	8 nights	May 23
<div><div></div><div></div><div></div></div>	Memorial Day	1 night	May 31
<div><div></div><div></div><div></div></div>	LGBT Pride Month	10 nights	June 1

# SoCal’s First-Ever Texas U-Turn

A truly innovative feature of the Gerald Desmond Bridge project is the “Port Access Under Crossing” or PAUC, a tunnel near the intersection of Ocean Boulevard and SR-47 in Terminal Island that enables motorists headed west to make safe U-turn without stopping at a traffic signal to go east toward the city or into the Pier T complex. One of the innovative features of the Bridge Project is a “Texas U-turn” at the intersection of Ocean Boulevard and SR-47 on Terminal Island.

Common in the Lone Star State, a Texas U-turn is a lane that enables vehicles traveling on one side of a one-way frontage road to U-turn onto the opposite frontage road (typically crossing over or under a freeway or expressway). In this case, the U-turn will run under Ocean Boulevard overpass on Terminal Island to allow trucks and other vehicles unabated movement onto Pier T or eastbound

Ocean Boulevard over the bridge. This roadway accelerates goods movement for truckers and Port tenants in the area, and provides safe and smoother driving through the intersection for everyone.

**HOW IT WORKS**

Motorists will access the PAUC in one of two ways:

1) traffic traveling westbound on Pier T Avenue will take the SR-47/SR-103 connector road; or

2) traffic headed westbound on Ocean Boulevard will take the northbound SR-47/SR-103 off-ramp.

In both cases, traffic will shift to the far left two lanes just prior to the signal at SR-47 and Ocean, and make a smooth unsignalized turn through the PAUC prior to heading east.

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