

## TOLL BRIDGE AND TOLL PLAZA

### POWER SOLUTIONS CASE STUDY of the RICHMOND- SAN RAFAEL BRIDGE

#### UNITS

Four Diesel Gensets:

2 - 150 kW

1 - 200 kW

1 - 300 kW

#### LOCATION

Richmond & San Rafael,  
California



## FOUR TIMES THE POWER

Is there a place on Earth that has more world class bridges in one locale than the San Francisco Bay area? Not likely! This region boasts eight major spans, including the legendary Golden Gate, the remarkable San Francisco-Oakland Bay Bridge, and the important but lesser known Richmond-San Rafael Bridge. Each one is a monument that reflects outstanding design, engineering, and construction.

These bridges are critical links in the Bay Area's transportation network. Because of their age, heavy use, and location in an earthquake-prone region, many of them require constant maintenance and periodic upgrading. This ensures that they will resist earthquake damage and continue to serve as a viable means of conveying tens of thousands of cars and trucks each day.

The Richmond-San Rafael Bridge, crossing over the San Pablo Strait at the north end of San Francisco Bay, has always existed in the shadow of its more famous neighbors, the Golden Gate and Bay Bridges. However, at a length of five and a half miles, this imposing structure — with a serpentine approach, a bend in the middle, and a pair of separate main spans totaling 1,070 feet over two channels — is a feat of engineering

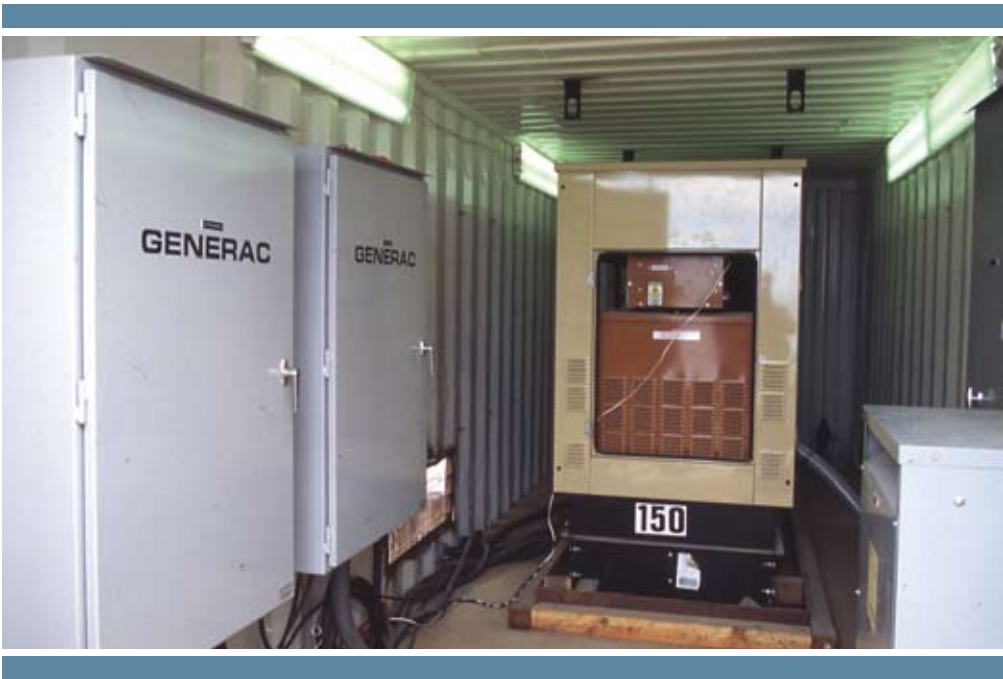
in its own right. It boasts a tower height of 325 feet, and a vertical clearance of 185 feet, allowing ocean-going ships to pass easily beneath it.

When completed in 1956, this bridge was one of the world's longest. Today, it is operated under the aegis of the Bay Area Toll Authority and carries an average of 65,000 vehicles per day on Interstate Highway 580 between Contra Costa and Marin Counties.

Electricity to the bridge is supplied from separate grid sources on each shore. Because of its great size and length, this bridge requires plenty of electrical power for its deck illumination, Coast Guard navigation lights, traffic control indicators, security systems, call boxes, toll plaza, and maintenance building. Backing up this array of critical functions are no less than four Generac diesel generator sets — a 200 kilowatt unit on the west shore, two containerized 150 kilowatt units on bridge piers 34 and 48, and a 300 kilowatt unit at the toll plaza on the east shore. Together, they're providing standby power for all elements of the

*Continued*

“ Power to the bridge is interrupted more often than you might expect,” says Steve Suhar, field foreman for Morisoli Construction, Inc. “This area is prone to occasional outages, so the generators do run from time to time to keep the bridge fully functional. They've been reliable units. ”



## TOLL BRIDGE AND TOLL PLAZA

### POWER SOLUTIONS CASE STUDY of the **RICHMOND-SAN RAFAEL BRIDGE**

#### UNITS

Four Diesel Gensets:  
2 - 150 kW  
1 - 200 kW  
1 - 300 kW

#### LOCATION

Richmond & San Rafael,  
California

bridge's key systems during a multi-year seismic upgrade project that will improve the bridge's ability to withstand earthquakes.

The gensets were purchased from Energy Systems of Stockton, the Generac Power Systems dealer serving the Bay Area. They were installed in August of 2001 by Morisoli Construction, Inc., the primary electrical contracting firm involved in the upgrade project. The units must operate in a challenging environment, where they are subject to wide temperature variations, periods of high humidity, and exposure to a saltwater atmosphere.

"Power to the bridge is interrupted more often than you might expect," says Steve Suhar, field foreman for Morisoli Construction, Inc. "This area is prone to occasional outages, so the generators do run from time to time to keep the bridge fully functional. They've been reliable units."

Morisoli's Doug Brown is the equipment manager / field electrician who monitors the gensets. "Each generator has its own phone line, which runs along with existing communications

cables," he says. "Using GenLink® software, I can connect to the control panel of each unit, monitor operational functions, set parameters, run diagnostic checks, and do all of that from my laptop computer. The system will also automatically call and alert me anytime an alarm function is triggered, so I can diagnose and solve any problems that may arise."

"Because of its unusual nature, this was an interesting project right from the start," says Don Richter, president of Energy Systems. "Morisoli Construction is highly regarded as an electrical contractor in the Bay area, and we worked with them to select the right mix of generators and features for this particular application. It's definitely a good showcase of the capabilities of Generac equipment."

For more info on the bridge, visit this site:  
[www.mtc.ca.gov/bata/richmond-rs.htm](http://www.mtc.ca.gov/bata/richmond-rs.htm)

## **GENERAC®**

Generac Power Systems, Inc.  
S45 W29290 Hwy. 59  
Waukesha, WI 53189  
1-888-GENERAC (1-888-436-3722)

[generac.com](http://generac.com)