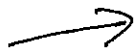


REVISIONS 5/31/06

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X. Bridges

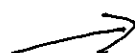


The San Francisco Bay Area is crossed by a number of bridges that carry automotive and rail traffic. Most shipping traffic transits through areas covered by suspension or fixed bridges with adequate vertical clearance for normal passage. *MOVEABLE*

Geographic Boundaries

The boundaries of the area in this chapter are set in the West by the COLREGS Demarcation Line (Between Pt. Bonita and Mile Rocks), and in the East to include the Rio Vista Highway Bridge in the Sacramento River and the Antioch Highway Bridge in the San Joaquin River.

Schedule of Bridge Openings



Oceangoing vessels may transit under two vertical lift bridges, the Union Pacific Railroad *BENICIA-MARTINEZ RAILROAD DRAW BRIDGE* (Benicia-Martinez) Bridge (UPRR) and the Rio Vista Highway *DRAW* Bridge. Both bridges are operated 24 hours a day and open for vessel traffic upon request. Approximately 30 minutes notice is *BENEFICIAL* required and the bridges may be contacted by VHF or telephone.



For vessels intending to transit through the *BENICIA-MARTINEZ RR DRAW* UPRR Bridge, there is a well established protocol for requesting a lift. Copies of the protocol are available at the VTS website, www.uscg.mil/D11/vtssf/.

BRIDGE	VHF CHANNELS	PHONE NUMBER
Benicia-Martinez RR Bridge	13	(510) 228-5943
Rio Vista	9, 13, 16	(707) 374-2134

Adequacy of Ship-to-Bridge Communications



Ship to bridge communications takes place via VHF radio on designated channels. Communications are considered to be adequate by the local maritime community.

OR AS REQUIRED BY DRAW BRIDGE REGULATIONS. (TITLE 33 CFR 117)

Physical Characteristics of Bridges

When required by the Eleventh Coast Guard Bridge Office, under the provisions of Title 33 Code of Federal Regulations, Part 118, bridges over navigable waterways in the Eleventh Coast Guard District, are lighted and marked as permitted obstructions on the waterway. Standard markings include a range of two green lights marking the center of the bridge, which in the case of drawbridges, will shift from green to red when the drawspan is in anything but the full open-to-navigation position. Bridge piers in or adjacent to the navigational channel may be lighted at night with fixed red lights to identify them as obstructions. When required, bridges are equipped with sound producing devices that are used during periods of reduced visibility.

The region now has 12 Racons mounted on bridges. A racon is a radar sensor (radar beacon) that sends out a radar emission that shows up as a distinctive mark on a ship's radarscope. The racons were installed because there is a high volume of vessel traffic transiting under bridges and the Bay Area has the highest number of foggy days in the nation when visibility is less than one-half mile.

Racons are located on the following Bay Area bridges:

- Benicia-Martinez (1)
- SF-Oakland Bay Bridge (3)
- Richmond-San Rafael Bridge (2)
- San Mateo-Hayward Bridge (1)
- Antioch Bridge (1)
- Rio Vista Bridge (1)
- Golden Gate Bridge (1)
- I-80 Crocket-Vallejo (2)

Bridge Clearances (See Appendices for most recent list of bridge clearances.)

Benicia-Martinez Railroad Drawbridge

To improve navigational safety for all vessels sailing through the relatively narrow opening of the drawbridge at Benicia, the Coast Guard has completed a number of initiatives:

Established a Regulated Navigational Area (RNA) at the bridge, which prohibits deep-draft vessel transits when visibility is less than 1000 yards. The Coast Guard revised the RNA to change the name of the bridge to the Benicia-Martinez RR Bridge, added a third visibility checkpoint, and clarified the procedures for downbound vessels that are moored or anchored between the Railroad Drawbridge and New York Point (that intend to transit the RNA once underway).

Installed white lights on the main channel piers to better identify the primary navigation channel. The white pier lights recommended for installation on the main channel piers have provided better visibility in foggy conditions and have been made permanent.

Asked the UPRR to change the working frequency of the bridge radiotelephone to VHF Channel 13, to allow vessels and bridge operators to communicate directly instead of using Vessel Traffic Service Channel 14. This change went into effect in 2001.

Investigated bridge malfunctions and created natural working group to find solutions to process and equipment problems.

Had CalTrans make modifications to the RACON on the adjacent highway bridge, which has improved the signal to downbound vessels.

Evaluated the obstructive character of the bridge under the Truman-Hobbs Act of 1940, a long term process to determine if increasing bridge clearances will provide benefits to navigation greater than the costs of modifying the bridge. The outcome of such a study would determine if the bridge should be altered.

Most of the recommended bridge improvement items have been completed by UPRR. UPRR has installed a new auxiliary power system including new generators and transformers, along with a new signal system. New enhancements include replacement of the bridge lift motors, installation of a computerized system to monitor train locations and track conditions and a computer system to track vessels upbound or downbound for the bridge.

→ To address problems occurring with the operation of the UPRR Bridge, industry, the ~~UPRR Bridge~~ ^{BENICIA-MARTINEZ} pilots and the Coast Guard continue to work with the bridge owners via the ~~UPRR Bridge~~ ^{R.R. DRAWBRIDGE} Working Group. The working group meets semi-annually to discuss problems with the bridge and to develop solutions. The working group is coordinated by the Bridge Section of the Coast Guard's Eleventh District and is regularly attended by representatives from both the rail and marine industries, as well as Coast Guard ~~MSO~~ ^{SECTOR} and VTS. Under the working group's direction Union Pacific has developed a formal training program for bridge operators, which includes ship rides for familiarization and training from VTS on the communications protocol to help avoid potential or near-miss situations. The working group created a mishap matrix to track incidents involving the bridge. Both the Coast Guard and UPRR provide information to the matrix, which is used as a problem-solving tool and historical reference.