

Tideland Signal Corp.

featuring Aids to Navigation Products

1.3. Bridge Lights

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Rev	Description	Date	By

Whilst some countries may issue their own instructions, and a detailed description of the USCG instruction, in particular, is laid out later in this section, IALA Recommendation O113 on the marking of fixed bridges over navigable waters gives general advice on the requirement for bridge lanterns and day marks.

In general, it is the custom in most parts of the world, to mark:

1. The limits of navigable water under bridges

With lateral marking lights and day marks according to the Buoyage system, A or B, in force - either on bridge piers or, if the latter are outside the limits of navigable water, then on or under the bridge span.

For example, where System A is in force, the starboard hand limit of navigable water when proceeding upstream is marked on both the down stream and upstream sides of the bridge by a green flashing light and a solid green equilateral triangle on a white background. The port hand limit when proceeding upstream is also marked on both the down stream and upstream sides of the bridge but with a red flashing light and a solid red square on a white background.

In a few instances, it may be considered sufficient where piers mark the limits of navigable water, to floodlight them at night and to fit day marks with retro reflecting material.

2. The centre of safe/best point of passage under a span

With a lantern suspended under the span at that point, flashing a white light with a safe water flash character, and a circular shaped day mark with red and white vertical stripes on a white background

More than one channel under the bridge span, similarly, except that preferred channel lateral marking could be used to identify the main channel.

3. The centre of safe/best point of passage of other channels that are only suitable for use by very small craft

With a lantern, suspended under the span at that point, flashing a yellow light with a special flash character, and a yellow cross shaped day mark

When there is significant background lighting in the vicinity of bridge lights, flashing and, even, synchronising them, makes it easier to identify the best point of passage and the limits of navigable water under the span or spans.

Tideland light assemblies using ML-155 MaxLumina signal lanterns are popular worldwide for marking bridges and other structures over navigable waters. The number, position, and character of these lights depend primarily on the bridge type and fender locations and are usually specified by Government regulations.

The ML-155 bridge light is a customised version of the basic ML-155 MaxLumina lantern. Bridge lights can be operated as fixed code lights. However, the ML-155 accommodates either a DC six-place flasher/lamp changer or an AC four-place flasher/lampchanger when a flashing light is required. An optional sunswitch is also available.

A bridge light with wide vertical divergence is required to mark high bridges. The ML-140 MaxLumina lantern produces a wide vertical beam ideal for such applications (see ML-140

MaxLumina lantern specifications in the Signal Lanterns section). The ML-140 uses the same mounting hardware as the ML-155 and accommodates the same flasher lamp changers and lamps.

In 2006 Tideland produced a range of solar and mains powered LED lanterns that are starting to replace the incandescent lamps and flashers. Recently the MaxiHalo 60 was introduced which provides a more efficient light and eliminates the costly replacement of lamps. MaxiHalo 60 is supplied in the MLED-140 and MLED-155 lantern and is also available as a direct replacement for the six-place lamp changer in existing lanterns.

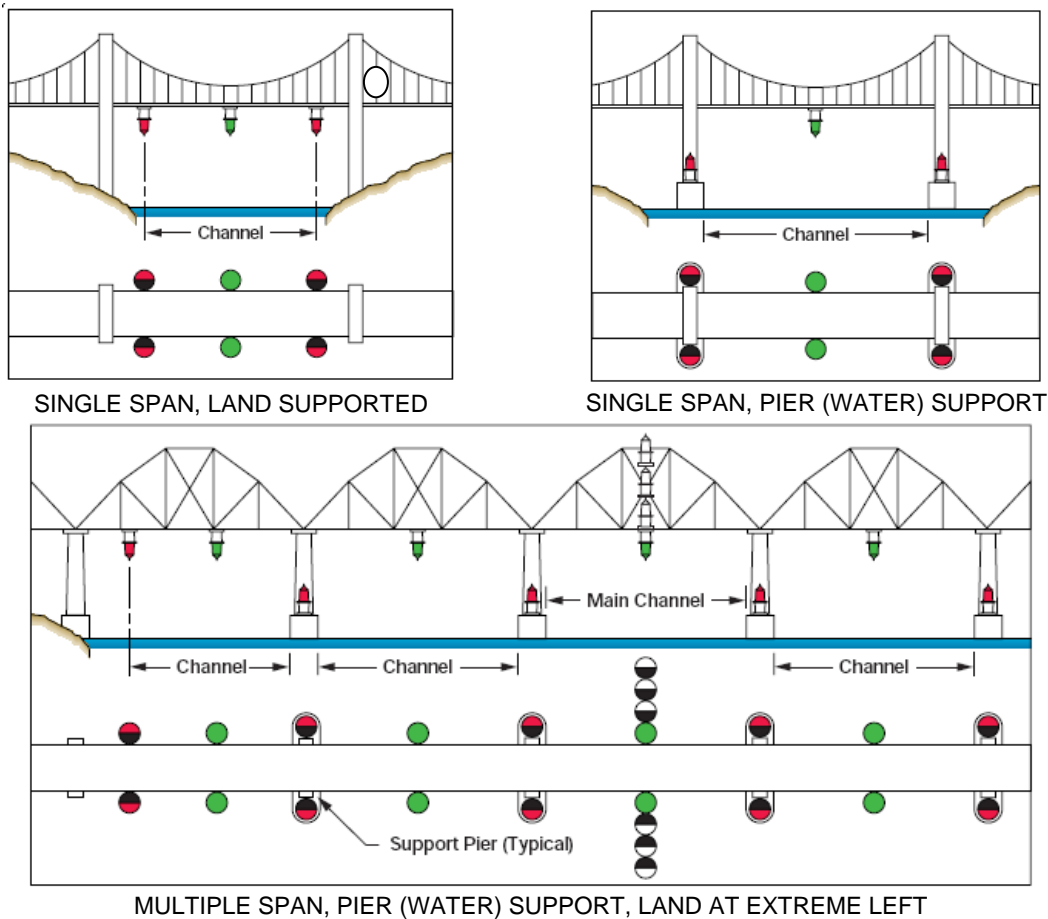


In typical bridge light installations, the lantern marking the centre of the channel can be mounted below the bridge superstructure on a swing arm mounting of hot-dipped galvanised steel with stainless steel hardware. This orientation of the lantern provides a reference point for bridge clearance height. The swing arm rotates on a bearing attached to the bridge mounting plate to allow for easy servicing.

Bridge lights are also available with standard pedestal for upright installation on bridge piers and abutments as well as on deck ends. Where USCG Rules apply, as illustrated below, bridge lights, typically show a 180-degree red light, a 360-degree green light, or alternate red and green sectors.






LIGHTS ON FIXED BRIDGES



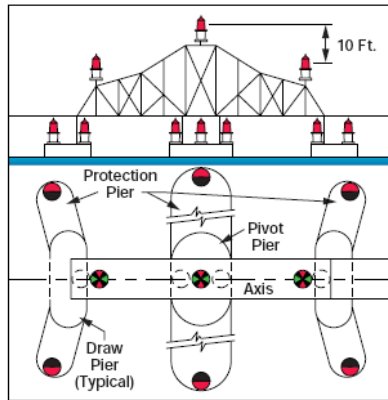
Fixed bridge lighting provides for two green lights, one on each side, for each span (single or multiple) to mark the centerline of each navigable channel, and red lights similarly positioned to mark each channel margin not limited by a pier. These lights are installed in a suspended position just below the outer edge of the bridge span structure.

Red lights marking piers are installed upright at each end of each pier at the lowest practicable level, but not less than 2 feet above high water.

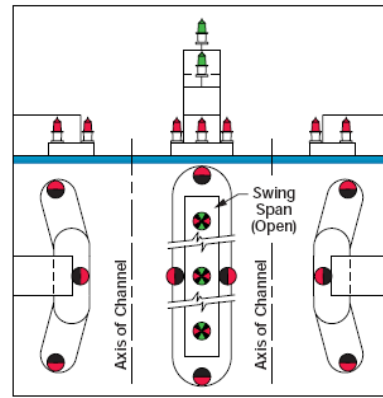
White lights, when required, identify the main channel for multiple span bridges. These consist of three upright lanterns vertically aligned above each green light marking that channel, lowest white light 10 feet minimum to 15 feet maximum above green light.

-  Red 180° sectored, positioned as required on span and/or piers
-  Green 360° omnidirectional, on spans at channel centerline
-  White 180° sectored, 3 lights at optimum spacings of 15 feet (7 feet minimum)

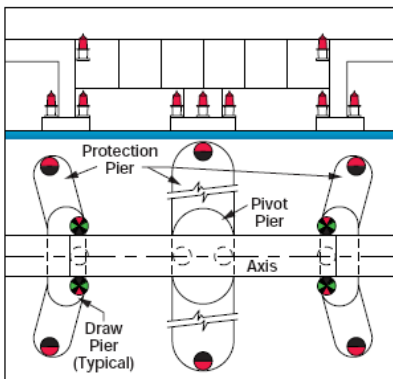
LIGHTS ON PIVOT SWING BRIDGES



THROUGH BRIDGE CLOSED



THROUGH BRIDGE OPEN



DECK BRIDGE CLOSED



DECK BRIDGE OPEN

On swing bridges, all piers are marked by red lights (180°), located and positioned where and as required at the edge of the pier, at the lowest practicable level as on fixed bridges and to allow for span clearance. Pier lighting is identical for either type shown here.

Lights installed on the swing span are sectored red and green alternately and positioned so that when the span is closed the red light is displayed to channel traffic. When the swing span is open, the lights are thus rotated into position where the green light becomes visible instead. On the two swing bridge types, through bridges and deck bridges, each type span has its own lighting arrangement as shown at left.

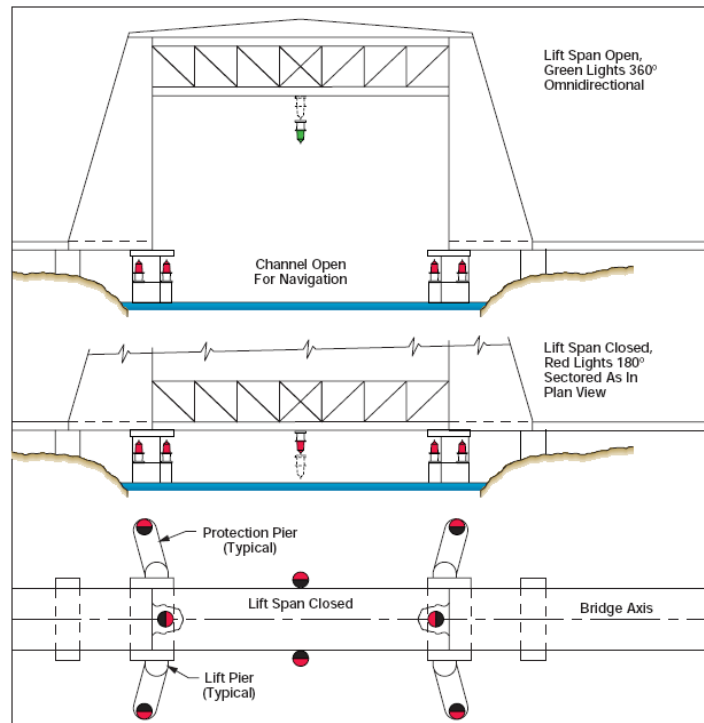
Note that all lights used here are installed upright.



Alternate red and green, 60° sectors at 90°, red one or two sectors, green two sectors, applied and positioned as required on swing span

Red 180° sectored, positioned as required on piers

LIGHTS ON VERTICAL LIFT BRIDGES



VERTICAL LIFT BRIDGE, POSITIONS OF LIFT SPAN MARKED BY VARIABLE (DUAL LANTERN) LIGHTS: CLOSED RED, OPEN GREEN

Pier lighting for vertical lift bridges is the same as that for swing bridges, except that the lighting for pivot pier with associated protection pier is not applicable here.

For lighting on the lift span, a suspended dual lantern installation is mounted and positioned on each side at the channel centerline (same as the green lights on fixed bridge spans). This consists of a red light in the upper lantern position and a green light in the lower position. These lights may be referred to as 'variable' lights as only one lantern in each dual unit is to operate at any one time according to the lift span's position. The red light is required to operate when the span is closed (to navigation) and the green light when it is open. When the lift span changes its position, the operating light (color) must be changed accordingly.

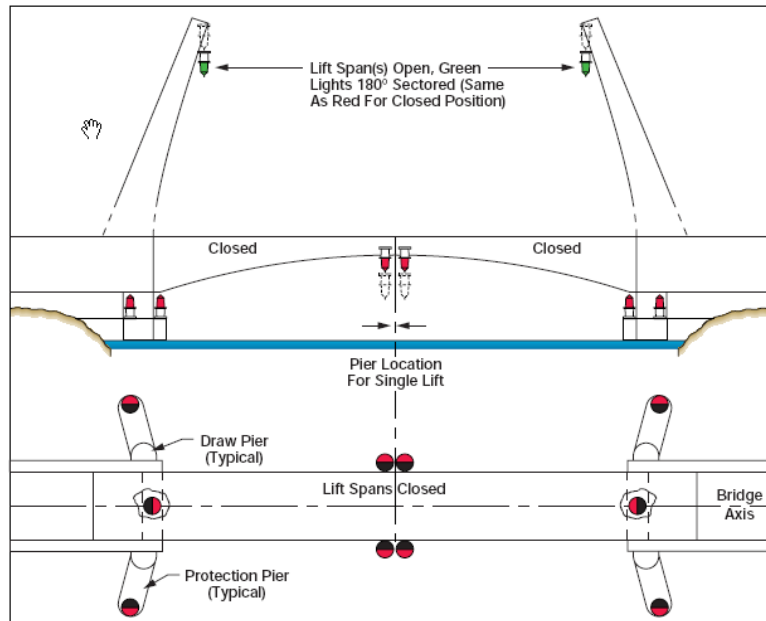


Red 180° sectored, positioned and applied as required on piers and span



Variable red (180°) and green (360°), dual lanterns vertically stacked, light color displayed when and as required, 'off' pattern phantomed as shown

LIGHTS ON BASCULE BRIDGES



BASCULE BRIDGE, DOUBLE LIFT (AS SHOWN) OR SINGLE LIFT (NOTE PIER LOCATION), POSITIONS OR LIFT SPAN(S) MARKED BY DUAL OR VARIABLE LIGHTS WITH APPROPRIATE VARIATIONS AS REQUIRED

Bascule bridge lighting is similar to that for vertical lift bridges. Pier lighting is same and that on lift spans is basically the same, however note deviations as shown in sketch and described as follows:

Bascule bridges may be double lift as shown or single lift (note pier locations). On a single lift bridge, the lights on the span will appear above the pier lights at that end when closed, since they are located at the free end of the span. If these lights are mounted to prevent sway, they will follow the arc of the lift span when it opens and assume an oblique position (shown).

On bridges consisting of multiple parallel lift spans, only the outermost sides not facing another span can be marked by dual lanterns. All other sides must be marked by red lights (showing red at all times, open or closed). Green lights are to be shown only when all parallel spans are open to permit passage.

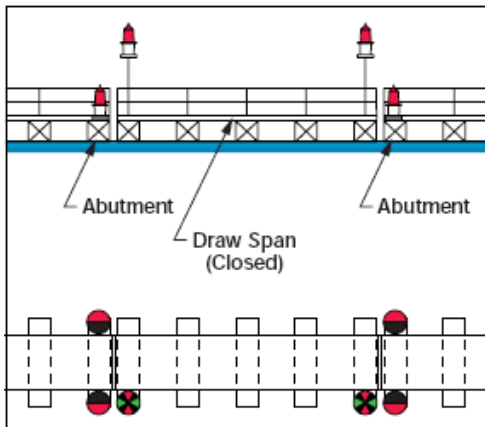


Red 180° sectored, positioned and applied as required on piers and span(s)

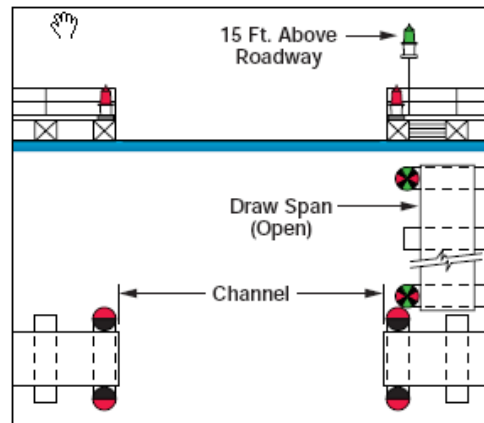


Variable red and green (both 180°), dual lanterns vertically stacked, light colour is displayed when and as required, 'off' lantern phantom as shown

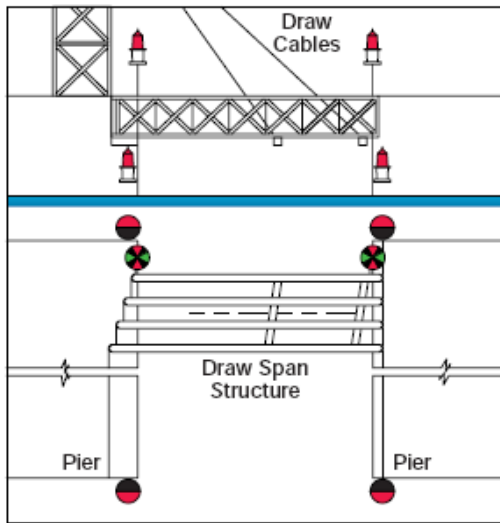
LIGHTS ON SINGLE-OPEN DRAWBRIDGES



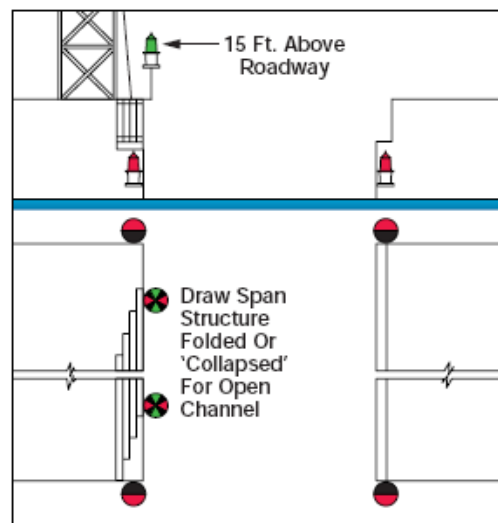
PONTOON BRIDGE CLOSED



PONTOON BRIDGE OPEN



FOLDING BRIDGE CLOSED



FOLDING BRIDGE OPEN

Drawbridges with single opening spans include pontoon bridges (not otherwise fixed) and folding bridges shown here, and other similar types not shown. Lighting is basically the same for all bridge types in this class.

Draw span lighting consists of two alternate red and green sectored lanterns, same as those on through swing bridges, one light at each end on the side that faces the channel when the span is open. The color of the light visible to channel traffic is governed by the span's position in the same manner as on pivoting swing bridges.

Red lights for piers or abutments are the same as those that are used in all other bridge classes, and are to be located as in the sketches shown.



Alternate red and green, each color two 60° sectors, positioned as required on draw span



Red 180° sectored, on piers or abutments