

SECTION V - BRIDGE LIGHTING AND FENDER SYSTEMS

INTRODUCTION:

The Coast Guard relies on mariner notification of discrepancies in BRIDGE LIGHTING AND BRIDGE FENDER AND PROTECTION SYSTEMS as well as other hazardous and non-standard bridge conditions. In this regard, prior to May 1981, the Coast Guard annually inspected navigational lighting, fender and protection systems that were situated over the navigable waters of the United States. Subsequently, it was determined that an adequate high level of compliance could be achieved in response to reports of complaints or violations by professional and private mariners. The Auxiliary plays an important part in Bridge discrepancy notification in conjunction with the ATON/CU Program.

OBJECTIVE:

1. To acquire a general knowledge of the different types of Bridges, and the responsibilities of the Auxiliary in reporting Bridge discrepancies.
2. To become familiar with the requirements for Bridge lighting, fender and protection systems.
3. To become familiar on how to determine discrepancies on Bridges.

INFORMATION:

There are six basic types of Bridges: fixed, double-opening swing, single-opening draw, pontoon, bascule and vertical lift.

In Bridge construction, the Coast Guard District Commander having jurisdiction over the area in which the Bridge is built, prescribes lights and other signals that are to be displayed for the protection of navigation. When construction is completed, permanent lights and other signals approved by the District Commander, must continue to be displayed.

- **BRIDGE AND PIER LIGHTING:** Periods of operation require that Bridge lights be displayed from sunset to sunrise or at other times when visibility is reduced to less than one mile. Bridge lights are not required for bridges over waters that are not open to navigation. (Vessels transiting such waters do so at their peril with complete liability.) Information describing the minimum lighting requirements for the type Bridges of interest is listed at the end of this Section.
- **BRIDGE FENDER AND PROTECTION SYSTEMS:** The Bridge fender and protection systems are designed to protect the Bridge from vessels transiting under or in the vicinity of the bridge. The fender system is made up of heavy wooden timbers lashed and/or

bolted together along with lights and other aids that are prescribed by the Coast Guard District Commander.

- Examples of the other aids to navigation associated with Bridges are:
 - a. RETRO-REFLECTIVE PANELS on BRIDGE PIERS High intensity red or green retro-reflective panels on bridges or piers.
 - b. DAYMARKS and LATERAL LIGHTING - Markings of the margins of navigation channels through Bridges with appropriate marks and lights installed on the superstructure or channel piers.
 - c. RADAR REFLECTORS AND RACONS - Radar reflectors and RACONS on bridge structures, stakes or buoys to mark the edges and centerline of the navigation channel.
 - d. FOG SIGNALS - On waterways where visibility is frequently reduced due to fog or other causes. One or more fog signals may be installed.
 - e. PAINTING OF BRIDGE PIERS - The painting of the sides of Bridge channel piers below the superstructure facing traffic. (May be painted white or yellow when they have become significantly darkened by weather.)
 - f. VERTICAL CLEARANCE GAUGES - When necessary for reasons of safety of navigation, clearance gauges may be installed. Clearance gauges must meet the prescribed requirements.

- BRIDGE DISCREPANCIES:

Bridge discrepancies, which could pose a hazard to navigation, include the following:

- a. Clearance gauges, missing, not legible or numbers not readable from 1/2 mile minimum distance.
- b. Unreadable drawbridge regulation signs.
- c. Bridge signals not functioning, e.g., horn, whistle or siren.
- d. Vertical lift bridge not equipped with height indicator.
- e. Cables hanging below bridge structure.
- f. Net or gondola hanging below bridge structure.

- g. Scaffolding hanging below bridge structure.
- h. Pier protection cells, planks, or coatings missing, steel sheathing protruding, cell damage.
- i. Pile or dolphin cluster broken off, leaning into channel, debris protruding from cluster, or top of cluster wrapped with other than wire cable.
- j. Ladders, platforms or rails protruding into channel.

- **BRIDGE FENDER SYSTEMS DISCREPANCIES:**

Discrepancies in Bridge fender systems, which could pose a hazard to navigation, include the following:

- a. Bolts, washers, corner plates, steel members, wales (rub rails), etc., protruding beyond the face (vessel side) of the wooden wales, pilings, sheathing or any other part of the system. (EXAMPLE - Right fender downstream side has bolts protruding approximately 3" from face of wales.)
 - b. Damaged steel plates and wales (rub rails) - used at corners and other places where heavy wear may be encountered.
 - c. Collection of mass debris wedged in or behind fender systems.
 - d. Protrusion of dolphins on the fender side.
 - e. Steel wales (rub rails) not coated with non-sparking material instead of wood.
 - f. Torn or loose ice protection or pier repair items - loose and subject to present a hazard to navigation. (EXAMPLE - Steel plates around the fourth stone pier from the right bank on the upstream side are loose and are extending into the channel.)
 - g. Fender system damaged due to fire, collision, natural deterioration and or rotting. (EXAMPLE - Left fender upstream side is partially collapsed due to vessel collision and badly rotted wood members. Right fender on the downstream side has been partially destroyed due to fire.)
- **REPORTING DISCREPANCIES:** Upon discovering a bridge discrepancy, which includes the Bridge, lights, fender protection, etc., the Auxiliary member should complete a CG-5474 (marked "BRIDGE" at the top) or other respective Coast Guard District developed reporting form and forward to the respective District (oan) via established distribution procedures. Such reports should be in specific detail such that

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the District (oan) can provide sufficient information to the owner to complete proper repairs. A sample bridge report is illustrated in the following.

Some districts have adopted an annual bridge lighting and fender system survey program, using an individual printout of each bridge from the District Commander (oan-br) database.

Auxiliary members and their units submitting CG-5474 reports are awarded points, refer to Section XII.

SAMPLE - BRIDGE REPORT

DEPARTMENT OF TRANSPORTATION U.S. COAST GUARD CG-5474 (Rev. 11-19-87)		AIDS TO NAVIGATION REPORT BRIDGE			INDICATE <input type="checkbox"/> VERIFICATION <input checked="" type="checkbox"/> DISCREPANCY	
SECTION I OBSERVER'S IDENTIFICATION DATA						
MEMBER NUMBER		LAST NAME		FIRST NAME AND INITIAL		
0701910229		JONES		JOHN P.		
OBSERVER'S MAILING ADDRESS						
NUMBER AND STREET		CITY	STATE	ZIP CODE	TELEPHONE NUMBER	
PO Box 123		CLEARWATER	FL.	34683	813-791-0101	
SECTION II COAST GUARD NOTIFICATION						
COAST GUARD UNIT NOTIFIED		DATE OBSERVED		DATE REPORTED		METHOD OF REPORTING
CCGD7 (oau-bridges)		021292		021392		RADIO _____ TELEPHONE _____ MAIL <input checked="" type="checkbox"/>
SECTION III DESCRIPTION OF DISCREPANCY						
OWNER/TITLE COAST GUARD _____ STATE _____ PRIVATE _____ OTHER _____						
POSITION		AID NAME		LEADER		MILE MARKER
LATITUDE		LONGITUDE		CHART NO.		OTHER
28° 03' 04" N		82° 47' 36" W		1511 (S)		
TYPE OF AID		BUOY _____ STRUCTURE _____		LIGHTED _____ SOUND _____		ELECTRONIC _____
STRUCTURE		WOOD _____ METAL _____ OTHER _____		SOUND SIGNALS		BELL _____ GONG _____
LIGHT COLOR		RED _____ GREEN _____ WHITE _____ YELLOW _____		HORN _____		WHISTLE _____
COMMON DISCREPANCIES (IF COMMENTS REQUIRED)						
VANDALIZED		DAMAGED BY COLLISION		RETROREFLECTIVE MATERIAL		
IMPROPER CHARACTERISTICS		OBSOLETE		PEELING		
DISENTICED		DAMAGED		MISSING		
RIFES NEST		FADED		INADEQUATE		
EXCESSIVE BIRD FOULING		PEELING PAINT		MILE MARKER		
BATTERY BOX CONTACT		MISSING VENT VALVE		MISSING		
OBLITERATED NUMBER		DAYMARK DELAMINATED		DAMAGED		
EXCESSIVE DETERIORATION		ROTTING WOOD STRUCTURES		LEANING MORE THAN 15		
LIGHTED AID		LANTERN DAMAGED		EXTINGUISHED		LIGHT DIM/REDUCED INTENSITY _____
TIMING ERROR _____		OPERATING CONTINUOUSLY _____		OTHER _____		
SIGNAL		SUBMERGED _____		OFF STATION _____		NUMBER OBLITERATED _____
ADJUST _____		CAPSIZED _____		STRANDED _____		TAPPER MISSING _____ BELL MISSING _____ GONG MISSING _____
WHISTLE MISSING _____		OTHER _____				
COMMENTS (HOW WAS OFF STATION DETERMINATION MADE? (E.G., HORIZONTAL SEXTANT ANGLES, COMPASS BEARINGS, RANGE FINDER, RADAR, LORAN, OR SEAMAN'S EYE?)						
THE FIXED WHITE CLEARANCE GAUGE LIGHT ON THE SOUTHEAST PIER OF THE BRISQULA BRIDGE OVER THE ICW AT DUNEDIN FL. IS EXTINGUISHED BEING UNABLE TO READ THE GAUGE DURING PERIODS OF DARKNESS						
SIGNATURE OF OBSERVER					DATE	
John P. Jones					FEB. 12, 1992	

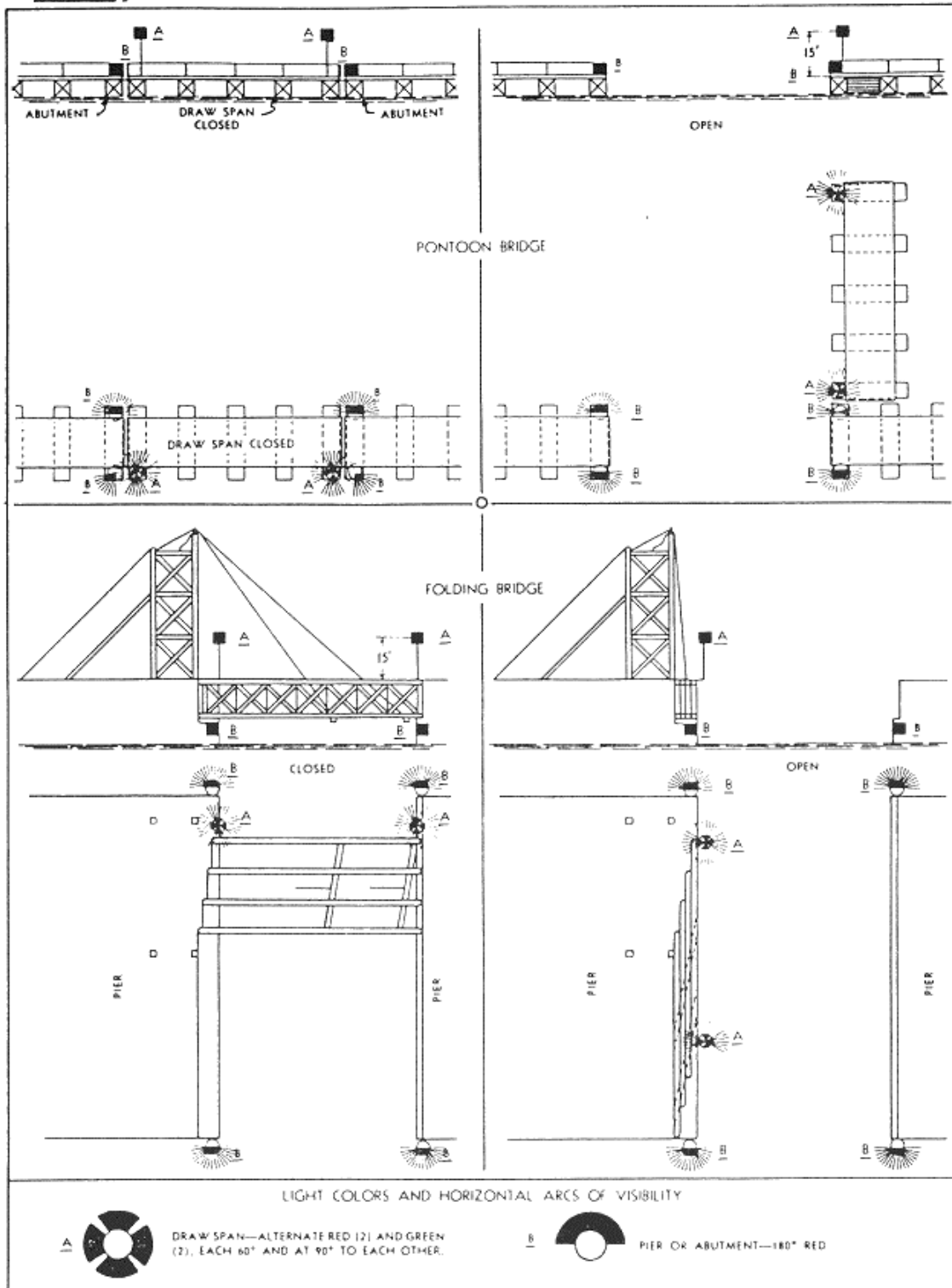
NOTE: DISTRICT FORMS MAY BE USED

COPY 1 - NAVY

EXAMPLE - BRIDGE DISCREPANCY REPORT (CG-5474)



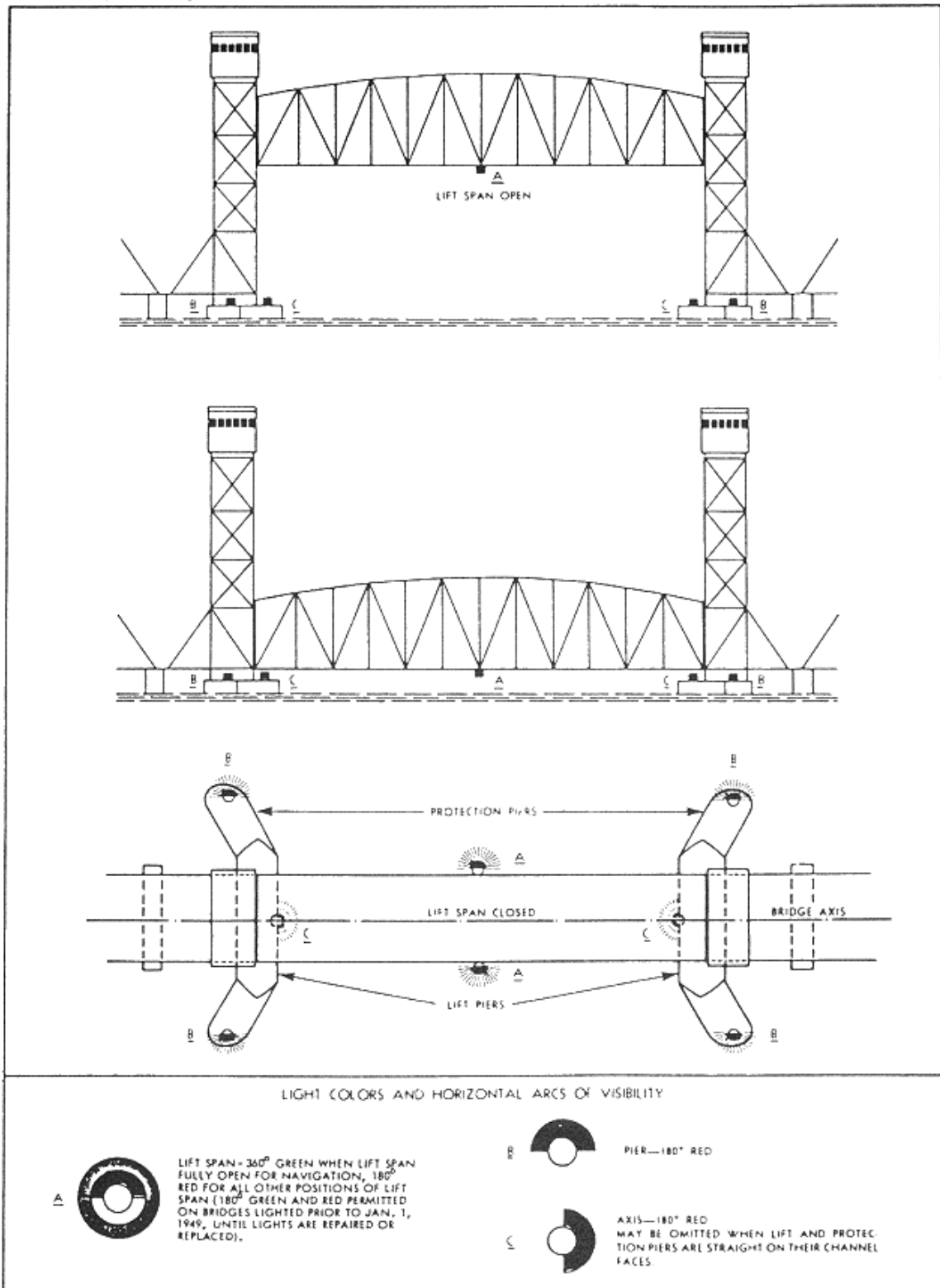
A GUIDE TO BRIDGE LIGHTING
MINIMUM LIGHTING FOR SINGLE-OPENING DRAW BRIDGES



GUIDE TO BRIDGE LIGHTING - SINGLE-OPENING DRAW BRIDGES



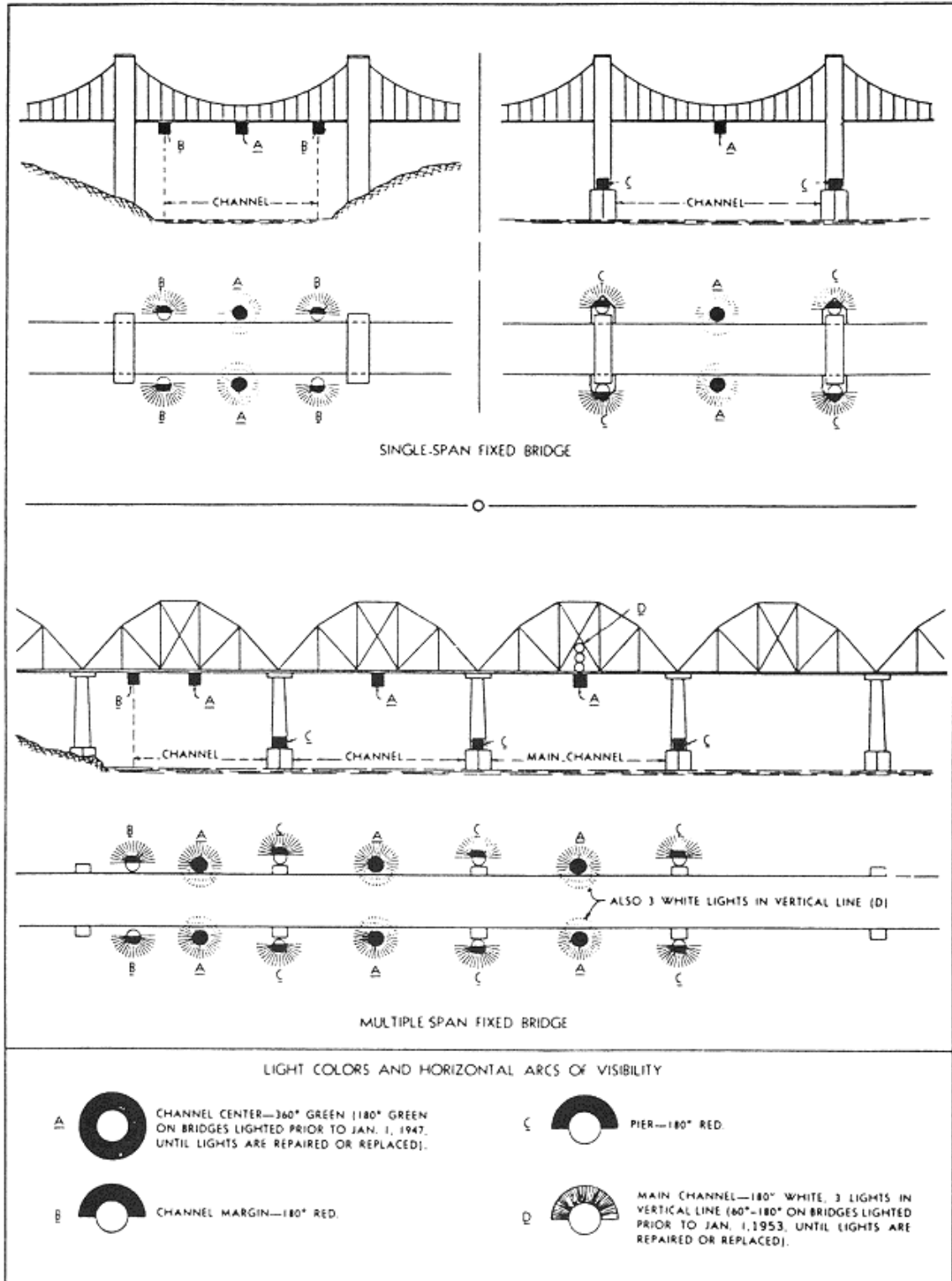
A GUIDE TO BRIDGE LIGHTING
MINIMUM LIGHTING FOR VERTICAL LIFT BRIDGES



GUIDE TO BRIDGE LIGHTING – VERTICAL-LIFT BRIDGES



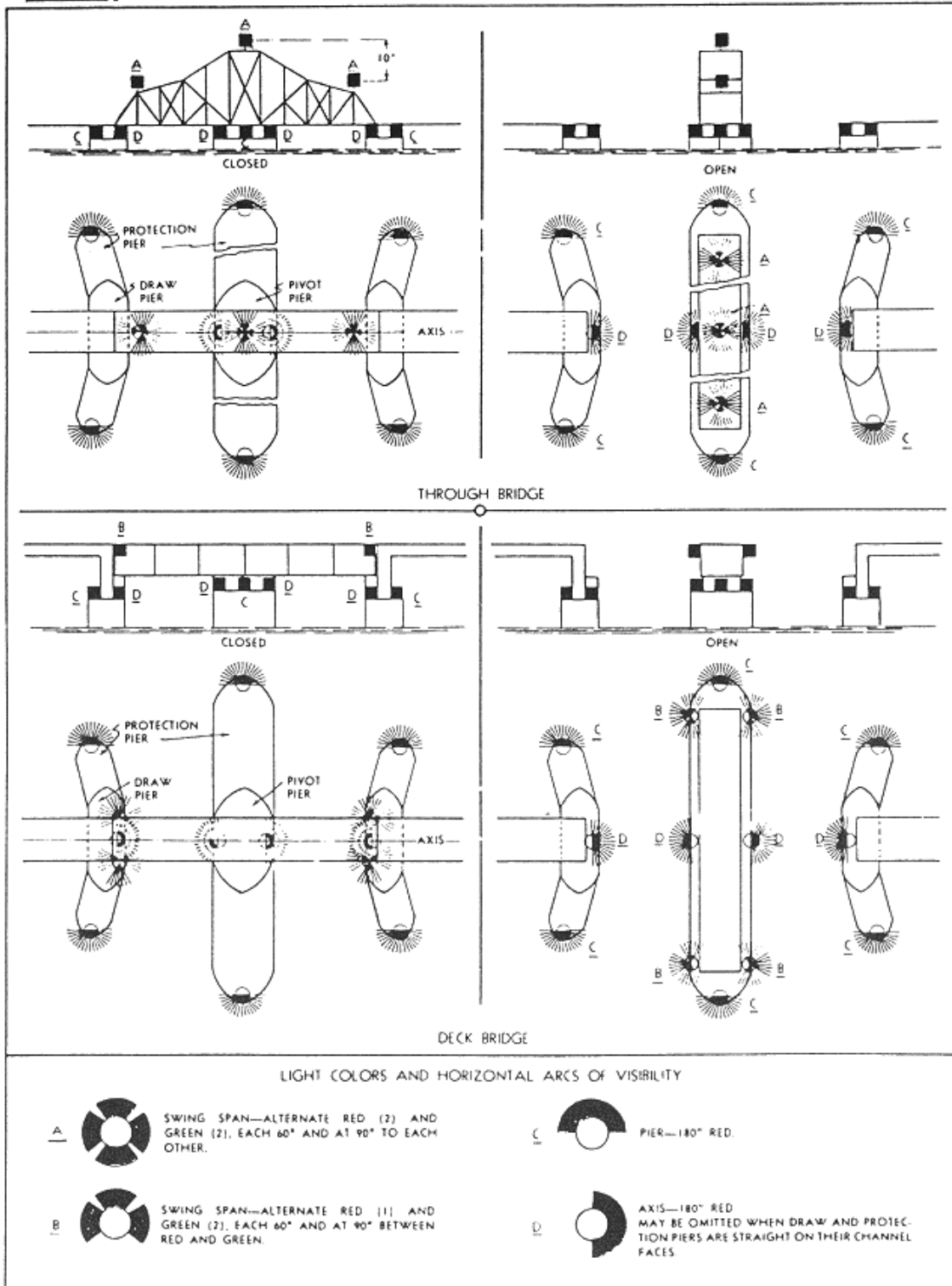
A GUIDE TO BRIDGE LIGHTING MINIMUM LIGHTING FOR FIXED BRIDGES



GUIDE TO BRIDGE LIGHTING - FIXED BRIDGES



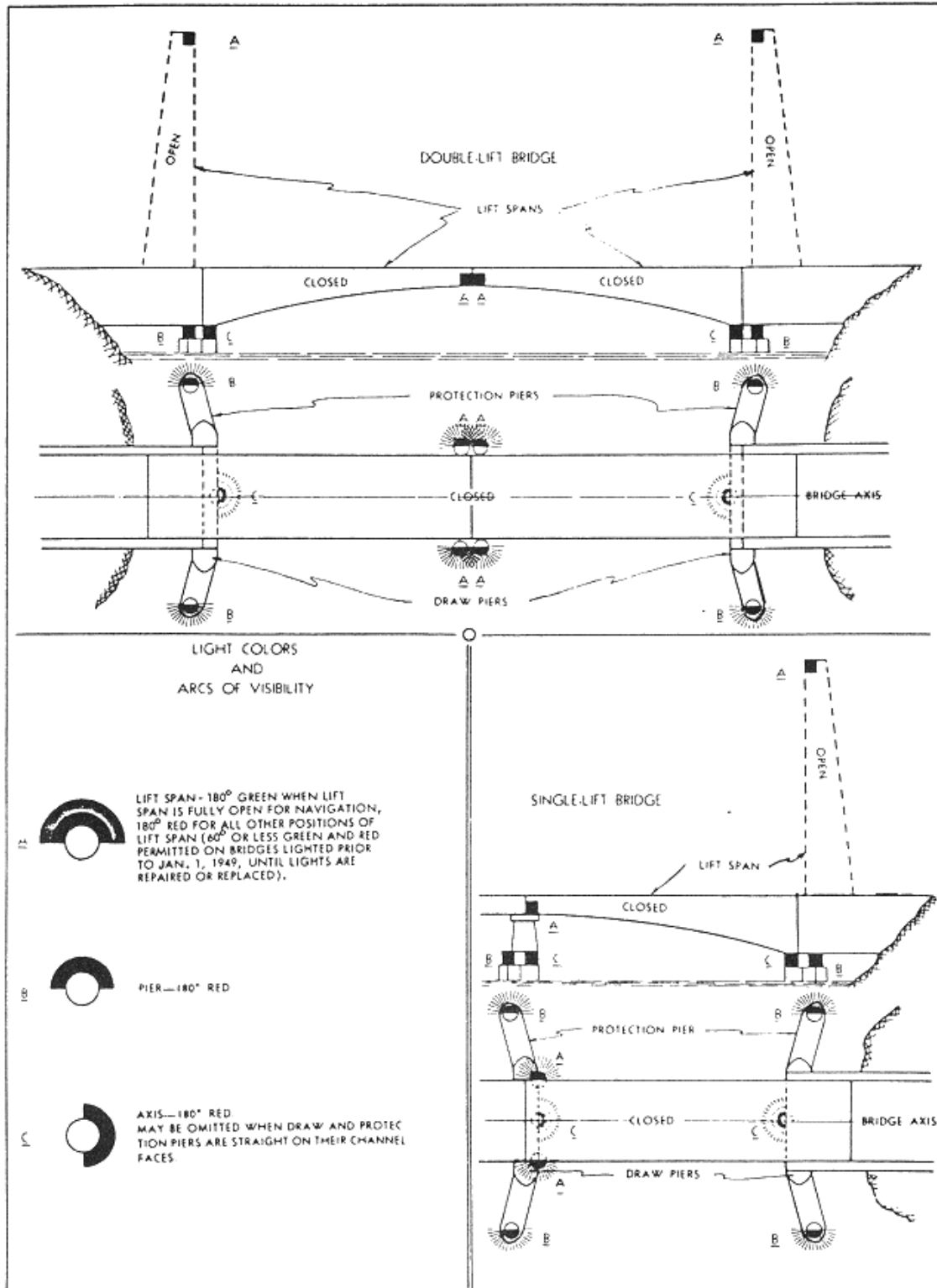
A GUIDE TO BRIDGE LIGHTING MINIMUM LIGHTING FOR DOUBLE-OPENING SWING BRIDGES



GUIDE TO BRIDGE LIGHTING – DOUBLE-OPENING SWING BRIDGES



A GUIDE TO BRIDGE LIGHTING MINIMUM LIGHTING FOR BASCULE BRIDGES



GUIDE TO BRIDGE LIGHTING - BASCULE BRIDGES