Task 6.0 Bridges

• Objectives
  – Understand bridge requirements
  – Understand reporting requirements
Bridge Lights:

- Channel Center Lights  \( G - 360^\circ \)
- Channel Margin Lights  \( R - 180^\circ \)
- Pier Lights  \( R - 180^\circ \)
- Channel Axis Lights  \( R - 180^\circ \)
- Preferred Channel Lights  \( 3W - 180^\circ \)
- Movable Span Lights  \( R > G - 180^\circ \)
Channel Center Lights
(found on *Fixed Bridges*)

Two 360-degree lanterns, hang just under lip.

Visible from both approach channels – up and down stream.

*Green* in color.

Lanterns should appear as *range lights mounted under the lip* of the bridge’s span.

Mark the center of the navigable channel.
Movable Span Lights
(found on Movable Span Bridges – Draw Bridges)

• 180-degree split-lanterns facing toward the traffic.
  • Shows a **RED** light when the draw is closed or moving.
  • **Shows a GREEN light** when the draw is open.
Channel Axis Lights

180-degree lanterns that face the center of channel.

**RED** in color.

Mark any bends in the channel or turns in the pier structures on a bridge.
Channel Margin Lights

180-degree lanterns that face into the traffic.

**RED** in color.

Mark the edges of the navigable channel and are not required if the pier marks the edge of the channel.

Are positioned above the lip of the span. These lights mark low steel - the lower limit of the span clearance.
Channel Margin Lights

Lights define the limits of the navigable channel.
Pier Lights

180-degree lanterns – facing the traffic.

**RED** in color.

Mark the piers on the bridge.

Note that they are used for a different purpose than Axis lights.
Two Major Types of Bridges

1. Fixed Bridges
2. Movable Span or Draw Bridges
   - Lift Bridges
   - Swing Bridges
   - Bascule Bridges
     Single Bascule & Double Bascule
   - Retractable Bridges
Single Span Fixed Bridge

Appears as a range under the lip of the span.

Should be mounted just below the lip of the span.

360° **GREEN** Channel Center Lights  180° **RED** Channel Margin Lights
Multiple Channel
Fixed Bridge
Multiple Span Fixed Bridge

3 180° White Preferred Channel Lights

360° Green Channel Center Lights

180° Red Pier & Margin Lights
Moveable Span Lights – alternate Red & Green, each 60° at 90° to each other. Show **RED** when the bridge is closed.

180° Red Pier Lights
Swing Bridge - Open

Moveable Span Lights: Alternate Red & Green, each 60° at 90° to each other.

180° Red Pier Lights
Single Span Swing Bridge - Closed
Double Span Swing Bridge - Closed

Coleman Memorial Bridge, Yorktown VA
180° Red Moveable Span Light is on.

360° Green Moveable Span Light is Out

180° Red Pier Lights
180° **Red** Moveable Span Light is **out**

360° **Green** Moveable Span Light is on.

180° **Red** Pier Lights
Vertical Lift Bridge – Open
Chart may show Hor CL and the open and closed Vert CL.
Single Bascule Bridge – Span is closed

180° **Green** Moveable Span Light is **out**.
180° **Red** Moveable Span Light is **on**.

180° **Red** Pier Lights
Single Bascule Bridge – Span is open

180° Green Moveable Span Light is on.
180° Red Moveable Span Light is out.

Draw must open to point where it clears the fenders.
Double Bascule Bridge
(Spans are closed)

180° Red Pier Lights

180° **Green** Moveable Span Light is **out**.

180° **Red** Moveable Span Light is on.
Double Bascule Bridge
(Spans are open)

180° Green Moveable Span Light is on.
180° Red Moveable Span Light is out.

180° Red Pier Lights
Double Span Bascule Bridge
(closed)
Lighting Discrepancies

- Broken Axis Light Lens
- Light Unlit
- Flow Down River
Wales — the horizontal wooden components of the fender system

Wales must be:

– In good repair.

– Have no sharp metal or bolts sticking into the channel.

– Have no metal corners.
FIXED BRIDGES

Center Channel Lights
[360 degree Green lanterns forming a range under the lip of bridge and marking the center of the navigable channel]

Axis or Margin Lights
[180 degree lanterns]

Pier Lights
[180 degree RED lanterns facing bridge approach]

Wales
[No exposed metal - nothing sticking into the channel]

Clearance Gauge
Fixed on right side of channel on both approaches.
Special Regulation Signs must be:

- Readable.
- Located on both sides of bridge.
- Match the Federal Regulations for that bridge in the 33CFR117 Subpart B.
- If a phone is required to open a lift bridge, the phone number must be shown on the *regulatory sign*. 
Special Regulatory Signs

• If a phone number is on the sign – call the number to make sure the number & area code is current and the phone is answered.
BASCULE BRIDGES
[bas’kul] French for a seesaw.
A kind of drawbridge that is counter-weighted so that it can be raised and lowered easily.

Special Regulatory Signs

DRAWBRIDGE Regulation Sign

AXIS Lights.
180 degree RED lanterns that mark the edge of the navigable channel - face into the channel.

PIER LIGHTS
180 degree RED lanterns facing the bridge approach.

PROTECTIVE PIERS
Must be wrapped with steel cable.

Clearance Gauge
Fixed on right side of channel on both approaches.
Fender Discrepancies:

• Missing or broken wales
• Fender protruding into channel
• Steel/metal exposed to channel
• Bolts not recessed
• Dolphin clusters “leaning”
• Broken or dirty vertical clearance gauge
• Missing or inaccurate drawbridge operating regulatory sign

PHOTOS REQUESTED
Bridge Fenders

PROTRUDING BOLTS
TOP VIEW

STEEL JACKETING
Bridge Fenders

PROTRUDING BOLTS

MISSING WALES
Protective Piers must be:

- Wrapped with steel cable.
- Have nothing projecting into the navigable channel.
- Undamaged
- Not be rotting at the waterline.
- Not be rotting down from the top.
Damaged Cell
Leaning Submerged Cluster
Protruding Wales
Clearance Gauges

May be required on both Fixed Bridges and Draw Bridges:

- Required only if specified on CG Bridge permit
- May be listed in 33CFR117 -Subpart B (may still be required by permit, even if not listed in 33CFR117)
- Listing is also found in the Coast Pilot
Clearance Gauges

Should be mounted on the right side of the channel on both sides of the bridge (upstream & downstream).

- Should be readable from $\frac{1}{2}$ mile.
- Must reflect the actual clearance from the lowest point of the span over the navigable channel to the actual water surface.
Clearance gauges are not always required but may be found on many Bridges. Check 33CFR117 or the Coast Pilot.
Broken Gauge
Racons

- Radar transponder beacons
- Mounted at center of main channel on some major fixed bridges. Provides enhanced Morse coded echo on radar display.
- Will be listed on chart if installed.
- Use boat’s radar to verify proper operation of RACON
Fog Horns

- Mounted at center of main channel on some major fixed bridges.
- Will be listed on chart if installed.
- Normally only sound when fog is present – can only be verified in fog!
Obstructions in the Channel

- Nothing may be hanging down from the span of the bridge into the navigable channel.
- Report any shoaling or other obstructions in the channel.
- Is the channel navigable?
- Is any debris caught in the fenders sticking into the channel?
Bridge Operation

- Is the draw operational?
- Did the bridge tender respond immediately?
- If a phone was required, was the phone number correct, and was it answered?
- Was the person answering the phone knowledgeable?
- Did the horns and alarms on the bridge operate effectively?
BRIDGE DISCREPANCIES

On 7055, and on ATON-1

1. Bridge clearance lights, missing, damaged or extinguished
2. Clearance gages incorrect, missing or not legible
3. Unreadable regulation signs
4. Sound signals not functioning
5. Cables or scaffolding hanging below bridge structure
6. Fender conditions which present hazard to navigation for any reason
**U.S. COAST GUARD AUXILIARY**

**CG 7055 - BRIDGE REPORT**

**SECTION 1 - MEMBER INFORMATION**

<table>
<thead>
<tr>
<th>REPORTER'S LAST NAME</th>
<th>FIRST NAME</th>
<th>MIDDLE INITIAL</th>
<th>AV QUAL</th>
<th>TELEPHONE NUMBER</th>
<th>DIST-DIV-FLO</th>
</tr>
</thead>
</table>

**DATE OBSERVED** | **TIME OBSERVED** | **OPCON NUMBER or CG UNIT NAME** | **EMAIL ADDRESS**

**SECTION 2 - COAST GUARD NOTIFICATION**

Fill in only if you already reported by phone, radio or e-mail to a CG unit.

| COAST GUARD UNIT NOTIFIED | DATE REPORTED | TIME REPORTED | COMMUNICATION METHOD USED FOR REPORTING TO CG UNIT |

**SECTION 3 - BRIDGE IDENTIFICATION**

<table>
<thead>
<tr>
<th>BRIDGE NUMBER</th>
<th>BRIDGE NAME</th>
<th>BRIDGE TYPE</th>
<th>BRIDGE USE</th>
</tr>
</thead>
</table>

| NAME OF WATERWAY | MILES ABOVE MOUTH | LOCATION (FROM) | LOCATION (TO) |

| LATITUDE (DD/MM/SS) | N/S | LONGITUDE (DD/MM/SS) | E/W | # ATTACHED PHOTOS |

**SECTION 4 - OBSERVED BRIDGE DISCREPANCY(S)**

1. LIGHT SURVEY
   - Check each type of light observed
     - Pier Lights
     - Center Channel Lights
     - Center Margin Lights
     - Preferred Channel Lights
     - Channel Aisles Lights
     - Swing Span Lights
     - Lift Span Lights

   Check the light discrepancies that apply:
     - Light is extinguished
     - Light is wrong color
     - Lantern is damaged
     - Lantern is missing

2. CLEARANCE GAUGES
   - Clearance Gauge is damaged
   - Clearance Gauge is unreadable

3. REGULATORY SIGNS
   - Regulatory sign is missing
   - Regulatory sign is unreadable
   - Regulatory sign is damaged
   - Regulatory sign colors faded

4. BRIDGE SIGNALING DEVICES
   - Bridge signaling device is inoperative
   - Bridge communication sign missing
   - Bridge radio is garbled and unreadable

5. FENDER SYSTEM
   - Fenders deteriorated or rotted
   - Fender is damaged by fire
   - Vessel allision evident on fender system
   - Wares are missing
   - Wares protrude into the navigable channel
   - Metal corner plates
   - Exposed bolts protrude into the channel
   - Debris protrude into channel
   - Protective dolphin(s) is damaged

6. OBSTRUCTIONS IN NAVIGABLE CHANNEL
   - Obstructions hang below the span
   - Cable(s) hangs into navigable channel

**SECTION 10 - COMMENTS**

Fully describe the discrepancy in this section - all reports must have comments filled in.
WHERE YOUR REPORTS GO

• Send Original to: – Frank Williams, DSO-NS
  – oceano75@msn.com
  – 983 Liberty Ln. Warrington, PA 18976

• DSO-NS will copy your Bridge report Chief Waterways Management, SDB, 1 Washington Ave., Phila., PA 19147

• Let your FSO-NS know each month how many reports made, so he can report to SO-NS for report at Div. Mtg.

• When reporting Discrepancies, give as much information as possible and suggest what is needed to correct
Task 7.0 PATON Certification and Currency Maintenance

• Maintain Currency
  – Perform ONE PATON verification, bridge inspection, chart update or discrepancy report per year
  – TCT
Oh By the Way

- An add on: Be aware of water pollution and elements that adversely affect marine life. A simple act of scooping up a plastic bag with a boat hook can mitigate its impact on some marine life.