

**HEAVY MOVABLE STRUCTURES, INC.**

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## **“U.S. Coast Guard’s Bridge Administration Program”**

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# **U.S. Coast Guard's Bridge Administration Program**

## **A. Purpose.**

The Coast Guard's Bridge Administration Program (BAP) is truly an intermodal surface transportation infrastructure program within the U.S. Department of Transportation. Its mission is to protect the human environment and freedom of navigation with a balanced intermodal approach to total surface transportation systems.

The purpose of the several federal bridge statutes is to preserve the freedom of navigation by assuring that bridges and causeways over or in the navigable waters of the U.S. do not impede the reasonably free, easy and unobstructed passage of waterborne commerce and other marine traffic past bridge sites. At the same time, the Coast Guard exercises care to balance the legitimate competing needs of land transportation (highway and railroad) that cross our nation's waterways.

## **B. Core Program Functional Activities.**

The core program functional activities, or workload, which need to be performed in order to ensure that the reasonable needs of navigation and land transportation are met, include:

- Approval of the location and clearances of bridges and causeways in or across the navigable waters of the United States through a formal bridge permitting process.
- Regulate the operation of drawbridges so as to ensure the reasonable needs of navigation and land transportation are met.
- Identify bridges which unreasonably obstruct navigation and order their removal or alteration so as to render navigation past the bridge site reasonably free, easy and unobstructed.
- Regulate bridge lighting and other markings for the safety, mobility and protection of navigation and land traffic, for bridges having significant nighttime waterway navigation.

- Ensure all BAP actions are in compliance with the National Environmental Policy Act (NEPA) and other applicable environmental control laws.

The purpose of these core workload activities is to meet the intent of Congress in enactment of the bridge laws. The laws prevent the impairment of navigable waters by unregulated bridge construction, operation and maintenance activities.

### **C. Bridge Program Mandate.**

Bridges across the navigable waters of the United States are obstructions to navigation. It is the duty and responsibility of the Coast Guard to preserve the public right of navigation. Bridges are tolerated only as long as they serve legitimate land transportation purposes. However, while the public right of navigation may be paramount to land transportation needs, such right is not absolute and may be diminished to benefit land transportation, provided the needs of navigation are not unreasonably impaired by bridges. Management of the BAP works toward the promotion of the overall goals of dot in a balanced manner, in order to accommodate, to the greatest extent practicable, the needs of all surface modes of transportation.

### **D. HMS Interface.**

All functional activities of the BAP involve an interface with heavy movable structures including the permitting, drawbridge operation regulation, alteration/removal, fendering or lighting and marking functions. These activities involve various types of heavy movable structures as well as fixed non-movable bridge structures.

The permitting function ensures adequate horizontal and vertical bridge clearances that provide for the needs of existing and future navigation at the bridge site. The majority of permits presently being issued are for projects that replace structurally deficient and/or functionally obsolete highway bridges. Many replacement projects involve drawbridges.

Permitting facilitates the replacement of aging transportation bridge infrastructures. The process of applying for a Coast Guard permit includes:

1. Determine if jurisdiction exists or a study is necessary.

2. Letter of Application, cite appropriate authority.
3. Indicate if federal funds are used.
4. Identify other involved agencies.
5. Include an environmental assessment.
6. Identify impacts on sensitive areas, i.e., wetlands, historic, endangered species, etc.
7. Include plans, showing location, elevation view, clearances, etc.

The regulation of drawbridge operations balances the competing needs of land and marine transportation by ensuring bridge operating schedules, to the extent practical without compromising the reasonable needs of navigation, minimize land traffic congestion or backups. A request by the bridge owner, navigation interests or a political jurisdiction for a change in the operating regulation of a bridge, must be supported with:

1. Reasons for the requested change.
2. Land and marine traffic data.
3. Bridge tender logs.

#### **E. Privatization Issue.**

The Coast Guard sees the issue of the privatization of operation and maintenance of drawbridges as one of choice by the bridge owner. If a bridge owner finds it more cost effective to contract out the functions of drawbridge operation and maintenance than to perform these functions themselves, then they are free to do so. However, the Coast Guard will still look to the bridge owner as the responsible party in such matters as:

1. Adherence to general or special drawbridge operation regulations pursuant to title 33, Code of Federal Regulations, Part 117.
2. Construction, operation, and maintenance in accordance with the location and plans approved by the Coast Guard. Appropriate coordination of construction, repair or other maintenance work with the Coast Guard and marine industry.
3. Civil penalty or criminal sanctions for failure to comply with applicable bridge statutes and regulatory requirements.
4. The removal or alteration of an unreasonably obstructive bridge improves or eliminates deficient bridge infrastructure. Several of these projects involve heavy movable railroad structures which no longer provide sufficient navigational clearances for present day marine commerce on the waterway.

Investigation of an alleged obstructive bridge usually commences with a written request from the bridge owner or navigation interests, stating the reasons that make a bridge an unreasonable obstruction. If a preliminary investigation indicates that a bridge may be obstructive, then a detailed investigation is conducted. If the benefits to navigation as a result of the alteration at least equal the cost of the project, then an order is given to alter the bridge with federal funding assistance.

5. The lighting/marketing function protects bridges from being hit by vessels and possibly collapsing into waterways and blocking navigation channels. Bridge lighting and other markers depend on the type of marine traffic using the waterway.

## **F. Conflicts.**

The Bridge Administration Program serves as a conflict resolution business for the Coast Guard. Bridge customers' needs and desires vary and, at times, diverge and generate conflict between land and vessel traffic needs.

Increases in vessel size, port capacity and development upstream of bridges necessitate greater bridge navigational clearances. Yet, construction of high-level fixed or movable bridges to provide adequate navigational clearances is resisted by bridge sponsors as too costly. Further, environmental groups are more vocal concerning environmental consequences of bridge construction. The Coast Guard is frequently called upon to resolve these competing needs in its consideration of each bridge project.

Drawbridge operating schedules can conflict with both land and water traffic. When drawbridges open they restrict land traffic. When they close, they restrict water traffic and may create serious navigation safety problems for vessels under adverse wind, tide, current and other affecting conditions.

Attempts to satisfy any single interest compete with the needs of other interests. The conflicts among competing users increase demands on the Coast Guard for resolutions.

## **G. Bridge Allisions.**

1. **Bridges Hits.** Generally caused by several reasons:

- a. The navigation span is too restrictive, often associated with the bridge being an antiquated structure. They share the following general characteristics:
  - (1) Old age: Built in late 1800s/early 1900s before the modern navigation system was created. For example, on the Mississippi river system they were built before the locks and dams were constructed (1930s).
  - (2) Navigation opening not built for modern vessels. Vessel size and power have significantly increased in the past 70 years, but the navigation opening stayed the same.
  - (3) The navigation channel has a significantly larger horizontal clearance than the bridge.
  - (4) Currents, especially during high river stages, make transit at the bridge difficult.
  - (5) Bridges located in or near bends or crossings in the river require vessels to occupy a greater area than allowed for by the bridge opening requiring vessels to perform difficult maneuvers to pass the area of the bridge.
- b. Fixed bridges present different problems. The main problem is difficulty in seeing the piers. The type of construction makes some piers “invisible” at night, especially in fog and rain conditions. This is true of old gray masonry piers.

## 2. **Bridge Lighting.**

- a. In conditions of poor visibility and rain it is critical for piers to be adequately marked. The piers are more important because they will cause damage to the vessel. Bridge owners vary greatly in the amount of attention they pay to proper and adequate lights. Vandalism also results in light damage or complete removal of the electrical wiring and fixtures; hunters often shoot the lights out. Some bridge owners do not give a lot of attention to the proper maintenance of bridge lights. (out of sight – out of mind).
- b. To compensate for uncertain light dependability, the Coast Guard in many instances requires the installation of high visibility retro-reflective material on bridges in the vicinity of the lights – especially the pier lights. This ensures that the pier will be seen from commercial vessels equipped with xenon searchlights.
- c. We have also required yellow retro-material to be installed on the inside face of certain “critical” piers to assist operators through the bridge. These critical piers are on bridges where there is a crossing (the channel moves

- from one side of the river to the other side) this allows the vessel operator to know when they are lined up with the bridge navigation channel and can move forward safely.
  - d. We have worked with our aids to navigation people to establish “leading lights” to assist tows at becoming aligned with channel spans. To make this effort worthwhile, we ensure the leading and center green lights are all aligned.
  - e. As needed, we mandate navigation lights on bridges to ensure the navigation channel and piers are properly marked. This is especially true in urban areas that have many bridges close together.
3. **Reducing Bridge Hits.** Accomplished by:
- a. Improving the marking of bridges by ensuring the dependability of reflective material used. This is especially important on temporary construction structures (cofferdams and falsework).
  - b. Ensuring the lighting/marking scheme is correct.
  - c. For new bridges - ensuring the piers are properly located.
  - d. Racons are used in some places, but not on the inland rivers. Also, Coast Guard aids to navigation people often place buoys in front of piers so the vessel operators will know the location of the navigation opening. On radar bridges only appear as a solid line across the river – no opening is seen. In order to more clearly identify bridge piers, our seventh Coast Guard district is using a radar reflector attached to bridges.

## H. Conclusion.

All areas of our program workload facilitate the maintenance of a safe, efficient bridge infrastructure, including heavy movable structures, at intersecting points where land and water transportation interests meet.

Should the Coast Guard fail in its responsibility to keep the nation’s waterways reasonably unobstructed by bridges which cross them, the ability of the United States to compete as a maritime nation will be impeded. National defense vessels will not be able to traverse waterways leading to homeport facilities.

Further, the Coast Guard’s ability to perform such vital traditional missions as search and rescue, aids to navigation and other vessel safety initiatives will be jeopardized. That is the downside.

The reality is that the Coast Guard will continue to manage America's waterways in a manner that ensures bridges do not unreasonably obstruct them and still perform their role as vital links for land traffic. There will always be conflicts between waterborne and land based commerce, but the Coast Guard will be there to balance their needs, so that everyone can enjoy freedom of movement with maximum safety and minimum inconvenience.

**About the Author**

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