

# BRIDGE ADMINISTRATION MANUAL

COMDTINST M16590.5C



Homeland  
Security



*Intermodal Mobility, Safety & Security*



COMDTINST M16590.5C

COMMANDANT INSTRUCTION M16590.5C

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Subj: BRIDGE ADMINISTRATION MANUAL

1. PURPOSE. This Manual prescribes updated policy guidance on Bridge Administration, based on 33 U.S.C. 401, 491 through 535 and 33 CFR 114 through 118. All personnel involved in the administration of bridges should use this Manual.
2. ACTION. Area and district commanders shall ensure that all bridge actions are conducted in compliance with this Manual. This Manual shall not be posted on the Coast Guard Internet site.
3. DIRECTIVES AFFECTED. This Manual supersedes the previous Bridge Administration Manual, COMDTINST M15690.5B.
4. DISCUSSION. Amendments have been made to this Manual to reflect the change from the Department of Transportation to the Department of Homeland Security, provide policy guidance and clarification on program implementing procedures and numerous editorial and format changes.
5. ENVIRONMENTAL ASPECTS AND IMPACT CONSIDERATION. Environmental considerations were examined in the development of this Manual and have been determined to be not applicable.
6. FORMS/REPORTS. The Bridge Administration Program Quarterly Activities Report (RCN 16590-1) Chapter 1.I and the Bridges Over Navigable Waters of the United States Completion Report (RCN 16590-2) Chapter 4.I.



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## **CHAPTER 2- NAVIGATIONAL CONSIDERATIONS**

### **A. Introduction**

1. The several federal bridge statutes and the mission of the Bridge Administration Program (BAP) are intended to ensure that freedom of navigation is maintained on the navigable waters of the United States, and bridge construction or operation is not authorized that would create unreasonable obstructions to navigation.
  - a. As indicated in Chapter 1, it is the duty and responsibility of the Coast Guard, under the authorities delegated to the Commandant by the Secretary of Homeland Security, to ensure the public right of navigation is preserved while maintaining a reasonable balance between the competing needs of land and waterborne modes of transportation.
  - b. This chapter provides guidance in addressing the navigational issues, which must be considered during the bridge permitting and regulatory processes described in Title 33, Code of Federal Regulations, Parts 114-118.
2. The provisions of this chapter are to be considered in context with all other chapters of this manual, as applicable.

### **B. Legal Authorities**

1. The laws relating generally to the protection, preservation and safety of the Nation's navigable waterways are found in Section 9 of the Act of March 3, 1899, as amended, 33 U.S.C. 401; the Act of March 23, 1906, as amended, 33 U.S.C. 491; the Act of June 21, 1940, as amended, (Truman-Hobbs Act) 33 U.S.C. 511-523; the General Bridge Act of 1946, as amended, 33 U.S.C. 525; the International Bridge Act of 1972, 33 U.S.C. 535; and the Ports and Waterways Safety Act of 1972, as amended by the Port and Tanker Safety Act of 1978, 33 U.S.C. 1221-1225.

### **C. Background**

1. The evident intention of Congress, under the various bridge statutes, is to take exclusive charge of navigational issues as they relate to the use and preservation of navigable waters of the United States and place them under the authority of the Secretary of Homeland Security. The Secretary has further delegated this authority and responsibility to the Commandant of the Coast Guard and the District Commanders.
  - a. It has long been recognized that the national interest in navigation and navigation safety is vested within the Coast Guard as the agency most prepared to ensure the reasonable needs of navigation are protected without unreasonably impacting other transportation modes or the human environment.

- b. This unique responsibility is further vested within the BAP which requires that every program action be handled professionally and with due care.
2. Personnel employed in the BAP are not expected to be navigational experts, but they must understand the basic navigational issues faced by a mariner using the navigable waters of the United States.
  - a. The guidelines contained in this chapter will assist in addressing the navigational issues surrounding the permitting of bridges, the authorization for specific drawbridge regulations, and the alteration of bridges under the Truman-Hobbs Act.
  - b. When they are coupled with the active participation of waterway users and other interested and affected parties, they will result in sound decisions for the future safety of our waterways. These decisions will also ensure the freedom of navigation, as intended by the various bridge statutes.

#### D. Definitions

1. **Bank Cushion:** The distance or amount of space between a channel bank and a vessel considered necessary to minimize risk of vessel grounding as a result of bank suction.
2. **Bank Suction:** The tendency to force a ship bodily in a transverse direction (sway force) when running close to a channel bank. Usually the ship will tend to move toward a channel bank; thus the force is called bank suction.
3. **Beam:** One of three principal dimensions of a ship; the width of a vessel in a transverse direction at its widest point, usually amidship.
4. **Bend:** A channel turn that is designed as a continuous curve with a given radius; usually provided for large channel changes (or turn angles) in direction.
5. **Bow:** The forward part of a ship or vessel; generally the forward 10 percent of the length of the ship hull where most of the hull curvature (flare) is located.
6. **Bow and stern thrusters:** Independent propulsion units integrated into the hull of a vessel or attached to barges being transported that help control the direction and alignment of a vessel or tow.
7. **Canalized Channel:** A channel consisting of one or more canals; an excavated watercourse, usually artificially cut through land area, without any existing channel, designed for navigation. Canal edges or borders usually extend above the water surface with visible banks and have important ship and bank interaction effects.
8. **Channel:** The deeper, navigable portion of a waterway, usually marked and designated on the appropriate navigation chart with known widths and depths.

9. **Channel Limit:** The location of the authorized channel as designated on project design documents and depicted on hydrographic survey sheets. Often provided as a channel width on navigation charts.
10. **Concave Bank:** The bank of a meandering stream curved like the inner surface of a ball.
11. **Controllability:** A subjective term used to describe the apparent adequacy of response to ship control by the mariner; the inherent quality of a ship to stay on track.
12. **Crosscurrent:** The magnitude of the tidal or river current component perpendicular to the channel centerline or intended ship track.
13. **Current:** A generic term referring to the horizontal movement of water caused by various forces such as river currents or tidal currents.
14. **Deep Draft Waterway:** Navigation channels (usually excavated as by dredging) provided for the movement of self-propelled vessels with drafts greater than 15 feet.
15. **Descending Bank:** A generic term referring to the banks along a river with a flowing current; often referred to as left or right descending banks as seen by an observer looking downstream.
16. **Design Vessel (Ship):** A hypothetical or real ship with dimensions of the largest vessels that a navigation project is designed to accommodate.
17. **Ebb Current:** The tidal current away from shore and toward the sea; usually downstream in a tidal stream and associated with a decrease in tide height.
18. **Flood Current:** The tidal current toward shore or up a tidal stream; usually associated with an increase in tide height.
19. **Maneuverability:** The ability of a ship to change course or to move off track while underway by the application of steering and engine controllers.
20. **Meandering Stream:** A stream that follows a turning and winding course.
21. **MOT Plan:** A Maintenance of Traffic (MOT) plan developed in support of a transportation project; may include highway, rail and waterway traffic alternatives to be employed while building a road or bridge project.
22. **Navigation:** The theory and practice of operating vessels, usually commercial vessels, in water bodies; charting the course for a ship movement.
23. **Navigation Traffic Pattern:** The use of established channels by vessels in one-way and two-way traffic patterns, including, but not limited to, the use of traffic separation schemes.

24. **Open-river navigation:** Vessel operations using natural streams without locks and dams.
25. **Pivot Point:** The point about which a ship actually turns. The pivot point varies as the ship is maneuvered and depends on all forces and movements acting on the ship.
26. **Shallow-draft Waterways:** Navigation channels provided for the movement of self-propelled vessels with drafts of 15 feet or less.
27. **Shallow Water:** A descriptive term to characterize navigation in waterways where the depth of water is shallow enough to cause significant ship hydrodynamic responses.
28. **Swept Path:** A single trace of the path of the extremities of the vessel platform as it makes its track while it transits the waterway. Account is taken of drift, drift angle and yaw.
29. **Tidal Currents:** The reversing horizontal movement of water associated with the rise and fall of the tide caused by astronomical tide-producing forces.
30. **Track:** A trace or trajectory of the path of a vessel as it makes its transit of a waterway. A vessel's line of travel or course made good.
31. **Trench Channel:** Dredged or open-type restricted channels, intermediate between canals and shallow water, with submerged banks on each side, usually provided with range markers and channel edge buoys or beacons.
32. **Vessel:** A general term referring to all types of self-propelled watercraft including ships, towboats, barges, tugs, yachts, and small boats.

#### E. Policy

1. It is the Commandant's policy, when considering bridge actions, to work toward promoting the overall goals of the Department of Homeland Security in a balanced manner in order to accommodate, to the greatest extent practicable, the needs of all transportation modes. However, the safety of navigation is a paramount consideration that cannot be compromised when addressing bridge program issues.
  - a. It is imperative, therefore, that every effort be made to involve members of the navigation community and other interested or affected parties early in our program deliberations.
  - b. This will ensure that all identified bridge-related issues are fully considered when the potential navigational impacts to the marine transportation system are addressed.

2. This manual and the Coast Guard Marine Safety Manual, Volumes I-X, COMDTINST M16000 series are primary sources of internal guidance for addressing navigational issues that may impact Bridge Program actions. Navigation involves the planning and movement of vessels on, across or through a water body. A bridge's location, design and operation should be planned to optimize the movement, or navigation, of each vessel that may use the navigable waterway.
  - a. A navigational evaluation is intended to address the impact of an existing or proposed bridge, or a proposed change in a drawbridge operation, on the ability of a vessel to transit through a bridge in a reasonably free, safe and unobstructed manner.
  - b. A Coast Guard bridge permit or a drawbridge regulation change should be issued only if the proposed design, location or operation will not unreasonably obstruct existing or prospective navigation.
3. The following sections will provide general guidelines for determining whether a proposed bridge or drawbridge regulation would meet the reasonable needs of navigation.

#### **F. Navigational Concepts and Bridge Clearances**

1. The U. S. Army Corps of Engineers (USACE) is responsible for designing, establishing, and maintaining federal project channels that have been authorized by Congress. Their manuals provide excellent guidance for the planning, layout, and design of deep-draft and shallow-draft waterways, and they may be useful when considering proposed bridge locations and clearances. (See USACE Engineer Manuals EM-1110-2-1611 and EM-1110-2-1603).
2. Open-river navigation is normally preferred by commercial towboat operators since it often eliminates delays encountered in passing through locks. However, restrictive bridge clearances and movable-span bridge opening schedules often discourage commercial navigation even on an open river system.
  - a. Maintenance of a river system can also be a major challenge due to constant changes in channel width and depth and in some cases channel alignment. These potential changes are particularly important when considering bridge locations and clearances.
  - b. Examples of open-river navigation include the Mississippi River below St. Louis, the Missouri River and the Columbia River below Bonneville Dam.
3. Canalized streams involve construction of locks and dams to maintain adequate depths for navigation during periods of medium or low water flows. These waterways normally have greater channel width and depth. Examples include the Ohio and Monongahela Rivers, the Mississippi River above St. Louis, Missouri, and the Arkansas River.

4. Land-cut canals normally connect two bodies of water, bypass rock outcrops and rapids and reduce the length or curvature of a navigable channel. Canals tend to be narrow and shallow in order to minimize costs. Examples include Chain of Rocks Canal near St. Louis, Missouri, the New York State Barge Canal, and the Intracoastal Waterways.
5. Intracoastal Waterways have been developed principally to assist commercial navigation by providing protected navigation along the East and Gulf Coasts of the United States. In recent years, these waterways have also become favorite routes for recreational vessel traffic.
  - a. As discussed in Chapter 1, for the purpose of the Bridge Administration, recreational boating falls within the term “commerce.” No distinction shall be made between commercial and recreational vessels, nor shall the use or purpose of a vessel on the waterway be considered as a basis for making any such distinction.
  - b. The recent increase in the number and size of recreational vessels is particularly significant regarding bridge clearances along the Intracoastal Waterways and the coastal river systems.
6. Most federally-authorized inland and coastal waterways have been designed to accommodate commercial barge tows consisting of a towboat pushing one or more barges. This is known as a “composite unit” when the barges are rigidly connected by wires or chains causing them to react to sea conditions as one unit.
  - a. The tow speed and direction are controlled by the towboat, which is normally positioned behind the barge(s) being pushed. The length of these tows may be one barge plus the towboat (150’-350’) or may be more than 1200’ with multiple barges.
  - b. The amount of control maintained by the towboats depends on their size, power, and maneuverability. Long tows often use some type of bow thruster or control units. These are independent power units located in the bow or stern of the towboat or attached to the lead barge. These units help control the direction of the bow or front ends of the tows. Most towboats are also equipped with twin propellers and large flanking rudders to assist in maneuvering through sharp bends and narrow bridge openings.
  - c. This ability to maneuver, however, varies greatly and must be carefully considered when evaluating proposed bridges along meandering river streams. The movement of a vessel is affected by the power of its propulsion unit, the size and location of its rudders, the underwater design of the vessel, and the direction and velocity of currents, wind, ice drift, and channel dimensions.

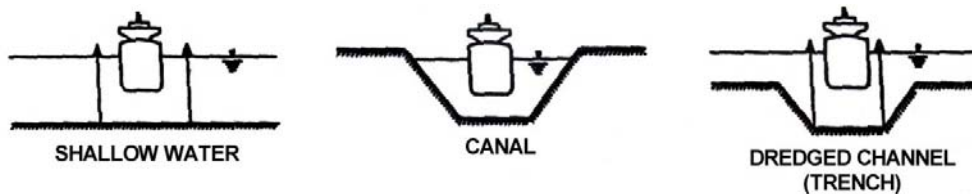
7. The pivot point of a vessel is normally about one-third of the distance from the bow to the stern. In other words, a vessel's stern maneuvers right and left while the bow remains fairly constant.
  - a. This characteristic makes vessel handling similar to that of pushing or maneuvering a wheelbarrow. However, a towboat does not normally follow the barge track when going around bends or negotiating turns.
  - b. This particular navigational characteristic, known as the swept path of a vessel, is recognized by the USACE when it designs bends in waterways. Such waterways are normally widened to compensate for the movement of large vessels, especially tugs with tows.
8. The effect of currents on vessels is a particularly important factor when considering bridge clearances. Tows and all other vessels are affected by the velocity and alignment of currents relative to the path of the vessel.
  - a. Currents moving at an angle to the path of the vessel are referred to as crosscurrents. These currents can be encountered in river crossings, in bends, near side or divided channels, in the entrance to canals and in approaches to locks and bridges.
  - b. Open-river navigation, in particular, recognizes and takes advantage of the current flows, which normally move from the concave bank of one bend across the descending stream to the concave bank of the next bend.
  - c. The straight reaches between alternate bends in a meandering stream are called crossings. Tows leaving one bend, usually from along the concave bank, must cross the stream toward the opposite bank to approach the concave bank of the next alternate bend. This series of bends in a meandering stream is nature's way of controlling the flow of water (much like the slalom movements of skiers coming down a steep mountain). Vessel operators normally follow this natural current flow as they descend a river.
  - d. If a bridge alignment is located close to or within a bend in a waterway, the crosscurrents may create significant difficulty in transiting through a bridge. This will necessitate increased horizontal clearances and bridge alignments that are perpendicular to the actual current flow to ensure the safety of navigation.
9. As a general rule, bridges should not be located in a bend or where crosscurrents can be expected. When more than one bridge is required in a given locality, the bridges should be close together with piers and fender systems in line or far enough apart to permit tows passing one bridge to become properly aligned for passage through the next bridge.

10. The required bridge horizontal and vertical clearances to accommodate a given design vessel (the largest vessel expected to use the waterway) should be determined based on the following factors in descending order of importance:
  - a. traffic pattern (one-way or two-way traffic);
  - b. design vessel beam, length and vertical height;
  - c. channel cross-section shape; current speed and direction;
  - d. quality and accuracy of aids to navigation; and
  - e. variability of channel direction and current flow.

**G. Waterway Designs**

1. Navigation channels can be classified into several types of cross sections. Understanding these types may help in understanding vessel navigational impacts. Figure 2-1 illustrates the three primary types of channels: shallow water, canal and trench, which are defined as follows:

- a. **Shallow Water** - Wide, unrestricted waterways without channel banks, found near the ocean end of port entrance channels and in large bays, usually provided with range markers and channel edge buoys. Vessel movements are influenced by substantial bottom effects but negligible bank forces (cushion and suction). Strong ship yawing forces (sideways movement) are often encountered from crosscurrent effects and wave action.
- b. **Canal** - Narrow, fully restricted channels with clear and visible banks, often with minimal or no aids to navigation. Vessels experience negligible yawing forces, since currents are aligned with the channel, except at turns. Strong bank effects (cushion and suction) result in vessels often being forced onto one side or another of the channel centerline.
- c. **Trench** - Dredged or open-type restricted channels, intermediate between canals and shallow water, with submerged banks on each side, usually provided with range markers and channel edge buoys or beacons. Vessel yawing forces from crosscurrents and wave effects are often present. Waves and winds are often a factor in navigation.



**Figure 2-1**  
**Three Primary Types of Channels**



**H. Determining Horizontal Clearance Requirements**

1. If a federal channel has been established, the authorized clearances for a new or modified bridge should completely span the authorized channel within practical engineering limits. The horizontal clearances for bridges over other waterways should be based on the following data and calculations:
  - a. Determine whether one-way or two-way vessel traffic is anticipated through the bridge site.
  - b. Ascertain the length and width (maximum beam) of the largest vessels or composite barge tows plying the waterway. This is known as a design vessel or design ship.
  - c. Determine the maximum currents for the waterway at the bridge site. Tidal currents are normally available from the National Oceanographic and Atmospheric Agency (NOAA). Tidal Current Tables and river discharge current data are published by the U. S. Geological Survey (USGS).
  - d. Determine the type of channel cross section at the bridge site (canal, trench or shallow water).
  - e. Determine whether there are extensive or little or no aids to navigation near the bridge site. Note that with a waterway designed for two-way traffic, there are always extensive aids to navigation.
  
2. Using the above information, enter Table 2-1 (Straight Reaches of a Waterway, Without Crosscurrents, Having One-Way Vessel Traffic) or Table 2-2 (Straight Reaches of a Waterway, Without Crosscurrents, Having Two-Way Vessel Traffic). Determine the beam multiplier. Multiply the beam multiplier times the maximum beam of the design vessel. This will provide the minimum horizontal clearance needed for a proposed bridge across one-way and two-way, straight waterways.

**TABLE 2-1**

**STRAIGHT REACHES OF A WATERWAY, WITHOUT CROSSCURRENTS, HAVING ONE-WAY VESSEL TRAFFIC**

Maximum Current (knots)	Beam Multipliers (Extensive aids to navigation seen near the bridge site)			Beam Multipliers (Little or no aids to navigation seen near the bridge site)		
	Canal	Trench	Shallow Water	Canal	Trench	Shallow Water
<b>0.0 to 0.59</b>	2.5	2.75	3.0	3.0	3.5	3.5
<b>0.6 to 1.59</b>	3.0	3.25	4.0	3.5	4.0	4.5
<b>1.6 to 3.0</b>	3.5	4.0	5.0	4.0	5.0	5.5

For example, for one-way vessel traffic with a standard barge width of 35 feet in a one way, straight canal channel with tidal currents of 1.5 knots and little or no aids to navigation, multiply 35 feet (beam) x 3.5 (beam multiplier) = 122.5 feet (horizontal clearance). This would be similar to the Intracoastal Waterway along the East Coast of Florida, which has a channel width and a Guide Clearance of 125 feet.

**TABLE 2-2**

**STRAIGHT REACHES OF A WATERWAY, WITHOUT CROSSCURRENTS, HAVING TWO-WAY VESSEL TRAFFIC**

Maximum Current (knots)	Beam Multipliers (normally two way traffic requires extensive aids to navigation)		
	Canal	Trench	Shallow Water
0.0 to 0.59	4.0	4.5	5.0
0.6 to 1.59	4.5	5.5	6.0
1.6 to 3.0	8.0	6.5	8.0

For example, for two-way vessel traffic with a standard 35-foot wide barge tow meeting a similar tow in a trench channel with tidal currents of 3.0 knots, multiply 35 feet (beam) x 6.5 (beam multiplier) = 227.5 feet (horizontal clearance).

3. The above calculations can be used to determine the minimum horizontal clearance requirements for waterways used by commercial and/or recreational vessels.
4. The horizontal clearance requirements for bridge projects involving large deep-draft waterways with maximum currents greater than 3.0 knots can be developed using computer models and Ship Simulator Design studies. Computer modeling and ship simulator studies are available through the USACE Waterway Experiment Station (WES), at Vicksburg, Mississippi, or other commercial facilities such as the Seamen’s Church Institute, Center for Maritime Education, at Paducah, Kentucky. Modeling and ship simulator studies funded by the Coast Guard require the prior approval of Commandant (G-OPT). Bridge permit applicants should be encouraged to fund such studies as part of their project development process if the horizontal clearance proposed is questionable.
5. Bridge crossings should be designed to be a minimum distance from bends in a waterway equal to five times the design vessel length for the waterway. Experiments conducted by the USACE have determined that this distance is needed to allow a tow or large vessel to align itself with the designated channel for safe passage through a bridge opening.
6. Proposed bridges should be designed to fully span waterways, if they are in a bend. If a full span is not feasible and a federal channel is involved, then consult with the

USACE to determine the exact channel width, including wideners, at the proposed crossing location and any anticipated increases in channel width.

- a. Since the swept path of a vessel making a turn in a bend of the waterway is wider than the path in a straight channel reach, a greater horizontal clearance is required in turns and bends.
  - b. A bridge permit applicant may need to consider arranging for a modeling or ship simulator design study to determine the necessary horizontal clearance requirements if the proposed bridge would be in a bend and cannot fully span the waterway.
7. In some instances, proposed horizontal clearances can be tested by placing temporary markers in the waterway to delineate the pier or fender locations at the bridge site and by arranging for a commercial tow or a Coast Guard vessel to transit the waterway. Comments from other waterway users can also be solicited through Broadcasts and the Local Notice to Mariners.

## **I. Determining Vertical Clearance Requirements**

1. The Coast Guard encourages construction of high-level fixed bridges, whenever practicable, to minimize potential conflict between land and waterborne modes of transportation. As discussed in Chapter 1, a balance between transportation modes is essential to further the strategic goals of tying America together through improvement and renovation of our national transportation infrastructure.
  - a. The vertical clearance requirement for fixed bridges is often a critical issue, which must be fully investigated and determined during project development and the bridge permitting process. The concept of a design vessel helps to establish vertical as well as horizontal clearance requirements.
  - b. Permit applicants should be encouraged to conduct waterway surveys as part of the application process to help determine vertical clearance requirements. These surveys will help identify existing and prospective vessels using the waterways that exceed established vertical guide clearances, and possibly require an increased clearance for a planned bridge.
2. The navigational evaluation should include a review of all bridges between the proposed site and other fixed bridges, both upstream and downstream, to determine the minimum vertical clearances available on the waterway. If a proposed fixed bridge will replace an existing drawbridge which has unlimited vertical clearance, it is necessary to determine whether the proposed bridge will accommodate existing and prospective navigation.
  - a. Discussions with vessel operators on the waterway, local marinas, and shipping companies will help in defining the mast heights of vessels using the waterway.

- b. State and local environmental permitting agencies and the USACE can provide information about planned marine facilities on the waterway that may attract larger vessels in the future.
  - c. Safety factors for variable wave heights created by wakes from passing vessels and wind directed currents for exposed bridges, as well as potential sea level rise, should be considered during these evaluations.
3. In many cases, major ports will strive to provide bridge clearances over entrance channels that are greater than those of other ports. This makes them competitive within the global market place. In other cases, especially for shallow-draft waterways, the established Guide Clearances may influence the type and size of vessels using a particular waterway. This is especially true with large recreational craft such as sailboats for which mast heights are often designed to allow passage under fixed bridges in a certain market area.
4. The Coast Guard does not attempt to establish the exact number of vessels that must be able to pass beneath a proposed fixed bridge. Under the bridge statutes we must ensure that bridge proposals meet the reasonable needs of navigation, not all of the needs. However, every effort should be made to reasonably accommodate existing and prospective navigation that may use the waterway in the future.
  - a. In some cases, alternate waterway routes may be available which will have minimum impact on navigational transit times.
  - b. In other cases, applicants may wish to mitigate the navigational impacts by relocating vessels or offering alternative moorings for impacted mariners.
  - c. These vessel restrictions and the proposed mitigation should be fully described in the Navigational Evaluation section of the Findings of Fact described in Chapter 4.

**J. Special Considerations When Determining Bridge Clearances for Inland River Systems**

1. Open rivers allow towboats to push as large a tow as the towboats can handle. For example, tows using the Mississippi River above St. Louis are restricted in size by the lock dimensions, however, extra barges are often carried alongside the towboat itself, “on the hip.” Further downstream, below St. Louis, tows may exceed 24 barges depending on the power of the towboat.
  - a. Some towboat companies will also combine tows between locks to conserve fuel, and then separate the tows when they approach a lock. These large tow sizes greatly increase the horizontal clearance requirements and may restrict the available waterway when uncoupling barges near a lock.

- b. Understanding these local towboat operations is an essential ingredient in determining proposed bridge clearance requirements and where bridge piers can be safely positioned within a waterway.
2. The swept path of a tow, or the width of the corridor a tow must occupy when transiting a particular reach of the river, is especially important when considering the placement of bridge piers. Unlike smaller canalized streams, open river navigation can extend from bank to bank well beyond the authorized channel limits. This is especially important when evaluating bridge clearances and pier locations for two-way traffic conditions.
3. Pooled rivers with locks and dams tend to have channels that are more stable in both depth and location. However, not all locks and dams are alike. Some structures are designed to allow tows to pass over the dam and bypass the lock when the river reaches high water stages. This seasonal variation may result in two navigable channels, one for high water and one for low water stages, normally on opposite sides of the river. Understanding these conditions, including where tows wait for lockages, is important when considering the proposed location of navigational spans and bridge piers.
4. In establishing the proper horizontal clearances for bridges over fast flowing rivers, the most important item is often proper pier placement based on the actual channel location and dimensions used by tows transiting the waterway.
  - a. As previously discussed, tows use the natural current flow of a descending river to navigate. This requires the location of the navigational openings to be over the actual usable channel.
  - b. These effective horizontal clearances must be wide enough to accommodate the full width of the corridor that vessels require when transiting a particular reach of a waterway, and should be measured normal to the axis of the channel. This will help compensate for channel skew.
5. Whenever there are multiple bridges along a waterway, the concept of “running the bridges” must be considered. Tows do not run through bridges one at a time. Instead, they navigate a reach of the river and often are unable to stop quickly if the channel is obstructed.
  - a. Therefore, if several bridges are in close proximity, it is important to understand how the river pilots approach the bridge openings, what navigational “marks” are used to transit several bridges, and whether a proposed new bridge will be compatible with these navigational concepts or may compromise safe bridge transits.
  - b. River pilots and the commercial towboat industry are the primary source of navigational information for river systems and should be consulted whenever new bridge construction and major modifications to existing bridge structures are being considered.

## **K. Guide Clearances**

1. Guide Clearances are described in Chapter 4. They are not intended to be regulatory in nature or form a legal basis for approving or denying a bridge permit application. However, they do provide guidance to potential bridge permit applicants regarding minimal clearances that would normally receive favorable consideration during the bridge permitting process.
  - a. Districts should periodically review the established Guide Clearances within their districts to ensure that changes in channel design and types and sizes of vessels using the waterways are reflected in the published clearances.
  - b. New waterways should be added when the level of navigation becomes significant. Normally, the horizontal clearances between bridge piers, including bridge fendering systems, should be equal to or greater than the local channel width.
  - c. In the absence of a designated federal channel, the above horizontal clearance calculations can be used to establish Guide Clearances for various waterways within the district boundaries.
2. Proposed bridges over deep-draft waterways should provide for the location of bridge piers well outside of the deep channel, the placement of which would cause a ship to run aground before colliding with the bridge piers or superstructure, thus causing potential loss of life. Use of fendering cells or “islands” can help deflect errant vessels and thereby avoid contact with the bridge structure. Bridges within shallow-draft waterways are normally required to have fendering systems installed to protect the bridge as well as navigation.
3. In some instances, bridge piers and other vertical members in shallow-draft waterways may be designed, if constructed to AASHTO standards, to withstand potential impact from the largest vessels known to use the waterway. It is the bridge owner’s responsibility to ensure that the proposed bridge can reasonably withstand potential vessel impacts, and in such case the bridge owner may request an exemption from the need for a fender system.
  - a. However, before authorization, the District Commander must determine whether the attachment of rub rails or other non-abrasive, non-sparking materials to piers or pilings adjacent to the navigational openings is needed to protect navigation.
  - b. In addition, possible future changes to the type, size and level of navigation may require a prospective fendering condition be included in the bridge permit (See example 5.61, Chapter 5).
  - c. In any event, the Findings of Fact should clearly document the fendering status of proposed bridge projects, particularly noting if pier design will withstand vessel hits.

**L. Bridge Repairs**

1. An on-site navigational evaluation should be conducted prior to authorizing bridge repairs that may impact waterway activity. Movable-span bridge repair often requires restricting the number of bridge openings in order to facilitate the repair work. These short-term deviations should only be authorized and published in the Federal Register as prescribed in Chapter 6 after a careful review of the potential impacts to the mobility and safety of navigation.
  - a. Whenever possible, periodic bridge openings should be scheduled to allow accumulated navigation to pass through the bridge. When strong tidal currents would impact safe transit of a bridge by a commercial tow, these periodic openings can be scheduled to allow transits during slack water.
  - b. In some instances, waterway currents, wind effects, channel limitations and traffic density may preclude vessels from safely holding for an extended period in the navigable channel near a closed bridge. Under these circumstances, every effort should be made to place a movable-span bridge in the open-to-navigation position during the repairs.
  - c. If repair schedules are not met, the bridge owner should be encouraged to minimize further impacts on navigation by working around-the-clock to expedite repairs.
2. Comments should be solicited from vessel operators using the waterway, either by Local Notice to Mariners (LNM) or through direct consultation, prior to authorizing any restrictions to navigation. In addition, consultation with the local Marine Safety Office (MSO) and their port safety committees would be appropriate to determine whether a safety zone may be needed to ensure the safety of the bridge and navigation.

**M. Navigation Considerations When Evaluating Proposed Changes to Drawbridge Regulations**

1. The guidelines and procedures for evaluating requests for the establishment, change, or revocation of regulations governing the operation of drawbridges across navigable waters of the United States are prescribed in Chapter 6.
  - a. The impact that any change from “on signal” operation of a drawbridge would have on the safety of navigation is a primary concern in the evaluation process. A delay in the opening of a drawbridge can only be authorized if vessels can safely wait for the opening.
  - b. Early notification of the proposed opening restrictions by LNM or marine broadcasts and publication in the FEDERAL REGISTER with a solicitation for comments is especially important.

2. The on-site evaluation should consider the holding conditions near the bridge, including the impact of wind and current on waiting vessels, crosscurrents, and cross-winds near the bridge, the width and depth of approach channels, the type and size of waiting vessels and their control/maneuverability, and the potential safety impact of vessels transiting the waterway that are not required to wait for a bridge opening.
  - a. Congestion near the bridge should be evaluated, especially that due to waterway traffic using nearby fueling docks, marinas, boat launch facilities and waterside restaurants. All of these entities may impact the safety of waiting vessels.
  - b. This may be further complicated by the lack of maneuverability of underpowered vessels that must turn around in the channel to avoid being carried by currents and winds into the closed bridge.
3. Whenever the on-site evaluation or responses to public notification indicates holding conditions or vessel accumulation near a bridge may jeopardize the safety of navigation, one should consider testing the proposed deviation (33 CFR 117.43) before authorizing a change in drawbridge operations. Restrictive regulations previously placed on a drawbridge may also have created unreasonable impacts on navigation, which should be tested to determine whether a change or regulation removal is warranted.
4. In some instances, drawbridge repairs such as painting, or replacement of superstructure materials or operating equipment, may require delays in bridge openings. A short delay to allow equipment to be removed from the leaves before openings would normally have minimal impact on navigation.
  - a. However, extensive delays or required advance notification for openings should only be authorized if bridge safety, or the protection of the marine environment, are considered critical issues.
  - b. As a part of the navigational evaluation, the procedures to be followed by the repair contractor should be reviewed to ensure that a reasonable balance is maintained between the needs of land and water transportation, and that navigation is not unreasonably impacted by delayed openings.
  - c. The volume and type of navigation using the waterway will often determine the amount of bridge opening flexibility that is necessary to maintain waterway safety.
5. As part of the navigational evaluation, a review of any recent Waterways Analysis and Management System (WAMS) studies and the USACE Waterborne Commerce of the United States publications may provide information regarding waterborne commerce near the bridge site.



- a. In addition, the waterway accident history near the bridge may be available through the Coast Guard Incident Investigation data contained in the Marine Information for Safety and Law Enforcement (MISLE) data maintained by the local Coast Guard Sector.
  - b. District bridge staffs are encouraged to consult with towboat operators and to take the opportunity to ride with commercial vessels through the bridge sites, whenever possible, to better understand the potential navigational impacts of any proposed changes in drawbridge operating regulations.
6. Commercial tows and other deep-draft vessels must normally remain within the dredged channel to await a bridge opening in order to avoid groundings and the resultant vessel or environmental damage.
- a. If a review of bridge tender logs and other waterway data indicate a large number of vessels, including tugs with tows, will be required to wait near the bridge for openings during short-term closures, it may be appropriate to consult with the local Coast Guard Sector regarding possible establishment of a safety zone or regulated navigation area, as appropriate, to minimize risk of vessel collisions or groundings.
  - b. Whenever feasible, repair work should be conducted with the draw in the open position to minimize impacts on navigation.
7. Applicants for bridge repair or construction permits and regulation change proposals should also be required to submit a Maintenance of Traffic (MOT) plan which describes how highway and waterway traffic will be handled during the project. Advance planning will reduce unexpected delays for both modes of transportation.
- a. Temporary drawbridge opening deviations, channel relocations, removal of fender systems and removal of replaced bridges must be carefully planned to minimize impacts to navigation. In many instances, temporary channels will be established, or existing channels will be relocated, as part of the bridge construction.
  - b. Temporary bridges must meet the minimum clearances provided by the permanent bridge and the needs of all modes of transportation must be considered equally during the repair/construction efforts.
  - c. Temporary aids to navigation and bridge lighting may also be required to ensure the safety of navigation. The placement of these aids must be coordinated with the bridge contractor and the District Aids to Navigation Branch.

**N. Navigational Considerations When Developing Environmental Documents in Support of Bridge Permitting Actions**

1. Navigation and bridge permitting jurisdiction determinations are based upon criteria described in 33 CFR 2.05-25 and Chapter 1 of this manual. If a waterway has been determined to be navigable waters of the United States, but does not qualify as an Advance Approval Waterway and is not exempted by the Federal Highway Administration under Title 23, U. S. Code, then a permit will be required to construct a bridge over that waterway.
  - a. Several navigational issues must be addressed during the permitting process. The proposed design and location of a bridge can be evaluated on site using the navigational evaluation criteria previously described in this chapter.
  - b. Each alternative described in the environmental document should summarize the navigational impacts. This should include a description of the bridge alignment in relation to the current flow, the vertical and horizontal clearances, the design vessel length, the beam and draft, the navigation traffic pattern (one-way or two-way vessel traffic), the wind and wave effect, the current speed and the direction, visibility, quality and spacing of aids to navigation near the bridge.
2. The Memorandums of Agreement in Enclosures (1) through (3) obligate the Coast Guard and other agencies to cooperate in ensuring the navigational issues are fully described in the environmental documents. Such description may include:
  - a. A description of the alternative alignments and their relationship to the navigable channels and current flows.
  - b. The vertical and horizontal clearances.
  - c. The location and visibility of bridge tender houses, and the location and designs of protective fender systems and clearance gauges, as appropriate.
  - d. The proposed disposition or retention of historic bridges and their relationship to the safety of navigation.
  - e. The construction-related impacts of a bridge project on navigation, and how land and waterborne traffic will be maintained during and after construction.

**O. Navigational Considerations When Evaluating Potentially Unreasonably Obstructive Bridges**

1. Chapter 7 provides guidance in conducting the Preliminary and Detailed Investigations of a potentially unreasonably obstructive bridge, as described in 33 CFR Part 116.

- a. In particular, the navigation benefits and benefit-to-cost ratio computations address the tangible annual savings related to navigation that would be realized by removing the obstructive features of the bridge.
  - b. These include: elimination of commercial and recreational vessel delays caused by the bridge, elimination of vessel accidents caused by the limited clearances of the bridge, and other savings such as eliminating a need for extra pilots, crew and tugs, eliminating environmental delays (bad weather, tides, cross-currents, wind, etc.), and eliminating multiple trips due to size limitations of barge configurations, plus other savings.
  - c. Once a bridge has been identified as a potentially unreasonable obstruction to navigation, it is apparent that the impact of a bridge on navigation is the principal focus of all investigations under the Truman-Hobbs Act.
2. The criteria described in the navigational evaluation within this chapter can also be used during a Truman-Hobbs investigation to further describe impacts of existing bridge locations and designs on our national security, the safety and mobility of intermodal transportation, and the potential for economic development within the waterway system. In particular, the Preliminary Investigation includes an analysis of the existing bridge design and location to determine whether the navigational clearances are unreasonably restrictive and what navigational problems are created by the restrictive clearances.
    - a. The history of accidents at the bridge site and the costs associated with the accident history are integral parts of the navigational evaluation required as part of this investigation.
    - b. Potential delays to military deployments and commercial vessel movements due to restrictive clearances are significant national security and mobility issues.
    - c. The inability of waterways to sustain modern vessel designs also greatly limits the potential for economic development within the waterway systems and impedes expansion of the marine transportation system.
  3. In some instances, restrictive navigational clearances caused by the age of an existing bridge, combined with strong crosscurrents, may force tows to await slack water before transiting through a bridge.
    - a. The use of lay-up dolphins or other mooring arrangements upstream and downstream of a bridge by vessels waiting for safe passage are considered temporary measures which should be corrected as soon as possible by increasing the bridge clearances. This is accomplished whenever possible by the bridge owner through planned replacement or alteration of the restrictive bridge.

- b. It is important to note that such delays can seriously impact the competitiveness of waterborne transportation, which ultimately will cause a reduction in the amount of commerce using the restricted waterway.

**P. Coordination With Other Coast Guard Activities**

1. All aspects of the bridge permitting, regulatory, and law enforcement requirements of the BAP should be coordinated with Coast Guard field commands, as appropriate.
  - a. The Coast Guard Sectors, Captain of the Ports, Coast Guard Stations and Coast Guard Cutters offer a wealth of professional experience in navigational issues which can be used during navigational evaluations.
  - b. These commands can assist the district bridge staff by providing navigational information for use in the jurisdictional determinations, site-specific information about design vessels that use a particular waterway, and by describing the potential impacts of current flow, shoaling, and wind effects on proposed bridge alignments.
2. These commands should also be consulted regarding proposed closures or restricted openings of drawbridges and asked to review all public notices describing proposed bridge construction across navigable waterways within their areas of responsibility. Such early consultation and partnering sessions may help identify serious navigational issues that can be more fully investigated and mitigated during the bridge permitting and regulatory processes. They can also help with testing proposed pier locations and horizontal clearances at bridge sites within their area of responsibility.

## TABLE OF ENCLOSURES

- Encl. (1) U.S. Coast Guard/Federal Highway Administration on Coordinating the Preparation and Processing of Environmental Documents
- Encl. (2) USCG/FHWA Procedures for Handling Projects Which Require a USCG Bridge Permit
- Encl. (3) U. S. Coast Guard/Chief of Engineers MOA
- Encl. (4) Memorandum of Understanding & Joint Action Plan; USCG Auxiliary Support of the Bridge Administration Program
- Encl. (5) Guidance for Determining the Proper Environmental Document When Assessing the Impacts on Historic Bridges
- Encl. (6) Bridge Lighting Guide
- Encl. (7) Environmental Control Laws, Executive Orders, and Regulations Requiring Compliance, as applicable, with BAP Actions
- Encl. (8) Bridge Administration Acronym List

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**U.S. Coast Guard/Federal Highway Administration  
Memorandum of Understanding on Coordinating the  
Preparation and Processing of Environmental Documents**

**I. Purpose**

The purpose of this Memorandum of Understanding (MOU) is to avoid unnecessary duplication of effort by the Coast Guard and the Federal Highway Administration (FHWA), both agencies of the Department of Transportation (DOT), in the preparation and processing of environmental documents pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4332(2)(c)) and other federal environmental statutes and orders for bridge projects requiring approvals of both the FHWA and the Coast Guard. The NEPA requires the Secretary of Transportation to make explicit analyses of environmental consequences of proposed major federal actions under DOT jurisdiction and prepare detailed statements which analyze and consider the impact of these proposed actions upon the environment. The procedures set forth in this MOU will be utilized to strengthen the early coordination between the Coast Guard and FHWA prior to and during the development of the highway section and environmental processing.

**II. Definition**

The definitions contained in the Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508) are applicable to this MOU as well as the following:

1. Bridge: The term "bridge and its approaches," as used in 33 CFR 114.05, should be defined in each case by applying proper engineering sense to the facts of the case. The term may be defined generally as including all work integral to the structure itself. For example, if a bridge deck's grade is the same as the grade of the highway approach to it, the point where the abutment terminates would be considered the limit of the bridge. In a case where the bridge deck is at a higher elevation than the approach highway leading up to it, with a change in grade required to reach that elevation, the point where a change in grade in the approach highway occurs would be considered the limit of the bridge. Other bridges, whether highway, railroad, industrial conveyors, pipelines, etc., excepting aerial transmission lines, which are reconstructed, removed, relocated, or otherwise involved in the federal assistance project requiring approval of the location and plans by the Commandant, U.S. Coast Guard, are included in this definition.
2. Bridge Permit: The approval of location and plans of a bridge, pursuant to the provisions of 33 U.S.C. 401, 491 et seq., 511 et seq., 525 et seq., and 535, and Acts of Congress authorizing the construction of bridges, including international bridges.
3. Coast Guard: This shall mean the Commandant of the Coast Guard; Assistant Commandant for Operations; Chief, Office of Bridge Administration; or Commander of a Coast Guard District to the extent of the authority delegated. However,

throughout sections IV and V of this MOU, unless otherwise stated, Coast Guard shall mean the Commander of a Coast Guard District.

4. FHWA: This shall mean the Administrator, Federal Highway Administration; the Regional Federal Highway Administrator; or Division Administrator (Division Engineer for direct federal highway projects) to the extent of the authority delegated. However, throughout sections IV and V of this MOU, unless otherwise stated, FHWA shall mean the Division Administrator.
5. Highway Agency (HA): The agency with the primary responsibility for initiating and carrying forward the planning, design, and construction of bridges and highways. For bridges and highways financed with Federal-aid highway funds, the HA will normally be the appropriate State highway department. For bridges and highways financed with other funds, such as National Forest, and National Park roads and highways, etc., the HA will be the appropriate Federal or State agency.
6. Federally Aided Highway Project: Highway and bridge projects constructed with the assistance of the FHWA-administered funds, including projects financed from funds transferred to the FHWA from other agencies.
7. Navigable Waters of the United States: For purposes of bridge administration, "navigable water of the United States" means the following (unless specifically declared otherwise by Congress):
  - a. The territorial sea.
  - b. Internal waters subject to tidal influence.
  - c. Internal waters not subject to tidal influence, which:
    - (1) Are or have been used, or are or have been susceptible for use, by themselves or in connection with others, as highways for substantial interstate or foreign commerce, notwithstanding obstructions that require portages; or
    - (2) A governmental or nongovernmental body having expertise in waterway improvement determines or has determined to be capable of improvement at a reasonable cost (a favorable balance between cost and need) to provide, by themselves or in connection with others, highways for substantial interstate or foreign commerce.

### III. **Lead Agency for Environmental Processes**

Except as provided for in Section 144(h) of Title 23, United States Code, the Coast Guard must approve (issue a permit for) the location and plans for highway bridges crossing navigable waters of the United States. A significant number of these bridges are constructed with the assistance of federal funds administered by the FHWA.



The actions by the FHWA and the Coast Guard require an evaluation under NEPA, as implemented by the CEQ Regulations (40 CFR 1500-1508), DOT Order 5610.1C, applicable parts of the operating agencies' directives (FHPM 7-7-2 and Commandant Instruction M16475.1C), and other federal environmental statutes and orders. The CEQ regulations strongly encourage that a single agency (lead agency) be designated to handle the NEPA responsibilities where related actions by several federal agencies are to be taken. The lead agency, in such instances, assumes the responsibility for consultation with other agencies, coordinating necessary environmental studies and evaluations, and preparation of any NEPA-related determination or document for review by the cooperating federal agencies prior to making it available for public review.

The Coast Guard and the FHWA agree that, when a highway section requires an action by both FHWA and the Coast Guard, the FHWA will normally serve as the lead agency for the preparation and processing of environmental documents.

#### IV. **Responsibility of the FHWA**

A. FHPM 7-7-2 defines three classes of actions which prescribe the level of documentation required in the NEPA process. These are:

1. Class I (EIS's) - Actions that require an EIS.
2. Class II (Categorical Exclusions) - Actions that do not individually or cumulatively have a significant effect on the environment.
3. Class III (Environmental Assessments) - Actions in which the significance of the impact on the environment is not clearly established. All actions that are not Class I or Class II are Class III. For these actions, an Environmental Assessment (EA) must be prepared culminating in a decision to prepare an EIS or a Finding of No Significant Impact (FONSI).

The above documents shall demonstrate, where applicable, consideration of and compliance with the requirements of other federal environmental statutes and orders, including but not limited to:

23 U.S.C. 138 and 49 U.S.C. 1653(f) (Section 4(f) of the Department of Transportation Act of 1966);

16 U.S.C. 461, et seq., Archeological and Historic Preservation Act and 23 U.S.C. 3054;

16 U.S.C. 662, Section 2 of the Fish and Wildlife Coordination Act;

16 U.S.C. 1452, 1456, Sections 303 and 307 of the Coastal Zone Management Act of 1972;

16 U.S.C. 1536, Section 7 of the Endangered Species Act of 1973;

33 U.S.C. 1251, et seq., Clean Water Act of 1977;

42 U.S.C. 300(f), et seq., Safe Drinking Water Act of 1974;

42 U.S.C. 4371, et seq., Environmental Quality Improvement Act of 1970;

42 U.S.C. 4601, et seq., Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970;

42 U.S.C. 4901, et seq., Noise Control Act of 1972;

42 U.S.C. 7401, et seq., Clean Air Act;

42 U.S.C. 2000(d)-(d)4, Title VI of the Civil Rights Act of 1964;

Executive Order 11514, Protection and Enhancement of Environmental Quality, as amended by Executive Order 11991, dated May 24, 1977;

Executive Order 11593, Protection and Enhancement of the Cultural Environment, dated May 13, 1971, implemented by DOT Order 5650.1, dated November 20, 1972;

Executive Order 11988, Floodplain Management, dated May 24, 1977, implemented by DOT Order 5650.2, dated April 23, 1979;

Executive Order 11990, Protection of Wetlands, dated May 24, 1977, implemented by DOT Order 5660.1A, dated August 24, 1978.

- B. It is the intent of this MOU that the data developed and the evaluation of impacts upon the human environment set forth in the appropriate environmental document will satisfy the requirements of both FHWA and the Coast Guard. In order to achieve this result, it is incumbent upon FHWA to initiate early and to maintain continuing coordination with the Coast Guard throughout the NEPA phase of project development. Accordingly, it is the responsibility of FHWA to take the following actions:
1. As the lead agency, FHWA shall be responsible for the preparation of the appropriate documentation for Class I, II, or III projects in accordance with the requirements of FHPM 7-7-2.
  2. The FHWA shall consult with the Coast Guard prior to determining that any project which may require a Coast Guard bridge permit is a Class I, II, or III action.

3. For each project that may require a Coast Guard bridge permit and is to be processed as a Class I or Class III action, FHWA will request that the Coast Guard become a cooperating agency.
4. For Class I projects, FHWA will continue to consult with the Coast Guard during the preparation of both the draft and final EIS.
5. For Class II projects, FHWA will provide the Coast Guard with information which documents that a project is a categorical exclusion.
6. For Class III projects, FHWA will consult with the Coast Guard during the preparation of both the environmental assessment, and if so determined, the FONSI.
7. The FHWA will consult with the Coast Guard relative to the need for highway and Coast Guard public hearing opportunities and consider a joint public hearing where appropriate.
8. If FHWA determines, pursuant to Section 144(h) of Title 23, United States Code, that a project is exempt from a Coast Guard permit, it shall so notify the Coast Guard of same if FHWA believes that sufficient navigation exists to require the establishment, maintenance, and operation of lights and signals as required under 14 U.S.C. 685.
9. When a difference of opinion arises between the FHWA Division Administrator and the Coast Guard District Commander relative to the proper class of action or adequacy of environmental documentation, the FHWA Division Administrator shall meet with the Coast Guard District Commander and attempt to resolve the issue. If the issue is not resolved, the FHWA Division Administrator shall so notify the FHWA Regional Administrator who, in turn, shall consult with the District Commander. If the issue is not resolved at the FHWA Regional Office level, the Regional Administrator shall refer it to the FHWA Associate Administrator for Right-of-Way and Environment for appropriate handling.
10. The FHWA will ensure that the environmental documentation submitted to the Coast Guard with the permit application is complete with respect to satisfying NEPA and other federal environmental statutes and orders.

**V. Responsibility of the Coast Guard**

It is the responsibility of the Coast Guard to take the following actions:

1. The Coast Guard shall cooperate with and provide guidance to FHWA and the HA during the determinations of class of actions and in the preparation of appropriate environmental documentation relative to its areas of jurisdiction.
2. The Coast Guard will furnish names of waterway organizations to FHWA and the HA with whom consultation should be made during the development of environmental studies and to whom copies of the draft environmental documents should be sent for review.
3. Provided coordination has been accomplished in accordance with this MOU, the Coast Guard will ordinarily accept FHWA's environmental documentation as satisfactory compliance with NEPA for the purpose of processing the bridge permit application.
4. Where it is necessary for the Coast Guard to hold a hearing or public review of the navigational aspects of the proposal, the Coast Guard notice will make reference to the approved FHWA environmental documentation. It is not the intent of the Coast Guard notice to invite review and comment on approved FHWA environmental documentation.

Concur R. A. BARNHART /S/  
Federal Highway Administrator

Concur J. B. HAYES /S/  
Commandant, U.S. Coast Guard

Date ----- 27 April 1981 -----

Date ----- 6 May 1981 -----


**Coast Guard/FHWA Procedures for Projects Which Require a Coast Guard Bridge Permit**

<p align="center"><b>Federal Highway Administration (FHWA/State) Activities</b></p>	<p align="center"><b>U.S. Coast Guard Activities</b></p>
<p>1. <i>System Planning Activities</i> – Notify Coast Guard of projects on plan or Transportation Improvement Program that may require a bridge permit. (optional)</p>	
<p>2. <i>Project Initiation Activities</i></p>	
<p>3. <i>Preliminary Environmental/Location Studies</i> - Assess potential for Bridge Permit and Coast Guard involvement early in the project development process.</p>	<p>3. Become involved early in process at FHWA's request.</p>
<p>3(a) <i>Data gathering</i> - Establish a Coast Guard contact (usually a Coast Guard District Office) and compile applicable information regarding location of potential crossing, i.e. waterway opening, waterway characteristics, type of waterway navigation, etc.</p>	
<p>3(b) <i>Determine if a Coast Guard permit is required</i> - Make 23 U.S.C. 144 (h) determination based on information obtained in 3(a) and through coordination with Coast Guard as per 23 CFR 650.805-807 (Subpart H).</p>	<p>3(b) Timely consult with FHWA/HA on permit jurisdictional issues. District will respond to FHWA/HA consultations within 30-days.</p>
<p>3(c) <i>Permit Pre-Application Consultation</i> - Coordinate with Coast Guard to determine information needed for meeting requirements of a Bridge Permit. Information needed by Coast Guard could include a description of overall project, proposed bridge design concepts, waterway location, opening and height clearances, presence and disposition of existing bridge(s), etc. and preliminary environmental information.</p>	<p>3(c) Assess navigational needs and assist FHWA/State with draft EIS or EA; consider, as appropriate, preliminary public notice of project locations and evaluation of possible effects on waterway. Advise FHWA/State whether the proposed project meets the reasonable needs of navigation or is controversial.</p>


<p>3(d) <i>Determine the Level of NEPA Environmental Documentation (CE, EA, or EIS)</i> – Based on project information, determine appropriate environmental class of action. For projects involving historic bridges, apply the provisions of Section 106 and Section 4(f) and the FHWA/Coast Guard guidance MOU of January 7, 1985. Coordinate with the Coast Guard using applicable guidelines. For multi-state bridge projects make sure that all of the affected State DOTs and responsible jurisdictions and oversight agencies carry out appropriate coordination efforts.</p>	<p>3(d) Become involved early in the process upon FHWA’s request. Cooperate with FHWA in determining appropriate level of environmental documentation. Coast Guard will normally accept a FHWA CE provided it does not conflict with FHWA/Coast Guard guidance MOU of January 7, 1985 or other guidance.</p>
<p>3(e) <i>Bridge Permit Coordination</i> - Continue coordination with Coast Guard regardless of level of environmental class of action. For EIS projects formally request Coast Guard to be cooperating agency as per CEQ Regulations. FHWA will advise FHWA headquarters if there is a problem coordinating with Coast Guard field representative.</p>	<p>3(e) Coast Guard will meet and cooperate with the FHWA and the HA whenever requested to resolve problems and avoid unnecessary project delays.</p> <p>Coast Guard will serve as a cooperating agency when requested and will so advise FHWA within 30 days of receiving request.</p>
<p>4(a) <i>Environmental Documentation</i> - Prepare necessary environmental documentation based on project analysis. Include discussion of Bridge Permit application information as established in 3(d), potential impacts to the environment, and a discussion of results of ongoing coordination with the Coast Guard.</p>	<p>4(a) Comment on environmental documentation concentrating on the bridge(s) and approaches, with particular emphasis on adequacy of proposed clearances.</p>
<p>4(b) <i>Joint FHWA/State and Coast Guard Public Involvement</i> – Coordinate with the Coast Guard to determine if joint efforts for public notices, meetings, and hearing(s), especially in controversial projects, are applicable.</p>	<p>4(b) Participate in joint public notice and hearing(s): Where requested by FHWA/State When sufficient information is available on a given bridge to avoid separate Coast Guard hearing.</p> <p>Coast Guard will hold/issue joint public hearings/notices whenever sufficient information is provided on bridge location and clearances.</p>

<p>5. <i>Environmental Documentation</i> – Continue environmental analysis, select preferred alternative and complete environmental documentation, furnish preliminary environmental documentation to Coast Guard for review, as appropriate, respond to comments received on navigation and environmental aspects of highway bridges. If the Coast Guard has not provided comments on the bridge permit related aspects, contact the Coast Guard and obtain their views on the adequacy of the current bridge permit information including navigational clearances.</p>	<p>5. Upon request, assist in preparing responses to any navigational issues received on environmental document.</p> <p>Review preliminary final EIS or FONSI and comment, as appropriate.</p>
<p>6. <i>FHWA approval of Final environmental documentation</i> - Complete permit application as required. Coordinate with Coast Guard to ensure adequacy of Permit information. If Programmatic Section 4(f) is utilized, provide Coast Guard with the supporting information for determining its applicability, including alternatives, mitigation measures, and Section 106 FHWA/SHPO MOA coordination.</p>	<p>6. If bridge impacts are adequately addressed in environmental documentation, Coast Guard will adopt bridge related portions of EIS, prepare own FONSI based on applicant prepared EA, and concur with any FHWA Programmatic Section 4(f). Coast Guard field bridge staff will cooperate with FHWA/HA to ensure bridge impacts are adequately addressed.</p>
<p>7. <i>Permit Application</i> – Whenever practicable submit application for Coast Guard Bridge Permit. (Permit application(s) may include alternate bridge designs.) Resolve any outstanding issues.</p>	<p>7. When permit application is included, review for completeness and issue formal public notice.</p>


<p>8. <i>Permit Application</i> – If permit application has not been previously submitted, apply for permit as soon as practicable.</p>	<p>8(a) For applications submitted after approval of final EIS or FONSI, District reviews application and issues formal public notice.</p> <p>8(b) District concurs in resolution of any outstanding issues; forwards permit application with recommendation to Washington Headquarters or acts on permit application where appropriate.</p>
<p>9. <i>Complete bridge design</i> - If alternate designs result, notify Coast Guard of alternate design within 30 days of bid award.</p>	

  
FREDERICK SKAER  
Director, Office of National Environmental  
Policy Act Facilitation  
Federal Highway Administration

Date: 12-10-2001

  
N. E. MPRAS  
Chief, Office of Bridge Administration  
U. S. Coast Guard  
By direction of the Commandant

Date: DEC - 6 2001

  
JAMES D. COOPER  
Director, Office of Bridge Technology  
Federal Highway Administration

Date: 12-16-01



**U. S. Coast Guard/Chief of Engineers**

**Memorandum of Agreement**

1. Purpose and Authority:

A. The Department of Transportation Act, the Act of October 15, 1966, P.L. 89-670, transferred to and vested in the Secretary of Transportation certain functions, powers and duties previously vested in the Secretary of the Army and the Chief of Engineers. By delegation of authority from the Secretary of Transportation (49 CFR 1.46(c)) the Commandant, U.S. Coast Guard, has been authorized to exercise certain of these functions, powers and duties relating to bridges and causeways conferred by:

(1) the following provision of law relating generally to drawbridge operating regulations: Section 5 of the Act of August 18, 1894, as amended (28 Stat. 362; 33 U.S.C. 499);

(2) the following law relating generally to obstructive bridges; The Act of June 21, 1940, as amended (Truman-Hobbs Act)(54 Stat. 497; 33 U.S.C. 511 et seq.);

(3) the following laws and provisions of law to the extent that they relate generally to the location and clearances of bridges and causeways in the navigable waters of the United States:

(a) Section 9 of the Act of March 3, 1899, as amended (30 Stat. 1151; 33 U.S.C. 401);

(b) The Act of March 23, 1906, as amended (34 Stat. 84; 33 U.S.C. 491 et seq.); and

(c) The General Bridge Act of 1946, as amended (60 Stat. 847; 33 U.S.C. 525 et seq.) except Sections 502(c) and 503.

B. The Secretary of the Army and The Chief of Engineers continue to be vested with broad and important authorities and responsibilities with respect to navigable waters of the United States, including, but not limited to, jurisdiction over excavation and filling, design flood flows and construction of certain structures in such waters, and the prosecution of waterway improvement projects.

C. The purposes of this agreement are:

(1) To recognize the common and mutual interest of the Chief of Engineers and the Commandant, U.S. Coast Guard, in the orderly and efficient administration of their respective responsibilities under certain federal statutes to regulate certain activities in navigable waters of the United States;

(2) To clarify the areas of jurisdiction and the responsibilities of the Corps of Engineers and the Coast Guard with respect to:

- (a) the alteration of bridges;
    - (1) in connection with Corps of Engineers waterway improvement projects; and
    - (2) under the Truman-Hobbs Act;
  - (b) the construction, operation and maintenance of bridges and causeways as distinguished from other types of structures over or in navigable waters of the United States;
  - (c) the closure of waterways and the restriction of passage through or under bridges in connection with their construction, operation, maintenance and removal; and
  - (d) the selection of an appropriate design flood flow for flood hazard analysis of any proposed water opening.
- (3) To provide for coordination and consultation on projects and activities in or affecting the navigable waters of the United States.

In furtherance of the above purposes the undersigned do agree upon the definitions, policies and procedures set forth below.

2. Alteration of Bridges in or Across Navigable Waters Within Corps of Engineers Projects:

A. The Chief of Engineers agrees to advise and consult with the Commandant on navigation projects contemplated by the Corps of Engineers which require the alteration of bridges across the waterways involved in such projects. The Chief of Engineers also agrees to include in such project proposals the costs of alterations, exclusive of betterments, of all bridges within the limits of the designated project which after consultation with the Commandant he determines to require alteration to meet the needs of existing and prospective navigation. Under this concept the federal costs would be furnished under the project.

B. The Commandant of the Coast Guard agrees to undertake all actions and assumes all responsibilities essential to the determination of navigational requirements for horizontal and vertical clearances of bridges across navigable waters necessary in connection with any navigation project by the Chief of Engineers. Further, the Commandant agrees to conduct all public proceedings necessary thereto and establish guide clearance criteria where needed for the project objectives.

3. Alteration of Bridges Under the Truman-Hobbs Act:

The Commandant of the Coast Guard acknowledges and affirms the responsibility of the Coast Guard, under the Truman-Hobbs Act, to program and fund for the alteration of bridges which, as distinct from project related alterations described in paragraph 2 herein, become unreasonable obstructions to navigation as a result of factors or changes in the character of navigation and this agreement shall in no way affect, impair or modify the powers of duties conferred by that Act.

4. Approval, Alteration and Removal of Other Bridges and Causeways:

A. General, Definitions. For purposes of this Agreement and the administration of the statutes cited in 1.A.(3) above, a "bridge" is any structure over, on or in the navigable waters of the United States which (1) is used for the passage or conveyance of persons, vehicles, commodities and other physical matter, and (2) is constructed in such a manner that either the horizontal or vertical clearance, or both, may affect the passage of vessels or boats through or under the structure. This definition includes, but is not limited to, highway bridges, railroad bridges, foot bridges, aqueducts, aerial tramways and conveyors, overhead pipelines and similar structures of like function together with their approaches, fenders, pier protection systems, appurtenances and foundations. This definition does not include aerial power transmission lines, tunnels, submerged pipelines and cables, dams, dikes, dredging and filling in, wharves, piers, breakwaters, bulkheads, jetties and similar structures and works (except as they may be integral features of a bridge and used in its construction, maintenance, operation or removal; or except when they are affixed to the bridge and will have an effect on the clearance provided by the bridge) over which jurisdiction remains with the Department of the Army and the Corps of Engineers under Sections 9 and 10 of the Act of March 3, 1899, as amended (33 U.S.C. 401 and 403). A "causeway" on both sides of the road, and which is constructed in or affects navigation, navigable waters and design flood flows.

B. Combined Structures and Appurtenances. For purposes of the Acts cited in 1.A.(3) above, a structure serving more than one purpose and having characteristics of either a bridge or causeway, as defined in 4.A., and some other structure, shall be considered as bridge or causeway when the structure in its entirety, including its appurtenances and incidental features, has or retains the predominant characteristics and purpose of a bridge or causeway. A structure shall not be considered a bridge or causeway when its primary and predominant characteristics and purpose are other than those set forth above and it meets the general definitions above only in a narrow technical sense as a result of incidental features. This interpretation is intended to minimize the number of instances which will require an applicant for a single project to secure a permit or series of permits from both the Department of Transportation and the Department of the Army for each separate feature or detail of the project when it serves, incidentally to its primary purpose, more than one purpose and has features of either a bridge or causeway and features of some other structure. However, if parts of the project are separable and can be fairly and reasonably characterized or classified in an engineering sense as separate structures, each such structure will be so treated and considered for approval by the agency having jurisdiction thereover.

C. Alteration of the Character of Bridges and Causeways. The jurisdiction of the Secretary of Transportation and the Coast Guard over bridges and causeways includes authority to approve the removal of such structures when the owners thereof desire to discontinue their use. If the owner of a bridge or causeway discontinues its use and wishes to remove or alter any part thereof in such a manner that it will lose its character as a bridge or causeway, the Coast Guard will normally require removal of the structure from the waterway in its entirety. However, if the owner of a bridge or a causeway wishes to retain it in whole or in part for use other than for operation and maintenance as a bridge or causeway, the proposed structure will be considered as coming within the jurisdiction of the Corps of Engineers. The Coast Guard will refer requests for such uses to the Corp of Engineers for consideration. The

Corps of Engineers agrees to advise the Commandant of the receipt of an application for approval of the conversion of a bridge or causeway to another structure, no residual jurisdiction over the structure will remain with the Coast Guard. However, if the Corps of Engineers does not approve the proposed conversion, then the structure remains a bridge subject to the jurisdiction of the Coast Guard.

5. Closure of Waterways and Restriction of Passage through or under Bridges:

Under the statutes cited in Section 1 of this Memorandum of Agreement, the Commandant must approve the clearances to be made available for navigation through or under bridges. It is understood that this duty and authority extends to and may be exercised in connection with the construction, alteration, operation, maintenance and removal of bridges, and includes the power to authorize the temporary restriction of passage through or under a bridge by use of falsework, piling, floating equipment, closure of draws, or any works or activities which temporarily reduce the navigation clearances and design flood flows, including closure of any or all spans of the bridge. Moreover, under the Ports and Waterways Safety Act of 1972, Public Law 92-340, 86 Stat. 424, the Commandant exercises broad powers in waterways to control vessel traffic in areas he determines to be especially hazardous and to establish safety zones or other measures for limited controls or conditional access and activity when necessary to prevent damage to or the destruction or loss of, any vessel, bridge, or other structure on or in the navigable waters of the United States. Accordingly, in the event that work in connection with the construction, alteration or repair of a bridge or causeway is of such a nature that for the protection of life and property navigation through or in the vicinity of the bridge or causeway must be temporarily prohibited, the Coast Guard may close that part of the affected waterway while such work is being performed. However, it is also clear that the Secretary of the Army and the Chief of Engineers have the authority, under Section 4 of the Act of August 18, 1894, as amended, (33 U.S.C. 1), to prescribe rules for the use, administration and navigation of the navigable waters of the United States. In recognition of that authority, and pursuant to Section 102(c) of the Ports and Waterways Safety Act, the Coast Guard will consult with the Corps of Engineers when any significant restriction of passage through or under a bridge is contemplated to be authorized or a waterway is to be temporarily closed.

6. Coordination and Cooperation Procedures.

A. District Commanders, Coast Guard Districts, shall send notices of applications for permits for bridge or causeway construction, modification, or removal to the Corps of Engineers Divisions and Districts in which the bridge or causeway is located.

B. District Engineers, Corps of Engineers, shall send notices of applications for permits for other structures or dredge and fill work to local Coast Guard District Commanders.

C. In cases where proposed structures or modifications or structures do not clearly fall within one of the classifications set forth in paragraph 4.A above, the application will be forwarded with recommendations of the reviewing officers through channels to the Chief of Engineers and the Commandant of the Coast Guard who shall, after mutual consultation, attempt to resolve the questions.

D. If the above procedures fail to produce agreement, the application will be forwarded to the Secretary of the Army and Secretary of Transportation for their determination.

E. The Chief of Engineers and the Commandant, U. S. Coast Guard, pledge themselves to mutual cooperation and consultation in making available timely information and data, seeking uniformity and consistency among field offices, and providing timely and adequate review of all matters arising in connection with the administration of their responsibilities governed by the Acts cited herein.

DATE: ----- 03/21/73 -----

SIGNED: C. R. BENDER /S/

DATE: 18 APRIL 1973

SIGNED: F. J. CLARKE /S/