

Reader 3111

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

UNITED STATES GOVERNMENT

memorandum

Subject: Motorist Warning System on Bridges
Subject to Ship Collisions

Date: ~~DEC~~ 8 1980

From: Chief, Bridge Division
Office of Engineering
Washington, D.C. 20590

Reply to
Attn. of: HNG-31

To: Regional Federal Highway Administrators
Regions 1 - 10

Several bridge failures involving the collapse of a bridge span have occurred in the recent past as a result of the collision of a ship with the bridge. In the immediate aftermath of such an accident, the potential exists for drivers to be unaware of the danger and to drive off the damaged bridge before warning devices and barricades can be installed. This hazard is compounded by the fact that such accidents are likely to occur at night or in periods of poor visibility.

The Department of Transportation has been evaluating the various factors involved in ship-bridge collisions in an effort to find ways to reduce the severity and occurrence of such accidents. While this type of catastrophic failure is not too common, enough accidents do occur to warrant consideration of the need for motorist warning systems on bridges subject to ship collisions.

At this time, the most practical warning device is considered to be some type of electrical conductor attached to or a part of the bridge which will activate warning systems and/or gates when the continuity is disrupted (span collapse).

While the use of such a system is simple in concept, there are a number of design considerations (sources of power, need for gates, signals, lights, signs, etc.) to be taken into account. The design and location of warning mechanisms becomes more complex for bridges susceptible to collision over a considerable number of spans. Thus, the warning system must be designed to fit the type of structure, the approaches, and other specific conditions existing at each bridge site.

A Technical Advisory is under development to provide some general guidance on design concepts for installing warning systems on bridges. We anticipate that it will be ready for distribution by the spring of 1981.

Federal funds may be used to construct warning systems on existing bridges and on new construction when approved by the Division Administrator. The type of funds used (including Interstate funds) should be consistent with the Federal-aid system on which the bridge is located. The warrants for such systems should be based on an assessment of the risks and consequences of a ship-bridge collision, taking into consideration (1) the type and frequency of shipping on the waterway; (2) the location and arrangement of the bridge piers in relation to the navigable channel and the resulting vulnerability of the piers to ship collisions; (3) other factors (fog, channel geometrics, wind, river currents, etc.) which may create navigational problems in the vicinity of the bridge; and (4) volume of highway traffic using the bridge.

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Federal Highway Administration
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cc: Files (1) 3111
Reader file 3208, 3113, 3111

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