



1.0 Introduction

The anti-icing technique has been proven to be effective in eliminating frost and black ice on bridge decks. The anti-icing technique has also been shown to have some benefits when used prior to light snow events. Many counties have been utilizing the anti-icing technology since the 1997-1998 winter season. Most of the anti-icing has been conducted prior to predicted frost events. The latest technology in the anti-icing technique is a fixed, bridge deck anti-icing system for use in problem areas where proximity to local maintenance facilities is limited.

The current version of the bridge deck anti-icing unit has been used in the United States since the mid 1990s. Wisconsin first installed a unit in 1997 in Walworth County. As of the 2000-2001 winter season there were three systems operating in Wisconsin. The bureau of highway operations has been testing and evaluating the bridge deck anti-icing systems since 1997 in order to document the cost/benefit of the technology.

Since the first installation in Wisconsin many districts have expressed interest in installing additional units. After preliminary evaluation of the three systems in Wisconsin, and other snow-belt states, the bureau of highway operations has developed the following criteria for selecting candidate bridges for installation of these systems:

2.0 Major Criteria

Bridge with a history of crashes attributed to snow, icing, and frost

For bridges where a history of crashes can be attributed to snow, icing, and/or frost the calculated crash rate should be compared to the statewide average crash rate. (The calculation will be similar to what is needed for H.E.S. funding applications)

Bridges on a grade greater than 2.5%

Grades where braking or accelerating may occur as a result of the steep grade of the structure.

Bridges located in an area susceptible to black ice or frost

Elevated bridges over railroad tracks or water (rivers, creeks, etc.) where cross-winds may contribute to deck freezing may be considered candidates.

Super-elevated decks greater than 5%

Bridges with high average daily traffic

Bridges with ADT's less than 25,000 would typically not be considered.

3.0 Other Criteria

Bridges located 30 minutes response time or more from the nearest salt stockpile

A "problem" bridge that is more than one hour from the closest stockpile will be given a higher priority.

Bridge located near moisture generating areas - cooling towers, dams, industrial complex, etc.

Bridge with adequate sufficiency rating

If a bridge will be undergoing major maintenance repairs within five years of the proposed installation date, a system should not be installed. However, installation could be done in conjunction with rehabilitation.

Bridges in areas susceptible to high winds

Where high winds could potentially cause a vehicle to lose traction.

Bridges with a span greater than 100 feet

Bridges with a span of less than 100 feet would be considered overkill at this time. As the cost of these systems becomes lower this criteria will be revisited.

4.0 Other Considerations

The system should be thoroughly tested by the installer prior to putting it into "full" operation mode.

These systems should be monitored throughout the season and careful records should be kept in an attempt to show a reduction in maintenance costs and crashes.