



US Army Corps of Engineers
St. Paul District

Dam Bridge & Gate Painting: USAF thru LD10

Location/Description

The St. Paul District operates and maintains 13 locks and dams beginning at Upper St. Anthony Falls (USAF) in downtown Minneapolis, Minnesota, and ending at Lock and Dam10 in Guttenberg, Iowa. Each of the 13 locks and dams represents a critical step in the "stairway of water" that makes navigation possible between Minneapolis and St. Louis, Missouri. These facilities are aging structures, with Locks and Dams 2 through 10 originally constructed in the 1930's. These sites include a dam bridge and varying numbers of dam gates. The dam gates are one of the most critical components at the sites, because they are manipulated on a daily basis to maintain proper pool elevation for navigation, environmental considerations, water supply, and flood control purposes. The dam bridges support the gate operating machinery.



Lock & Dam 2 in Hastings, MN during high flows in April 2001 (view from upstream side of dam of floating debris and trees impacting the dam bridge and gates)

Status

When originally constructed, the steel dam bridges and gates were coated with "lead-based" paint to protect the individual steel components of these structures from corrosion caused by the severe environment to which they are exposed. The majority of the time, the gates are partially submerged in flowing water and consequently subjected to abrasion from sediment and debris (trees and ice) carried by the river. The paint systems are exposed to annual temperature ranges over 100 °F. These factors have degraded the paint systems – diminishing their protection of the dam bridge and gate structures. This degradation has contributed to significant corrosion of the gates and, consequently, an escalating backlog of needed repairs.

In addition to the degradation of the paint systems described above, the elimination of the "lead-based" paint on the original structures is needed to protect the environment and personnel from the potentially harmful effects of the lead. To date, all the dam gates have had their lead-based paint removed, but only four of the dam bridges have been sandblasted and painted; the remainder have not been painted since their original construction in the 1930's.

The life expectancy based on current paint system technology ranges from 15 years to 25 years, depending on the elements to which the paint system is subjected.

Fiscal

The average cost (in today's dollars) of painting and repairing corrosion is estimated at \$7 million per site. The St. Paul District has been unable to award a painting contract for several years because of funding constraints. Protecting the Nation's substantial investment in this critical component of the inland waterways infrastructure through preventive maintenance is sound, justifiable, and prudent – particularly when replacement costs are considered.