

A little maintenance can go a long way

According to Ben Foster, MaineDOT Assistant Bridge Maintenance Engineer, the lack of simple bridge maintenance in many Maine municipalities is significantly affecting bridge structural capacity, overall condition, and personal safety.

Under Federal law, the MaineDOT inspects, or receives inspection reports, on all bridges on public highways in the State every two years. These reports must be reviewed by MaineDOT within 90 days of field inspection. If a major concern is evident, then MaineDOT will immediately contact that municipality. The reports are then sent electronically to each municipality. In these biennial inspections, the State inspection crews have generally found that municipal bridges and minor spans are not well maintained and very little attention is generally paid to them. In some cases, bridges have been closed or severe restrictions have been recommended to the local municipal officials.

The MaineDOT simply performs the inspection and makes recommendations on weight posting, repairs, or other limitations. **Maintenance of minor spans on townways and low use bridges is the full responsibility of municipalities.** MaineDOT provides limited engineering services and other assistance through the Bridge Maintenance Office.

It is recommended that all towns budget money for normal maintenance, deck repair, paint, and minor repairs. Otherwise, it is likely that more expensive repairs or full replacement will face decision-makers in the future.

Here is a checklist of basic maintenance which municipalities should perform on their bridge(s) and/or minor spans:

- **Annual cleaning**
Remove all sand and debris from deck and around beams at least once a year (preferably spring). Use fire trucks to wash down and remove salt because salt readily deteriorates concrete and corrodes steel. This activity provides you with the most benefit at the least cost and provides an opportunity to check the condition of the structure for needed repairs.
- **Erosion**
Check under and around abutments to spot eroded areas (best time is when water is lowest in late summer); add stone protection (riprap) to stabilize eroded areas and provide bridge support. Remove excess winter sand from approaches to allow runoff into the ditches instead on onto the bridge.
- **Wood decks**
Check planks for breaks, rotting, excessive wear, looseness. Replace damaged planks ("piecing in" not recommended); re nail planks to beams; add waterproofing layer (tarpaper) between beams and planks; treat with preservative when dry.
- **Concrete decks**
Look for signs of leakage, cracks, rust stains from underneath; don't pave over concrete decks (this accelerates concrete deterioration). Every 2 years coat concrete with a solution of double-boiled linseed oil and kerosene. This should be done yearly for the first two years with new concrete.
- **Steel beams**
Remove all dirt and/or debris yearly and paint, as needed, to prevent corrosion. Complete painting is usually needed every 10-20 years with occasional touch-up painting in between, mainly painting the beam ends and bearings.
- **Timber beams**
Check for deterioration; test with hammer and/or occasionally drill holes to sample interior condition. Holes must be filled in after drilling to prevent further decay.
- **Abutments and piers**
Check for movement and stability - cracks, rocks moved, leaning or bulging; check for scour and undermining; cut and poison all brush and trees growing close to abutments (left

untreated, they push abutments and crack concrete); repair any damaged or missing stones or concrete. Remove debris from the upstream channel that can potentially plug bridge opening(s).

- **Guardrails**

If none exist, put up something sturdy (if vehicle goes off, town could be liable for major dollars!); if wood or steel rails or wire cables are bent, broken or in poor condition, replace or reinforce deteriorated parts; a visible railing is better than nothing.

- **Bridge approaches**

Trim all trees and bushes for good sight distance, especially around signs. Fill all ruts and eroded areas; check for a smooth transition from the road onto the bridge. Vehicles ramping and landing on a bridge deck can cause a force equal to double their weight.

- **Signs**

Inspect, straighten, clean and remove brush from all warning signs. Erect new signs, if necessary (both at and in advance of the structure). Two conditions require legal signing - weight posting and overpass clearances of less than 14'6". Make sure the signs meet MUTCD standards.

- **Bearing devices**

Identify the fixed and moveable bearing devices. Clear any obstructions that would prevent a moveable support from functioning.

- **Cracks**

Measure and keep a record of any cracking or movement of the abutment main wall or the wing wall.

TAKE CARE OF YOUR BRIDGES NOW BEFORE IT'S TOO LATE!