Stream Smart

Connecting fish and wildlife habitat while protecting roads and public safety.

StreamSmartMaine.org
Stream Smart Road Crossing Workshop Partners

For more information, go to StreamSmartMaine.org
Stream Smart Phase II: Road Crossing Field Survey and Assessment Two-Day Workshop

WORKSHOP OBJECTIVE: To provide information that will enable participants to gather and analyze field data relative to ecological objectives (i.e. fish passage and connected stream processes) when designing replacement structures at stream/road crossings.
WORKSHOP OBJECTIVE: At the end of this course, participants will understand how to:

1. Identify and evaluate specific conditions at stream/road crossing sites and collect and analyze data
2. Utilize stream survey tools and techniques including longitudinal profiles, cross sections and bed characterization
3. Develop recommendations for properly sized and installed structures that maintain ecological functions
DISCLAIMER: This information is in addition to and does not replace additional elements of design relative to the hydraulic capacity and structural integrity of the road/stream crossing.
Road Map of Day 1

8:30 – 9:00  Participant Registration
9:00 – 9:15  Welcome and Overview
9:15 – 10:00 Stream Smart Refresher
10:00 – 11:00 Intro to tools, site assessment, data collection
11:00 – 11:30 Travel to field site
11:30 – 12:00 LUNCH (box lunch provided)
12:00 – 3:00 Break into groups, visit stations
3:00 – 3:30  Regroup, Q&A
3:30 – 4:00  Travel back to classroom
4:00  Reminders for Day 2, depart
8:30 – 9:00  Check all have spreadsheets
9:00 – 12:00  Spreadsheets and working with data from field site
12:00 – 12:30  LUNCH (provided)
12:30 – 1:30  Hydrology and Hydraulics
1:30 – 2:00  Structural Design Options
2:00 – 2:15  BREAK
2:15 – 3:45  Construction Site Concepts and Case Studies
3:45 – 4:00  Q&A, Closing Remarks, Evaluations
Folder Materials

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What is Stream Smart?
Stream Smart is a training program and resource for anyone responsible for constructing road-stream crossings. The goal of Stream Smart is to encourage fish and wildlife habitat while protecting roads and public utility and to promote the larger and longer-term ecosystem services that have been shown to benefit the state and the nation.

Who Benefits?

- Fish
- Wildfire
- People

The Problem
People need healthy rivers and wetlands.

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Comparison of Crossing Structures

<table>
<thead>
<tr>
<th>Crossing Structure Type</th>
<th>Material</th>
<th>Cost (years)</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge A</td>
<td>Steel-reinforced concrete abutments (gravel in place) and ballast on steel streambed</td>
<td>$55-75</td>
<td>Natural bottom, durability, snowovable</td>
<td>High cost</td>
</tr>
<tr>
<td>Bridge B</td>
<td>Reinforced concrete with steel in-stream columns and timber deck (previously used as alternate design)</td>
<td>$50-75</td>
<td>Irregular natural bottom, low cost, snowovable</td>
<td>Limited accessibility, limited snowovable</td>
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<tr>
<td>Bridge C (Steel Box Culvert)</td>
<td>Reinforced concrete, galvanized steel or aluminum</td>
<td>$50-75</td>
<td>Natural bottom, simplicity</td>
<td>Weight of concrete structures can limit installation systems</td>
</tr>
<tr>
<td>Open Bottom Arch</td>
<td>Galvanized steel, aluminum, steel-reinforced concrete</td>
<td>$50-75</td>
<td>Natural bottom, ease of installation</td>
<td>Care must be taken to install and protect bottom, limited ease of maintenance</td>
</tr>
<tr>
<td>Embedded Box Culvert</td>
<td>Reinforced concrete</td>
<td>$50-75</td>
<td>Natural bottom if spans stream, variety of configurations</td>
<td>Must span stream and be set below stream elevation to avoid overtopping</td>
</tr>
<tr>
<td>Embedded Pipe Arch</td>
<td>Galvanized steel, steel-reinforced concrete</td>
<td>$50-75</td>
<td>Natural bottom if spans stream, variety of configurations</td>
<td>Must span stream and be set below stream elevation to avoid overtopping</td>
</tr>
<tr>
<td>Embedded Roll Pipe</td>
<td>Galvanized steel, plastic, steel-reinforced concrete</td>
<td>$50-75</td>
<td>Natural bottom if spans stream, lowest cost</td>
<td>Low cost, limited to smaller sizes, not for use with ledge</td>
</tr>
<tr>
<td>Embedded Roll Pipe (at stream grade)</td>
<td>Galvanized steel, plastic, steel-reinforced concrete</td>
<td>$50-75</td>
<td>Natural bottom if spans stream, lowest cost</td>
<td>Low cost, limited to smaller sizes, not for use with ledge</td>
</tr>
</tbody>
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Maine Stream Smart Road-Stream Crossing Field Workshop Glossary

<table>
<thead>
<tr>
<th>Subject of Terms Used in Road-Stream Crossing Measurements</th>
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<tbody>
<tr>
<td>Volume of flow, and the flow width or depth associated with the point where water fills the channel just before it passes under a road crossing.</td>
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</table>

<table>
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<tr>
<th>Remaining Bank Full Width</th>
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<tbody>
<tr>
<td>Width of bank at full water level</td>
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</table>

Hood Frequency Estimates for New England River Restoration Projects: Considering Climate Change in Project Design

The NOAA's National Resources Conservation Service (NRCS) works with farmers, fishers, other harvesters and other private landowners to conserve natural resources on their lands. NRCS is a key player in designing and implementing projects to protect and restore fish habitat. This guidebook provides a framework for assessing the risk of floods and the potential for coastal and estuarine flooding in the future. It also provides guidance on how to design and implement effective restoration projects to reduce these risks.
Why are you here?