



Photo credit: SRPEDD



Photo credit: Jennifer Carlino

Stream Continuity Workshop

October 2, 2017

Norton, MA

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Welcome!

- **Acknowledgements** – Heidi Ricci
- **4:15-4:30 Intro & Stream Crossing Standards** – Stefanie Covino
- **4:30-5:00 Stream Continuity Report** – Priscilla Chapman
- **5:00-5:30 Planning, Funding, & Implementation** – Bill Napolitano & Jenn Carlino
- **5:30-6:00 Wrap Up & Discussion**

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Culverts - The Good and the Bad

Allow streams and rivers
to flow, despite our
infrastructure

Or not.

Flow depth & pressure
Outlet drop
Openness



vs.



Stream Crossing Standards



Scott Jackson photo

A Well Designed Crossing

Large size suitable for handling high flows

Open-arch design preserves natural stream channel

Openness ratio greater than 0.5m, suitable for most settings

Crossing span helps maintain dry passage for wildlife

Water depth and velocity are comparable to conditions upstream and downstream

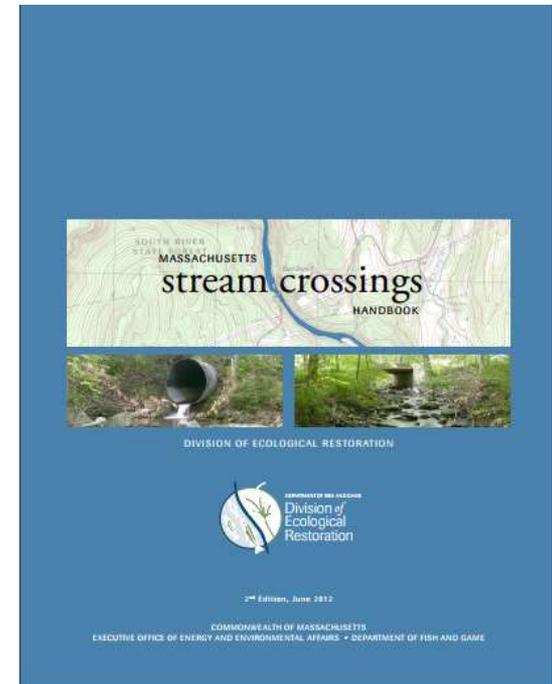
Natural substrates create good conditions for stream-dwelling animals

Wetlands Protection Act

New crossings must meet these standards, including the following under the WPA (310 CMR 10)

- Restoration (10.11-14)
- Inland/coastal limited (10.24; 10.53)
- Bank (10.54)
- Land Under Water (10.56)

to maximum extent practicable



Maximum Extent Practicable

- Balance environmental benefit vs. cost;
- Potential for downstream flooding;
- Upstream and downstream habitat (in-stream habitat, wetlands);
- Erosion potential /stream stability;
- Extent of habitat fragmentation/stream mileage improvements;
- Storm flow conveyance;
- Engineering design/hydrologic constraints;
- Additional impacts to wetlands;
- Potential to affect property and infrastructure;
- Cost of replacement.



7 Stream Crossing Standards

1. Spans (bridges, open-bottom culverts) preserve the natural stream channel
2. Minimum design and materials for embedding culverts
3. Channel width: 1.2x bank full
4. Natural bottom substrate within the structure
5. Water depths and velocities are comparable to natural channel at a variety of flows
6. Openness over 0.82 feet (0.25 meters)
7. Banks present on each side of stream & match the horizontal profile of the existing stream and banks

Undersized and Failing Culverts Can Affect...

- Water quality
- Flooding and infrastructure
- Local resiliency
- Human health – mosquito habitat
- Wildlife habitat – loss and degradation
- Wildlife population – fragmentation, isolation, loss (roadkill)



**Both people & wildlife benefit
when streams flow freely**

Before and after



Hill St Culvert in Raynham. Photo credits: SRPEDD

Local Efforts

In the Taunton watershed, there's been a coordinated effort to inventory >500 crossings

- The Nature Conservancy
- Save the Bay
- Mass Audubon
- Southeastern Regional Planning & Economic Development District (SRPEDD)
- Taunton River Watershed Alliance (TWRA)

