STREAM CROSSING STANDARDS

Stream crossing standards are based on six important variables. While the specifics of the regulations listed below may change over time, the crossing guidelines presented in the Massachusetts Stream Crossings Handbook remain effective for fish and wildlife.

1. TYPE OF CROSSING

- General: Spans (bridges, 3-sided box culverts, open-bottom culverts or arches) are strongly preferred.
- Optimum: Use a bridge.

2. EMBEDMENT

- All culverts should be embedded (sunk into stream) a minimum of 2 feet, and round pipe culverts at least 25%.
- If pipe culverts cannot be embedded this deep, then they should not be used.
- When embedment material includes elements >15 inches in diameter, embedment depths should be at least twice the D_{84} (particle width larger than 84% of particles) of the embedment material.

3. CROSSING SPAN

- General: Spans channel width (a minimum of 1.2 times the bankfull width of the stream).
- Optimum: Spans the streambed and banks (at least 1.2 times bankfull width) with suf.cient headroom to provide dry passage for wildlife.

4. OPENNESS

- General: Openness ratio (cross-sectional area/crossing length) of at least 0.82 feet (0.25 meters). The crossing should be wide and high relative to its length.
- Optimum: Openness ratio of at least 1.64 feet (0.5 meters) and minimum height of 6 feet. If conditions significantly reduce wildlife passage near a crossing (e.g., steep embankments, high traf.c volumes, and physical barriers), maintain a minimum height of 8 feet (2.4 meters) and openness ratio of 2.46 feet (0.75 meters).

5. SUBSTRATE

- Natural bottom substrate should be used within the crossing and it should match the upstream and downstream substrates. The substrate and design should resist displacement during floods and maintain an appropriate bottom during normal flows.

6. WATER DEPTH AND VELOCITY

- Water depths and velocities are comparable to those found in the natural channel at a variety of flows.

A Well Designed Crossing

Scott Jackson photo