NOVA SCOTIA
Environment

NOVA SCOTIA WATERCOURSE ALTERATION SPECIFICATIONS (2009)

Clear Span Permanent Bridges

B1. Bridge installations must entirely span the watercourse. The bridge abutments or any other part of the structure, including stabilization material, shall be aligned with the existing banks and not extend into the watercourse or in any way constrict the natural width of the channel.

B2. Bridges must be designed with a hydraulic capacity large enough to pass a peak flow with a 100 year return period and a maximum velocity of 1.8 m/s unless otherwise Approved by the Minister or Administrator.

B3. All machine work is to be carried out from the watercourse banks. Machinery is not permitted to enter the watercourse.

B4. Grubbing on watercourse banks is limited to the area required for the construction of abutments and for adjacent backfills to reach slope stability unless otherwise authorized in writing by the Minister or Administrator.

B5. The structure must be supported by abutments that extend below the line of scour (the deepest channel of flow within the watercourse). A gravel or rock pad shall be prepared to fill in low areas and ensure uniform abutment support. Abutments may be concrete, wood that is rot resistant such as hemlock and tamarack, steel or other materials which provide are designed to be structural supports. Abutments must be installed outside the shoulder of the watercourse such that erosion protection materials may be installed in accordance with specification B9 and B10.

B6. No fresh concrete, lime, or cement is allowed to enter a watercourse.

B7 The area excavated for placement of the abutment shall be backfilled up to the elevation of the bottom of the streambed with unshrinkable fill or clay type material which is to be installed in compacted lifts of not more than 30 cm at a time, to prevent dewatering of the streambed.

B8. Lumber treated with creosote must not be used in the construction or maintenance of any part of the structure. Uuntreated hemlock, tamarack/ juniper, or cedar, pre-cast concrete, corrosion resistant steel or plastic; or ACQ (Alkaline Copper Quaternary) or CCA (Chromated Copper Arsenate treated wood, if treated in accordance with Best Management Practices (BMPs) as outlined in the 1997 industry guide published jointly by the Canadian Institute of Treated Wood (CITW) and the US based Western Wood Preservers Institute are considered acceptable materials.

B9. Abutment face at the toe and ends shall be protected from erosion and scour. Erosion protection material shall be installed such that it must not encroach upon the channel beyond the thickness of the largest material required, based on velocity of the watercourse.

B10. Erosion protection material must be placed at a maximum 2:1 horizontal to vertical slope. Erosion protection materials must be installed below the line of scour (deepest channel of flow within the watercourse), sized based on the calculated velocity of the stream (see table 1) and installed to minimum thickness of 1.5 times the maximum stone size.

Table 1: Rip Rap Sizing

Velocity	*A minimum of 70%* **of** *Rip rap size (millimetres)*
Up to 3 meters per second	200 to 450
3 meters per second to 4 meters per second	300 to 760
4 meters per second to 4.5 meters per second	500 to 1200

B11. The Department's "Guidelines for the Application and Removal of Structural Steel Protective Coatings" shall be adhered to during maintenance or construction activities.

B12. All instream work shall be carried out in isolation of the watercourse flow ("in the dry").

B13. Water control devices such as cofferdams or aquadams are to be used to separate the entire work area from the flowing watercourse. Cofferdams must be constructed of sandbags faced with plastic, sheet piling or other material authorized in writing by the Minister or Administrator.

If Cofferdams are to be used, there must be of sufficient height and strength to hold back the 1:2 year return rainfall event (bank full conditions).

B14. No excavation shall take place within the dammed area until the cofferdam is completely isolated from the flowing watercourse.

B15. Placement and removal of cofferdams shall be conducted in a manner as to prevent cofferdam material and silted water from entering the watercourse.

B16. Excavation of the bed or banks of a watercourse outside the cofferdam limits is not permitted.

B17. No temporary infilling of the watercourse is to take place to provide access during the bridge construction.

B18. Not more than 1/3 of the watercourse channel width is to be blocked by the cofferdam at any one time during construction unless otherwise authorized in writing by the Minister or Administrator.

B19. The approval holder shall ensure the materials for this project, i.e. aggregate, etc., have the appropriate authority and the material is suitable for the purpose intended. Compliance with the Department's Activities Designation Regulations and the Sulphide Bearing Material Disposal Regulations, is required.

B20. Bridge decking must be designed to carry the intended loads.

B21. During the replacement of the bridge decking, the approval holder shall ensure a tarp or collection device is used to prevent any debris from entering the watercourse.