NOVA SCOTIA
Environment

NOVA SCOTIA WATERCOURSE ALTERATION SPECIFICATIONS (2006)

Arch or Open-Bottom Box Culvert :

The following applies to installation or construction of a single arch or open-bottom box culvert.

AC1. The exemption under Section 5(1)(d) of the *Activities Designation Regulations* applies to the installation of a culvert during the period June 1 to September 30 only. Installation of a culvert outside this time frame will require formal approval. Installation of a culvert inside this time frame must be preceded with the submission of a watercourse alteration application with culvert notification indicated in Section 5A of the application at the designated District Office, Nova Scotia Department of Environment & Labour.

AC2. The exemption applies to a single arch or open-bottom box culvert installation with the following maximum dimensions:

a) 3.0 metres in span;
c) 18.3 metres in length.

AC3. The size of the culvert shall be based on a minimum of 1:100 year estimated storm flows.

AC4. Fording is prohibited.

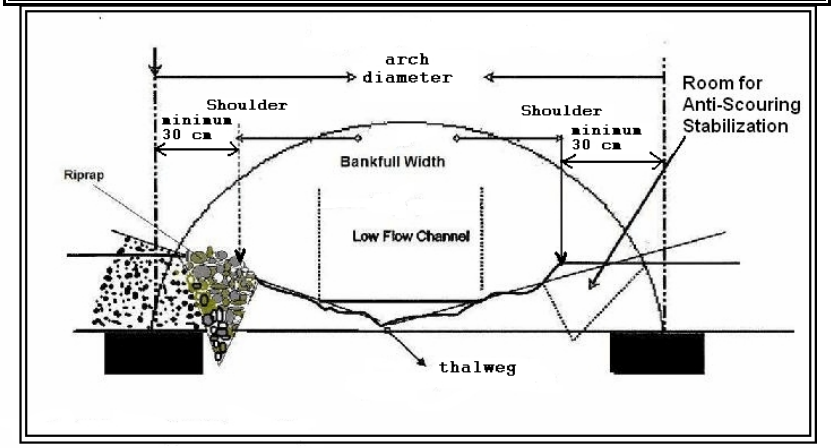
AC5. Prior to the culvert installation, erosion & sediment control measures shall be installed to prevent sedimentation of the watercourse and maintained, as required, until all exposed erodible soil adjacent to both the watercourse and road surface have been stabilized within 30 m of the watercourse.

AC6. The culvert shall be installed during periods of low flow. All work operations are to be conducted in a manner to protect the watercourse from the release of silt and sediment.

AC7. The structure is to be aligned with the existing watercourse channel.

AC8. The structure must span the bank full width of the channel such that no part of the structure including the foundation and any associated excavation is located within 30cm of the shoulder of the watercourse. (Shoulder of the watercourse – located at the sharpest break in the slope where the steepest part of the bank drops down to the bed of the watercourse). See figure AC-1.

Figure AC-1 Diagram Indicating Location of Shoulder of a Watercourse



AC9. The natural material located beneath the footings must be capable of supporting the structure and the loads travelling over it. If the natural substrate material is not capable of supporting the structure, it shall be replaced with granular material capable of supporting the intended loading.

AC10. The structure must be founded on continuous footings. These footings may be concrete, wood that is rot resistant such as hemlock and tamarack, steel, rigid plastic or other materials which provide support for the structure. A gravel or rock pad shall be prepared to fill in low areas and ensure uniform footing support.

AC11. No alteration to the stream channel shall take place.

AC12. All rock used must be clean, non-ore bearing, non-toxic and obtained from a non-watercourse source.

AC13. 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.

AC14. All excavated material shall be placed in a location where it will not enter the watercourse. All debris resulting from construction activities shall be disposed of at a facility which is Approved to accept the specific material. Any material not regulated by the Department shall be removed to an area where flood water will not come in contact with the debris and excavated material must be removed from the areas adjacent to the watercourse and be disposed of in a manner acceptable to the Department.

AC15. The road fill at each end of a culvert must be stabilized against erosion with rip rap or other non-erodible material. The rip rap height above the culvert is to be a minimum of half the height of the culvert or shall extend up to the road surface, whichever is less. The rip rap shall also extend one culvert span beyond both sides of the structure. The following uniformly-graded, stone-rip rap material is to be used for embankment protection unless alternate materials have been authorized by the Department.

Class 1	Class 1
Local velocity up to 3m per second	At least 70% of the rip rap shall be between 200mm and 450mm
Class 2	Class 2
Local velocity up to 4m per second	At least 70% of the rip rap shall be between 300mm and 760mm
Class 3	Class 3
Local velocity up to 4.5m per second	At least 70% of the rip rap shall be between 500mm and 1200mm