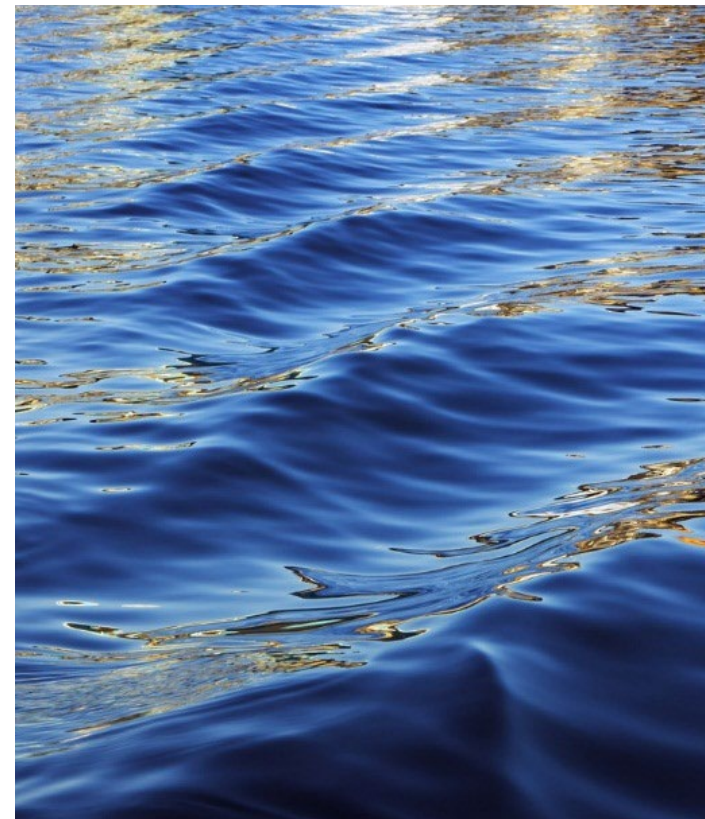




CULVERT SIZING REFRESHER

DO I NEED A STREAM ALTERATION PERMIT??



CULVERT CATEGORIES

**DRIVEWAY
(15")**

**DRAINAGE
(18" – 24")**

- Covered under the TOWN ROAD AND BRIDGE STANDARDS / MUNICIPAL ROADS GENERAL PERMIT
- No ANR Stream Alteration Permit needed
- Replace as needed part of highway maintenance operations

CULVERT CATEGORIES

INTERMITTENT STREAMS
(dry some times of year)
($\geq 36''$)

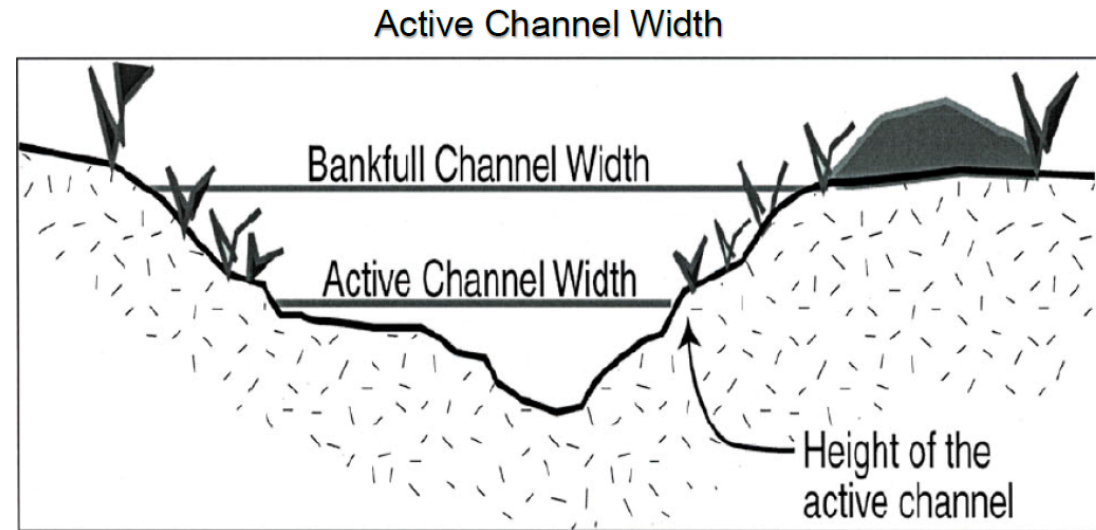
- Covered under the TOWN ROAD AND BRIDGE STANDARDS / MUNICIPAL ROADS GENERAL PERMIT
- **MAYBE** ANR Stream Alteration Permit needed
- Check with your ANR River Management Engineer for opinion!

Appendix B

Active Channel Culvert Sizing for Intermittent Stream Crossings

Choose the drainage area closest to your crossing site drainage area

Drainage Area (Acres)	Minimum Diameter for Culverts on Intermittent Streams (in inches)
4	15
8	18
16	24
20	30
40	36
50	42
80	48
120	60
160	66
200	<i>Streams with drainage areas of 160 acres or greater are likely to be perennial. Adhere to the VTDEC Technical Guidance for Identification of Perennial Streams</i>
320	
350	
450	
640	



Active Channel Width means the limits of the streambed scour formed by prevailing stream discharges, measured perpendicular to streamflow. The active channel is narrower than the bankfull width (approximately 75%) and is defined by the break in bank slope and typically extends to the edge of permanent vegetation.

Culvert sizing for crossings on intermittent streams: Determine the Active Channel Width by field measurements, **the culvert size should meet or exceed the Active Channel Width**. To obtain the measurements go to the crossing location and obtain several upstream Active Channel Width measurements in riffle (fast moving water) narrower channel locations. The selected channel width should be a representative average of the field measurements. In the absence of field measurements, the drainage areas in the table can be used.

B-1

<https://www.usgs.gov/streamstats>

CULVERT CATEGORIES

PERMANENT STREAMS
(flowing brook/stream year round)
(> 36")

- **DEFINITELY** ANR Stream Alteration Permit needed
- Depending on size, maybe also US Army Corps of Engineer permit
- Request VTrans for a hydraulic study for appropriate structure sizing
- Check with your ANR River Management Engineer for opinion!