TOWN ROAD AND BRIDGE STANDARDS

(January 21, 2026)

MUNICIPALITY OF Ferrisburgh, VERMONT

The Legislative Body of the Municipality of Ferrisburgh hereby adopts the following Town Road and Bridge Standards which shall apply to the construction, repair, and maintenance of town roads and bridges.

The standards below are considered minimums. Municipalities that have construction standards / specifications in place that meet or exceed the minimum standards: indicate adoption date and include as Appendix C. **Date of Adoption:** 7/7/2026

Municipalities must comply with all applicable state and federal approvals, permits and duly adopted standards when undertaking road and bridge activities and projects.

Any new road regulated by and/or to be conveyed to the municipality shall be constructed according to the minimum of these standards.

Circle **YES** or **NO** below to indicate town adoption of that section of the Standards

Road and Bridge Standards Sections	**Hydrologically-connected road segments***	**Non-hydrologically-connected road segments****
Section 1 – Municipal Road Standards	**YES** (Required by MRGP)	**YES** **NO**
Section 2 – Class 4 Road Standards	**YES** (Required by MRGP)	**YES** **NO**
	Town wide	
Section 3 - Perennial stream- bridge and culvert standards	**YES** (Required by DEC Stream Alteration Standard)	
Section 4 – Intermittent stream crossings	**YES** **NO**	
Section 5- Drainage crossings	**YES** **NO**	
Section 6 - Roadway construction standards	**YES** **NO**	
Section 7 - Guardrail standard	**YES** **NO**	
Section 8 - Driveway access standard	**YES** **NO**	

Road segments – ANR Resources Atlas includes a map layer of all of Vermont's municipal roads divided into 100-meter (328 foot) segments, each with a unique identification number.

***Hydrologically-connected road segments** - are those municipal road segments and catch basin outlets, Class 1-4, as shown on the ANR Natural Resources Hydrologically-connected municipal road segment layer (http://anrmaps.vermont.gov/websites/anra5/) or the Road Erosion Inventory Scoring (MRGP Implementation Table portal) layer (https://anrweb.vt.gov/DEC/IWIS/MRGPReportViewer.aspx?ViewParms=True&Report=Portal).

****Adoption of standards on non-hydrologically-connected road segments** does not indicate that these road segments are then subject to the Municipal Roads General Permit (MRGP).

Municipalities may also find additional resources in the latest version of the *Vermont Better Roads Manual*.
https://vtrans.vermont.gov/sites/aot/files/Better%20Roads%20Manual%20Final%202024.pdf

Road and Bridge Standards Sections

Section 1 – Municipal Road Standards - See Appendix A

These standards are required by Act 64 and the DEC Municipal Roads General Permit (MRGP) for hydrologically-connected roads only.

Municipalities may adopt Section 1 Road standards by road type for non-hydrologically-connected roads/segments/catch basins.

Section 2 – Class 4 Road Standards - See Appendix A

Section 3 - Perennial stream - bridge and culvert standards

Bridge and culvert work on perennial stream crossings must conform with the statewide DEC Stream Alteration Standard.

"Perennial stream" means a watercourse or portion, segment, or reach of a watercourse, generally exceeding 0.25 square miles in watershed size, in which surface flows are not frequently or consistently interrupted during normal seasonal low flow periods. Perennial streams that begin flowing subsurface during low flow periods, due to natural geologic conditions, remain defined as perennial. All other streams, or stream segments of significant length, shall be termed intermittent. A perennial stream shall not include the standing waters in wetlands, lakes, and ponds.

Streambank stabilization and other in-stream work must conform with the statewide DEC Stream Alteration Standard.

For River Management Engineer Districts: https://dec.vermont.gov/sites/dec/files/wsm/rivers/docs/RME_districts.pdf

Section 4 – Intermittent stream crossings – See Appendix B for sizing table and graphic. These standards are above and beyond the culvert standards in Section 1.

"Intermittent streams" are defined as streams with beds of bare earthen material that run during seasonal high flows but are disconnected from the annual mean groundwater level.

Section 5 – Drainage crossings (NOT perennial or intermittent streams)- Upon replacement, municipally owned or maintained cross culverts shall be a minimum of 18". Undersized drainage crossings shall be upsized 6-12" if road geometry allows. Indications that a culvert is undersized include a culvert that plugs with sediment and/or gets washed out during rain events.

Section 6 - Roadway construction standards – Sub-base and gravel standards

All new or substantially reconstructed gravel roads shall have 12 inches* thick gravel sub-base, with an additional 6 inches* top course of crushed gravel.

All new or substantially reconstructed paved roads shall have 18 inches* thick gravel sub-base.

*Municipalities shall indicate their own construction criteria.

Section 7 - Guardrail standard

When a roadway, culvert, bridge, or retaining wall construction or reconstruction project results in hazards such as foreslopes, drop offs, or fixed obstacles within the designated clear-zone, the AASHTO Roadside Design Guide will govern the analysis of the hazard and the subsequent treatment of that hazard. For roadway situations, an approved barrier system may be steel beam guardrail with 6-foot posts and approved guardrail end treatment. If there is less than 3 feet from the rail to the hazard, then steel beam guardrail with 8-foot posts shall be used. The G-1D is an example of an approved guardrail end treatment. For bridge rails systems, VTrans bridge rail standards shall be referenced

Section 8 - Driveway access standard

The municipality has a process in place, formal or informal, to review all new drive accesses and development roads where they intersect town roads, as authorized under 19 V.S.A. Section 1111. Municipality may reference VTrans Standard *A-76 Standards for Town & Development Roads* and *B-71a and b Standards for Residential and Commercial Drives*; the VTrans *Access Management Program Guidelines*; and the latest version of the *Vermont Better Roads Manual* for other design standards and specifications.

Passed and adopted by the Legislative Body of the Municipality of Ferrisburgh **, State of Vermont on** July 7 **, 20** 26

Selectboard / City Council / Village Board of Trustees:

Appendix A

MUNICIPAL ROAD STANDARDS

The following standards constitute the minimum required Best Management Practices (BMPs) for municipal roads. These standards shall apply to the construction, repair, and maintenance of all town roads and bridges.

It is the municipality's responsibility to maintain all practices after installation. Roads not meeting these standards must implement the BMPs listed below in order to meet the required town's standards.

Feasibility

Municipalities shall implement these standards to the extent feasible. In determining feasibility, municipalities may consider the following criteria: The implementation of a standard listed in Part 6 of this general permit does not require the acquisition of additional state or federal permits[3] or noncompliance with such permits, or noncompliance with any other state or federal law. The implementation of a standard does not require the condemnation of private property; impacts to significant environmental and historic resources, including historic stone walls, historic structures including structures registered on either the Vermont State Register of Historic Places or the National Register of Historic Places, or removing vegetation within 250 feet of a lakeshore; impacts to buried utilities; and excessive hydraulic hammering of ledge. Additionally, the implementation of any standard shall not be required if it would render the road unsafe for travel.

Municipalities shall document in the REI Reassessment each instance where feasibility affects implementation of the standards.

Standards for All Construction and Soil Disturbing Activities

Following construction and soil disturbance on a hydrologically-connected road segment, all bare or unvegetated areas shall be revegetated with seed and mulch, hydroseeded, or stone lined within 5 days of disturbance of soils, or, if precipitation is forecast, sooner. Projects authorized under the Construction General Permit (CGP 3-9020) or Individual Construction Stormwater Permit (INDC) shall instead comply with the terms and conditions of that permit.

Standards for Open Drainage Roads (Not Class 4)

The following are the required standards for all non-compliant hydrologically-connected open drainage roads. To maintain compliance with the requirements of this General Permit, municipalities shall apply these standards to all new construction, general BMP maintenance, and significant upgrades of stormwater treatment practices.

A. Roadway/Travel Lane Standards

1. Roadway Crown

a. Gravel roads shall be crowned, in or out-sloped:

Minimum: ¼" per foot

Recommended: ¼" – ½" per foot or 2% - 4%.

[3] Self-verification under a non-reporting permit category does not constitute a permit for purposes of this section.

b. Paved/ditched roads shall be crowned during new construction, redevelopment, or repaving where repaving involves removal of the existing paving.

Minimum: 1/8" per foot or 1% Recommended: 1% -

2%.

2. Shoulder berms (also called Grader/Plow Berm/Windrows)

Shoulder berms shall be removed to allow precipitation to shed from the travel lane into the road drainage system. Roadway runoff shall flow in a distributed manner to the drainage ditch or filter area and there shall be no shoulder berms or evidence of a "secondary ditch". Shoulder berms may remain in place if the road crown is in-sloped or out-sloped to the opposite side of the road from berm side of road. The shoulder berm standard only applies to open drainage gravel roads.

A. Road Drainage Standards

Roadway runoff shall flow in a distributed manner to grass or a forested area by lowering road shoulders or conversely by elevating the travel lane level above the shoulder. Road shoulders shall be lower than travel lane elevation. If distributed flow is not possible, roadway runoff may enter a drainage ditch, stabilized as follows:

1. For roads with slopes between 0% and 5%: At a minimum, grass-lined ditch, no bare soil. Geotextile and erosion matting may be used instead of seed and mulch. Alternatively, ditches may be stabilized using any of the practices identified for roads with slopes 5% or greater included in Sub-part B.2, below.

   Recommended shape: trapezoidal or parabolic cross section with mild side slopes; two foot horizontal per one foot vertical or flatter and 2-foot ditch depth.

2. For roads with slopes 5% or greater but less than 8%:

   a. Stone-lined ditch: minimum 6"- 8" minus stone or the equivalent for new practice construction. Recommended fractured stone with 2-foot ditch depth from top of stone-lined bottom,

   b. Grass-lined ditch with stone check dams[4], or

   c. Grass-lined ditch if installed with disconnection practices such as cross culverts and/or turnouts to reduce road stormwater runoff volume. There shall be at least two cross culverts or turnouts per segment disconnecting road stormwater out of the road drainage network into vegetated areas or spaced every 160'.

3. For roads with slopes of 8% or greater: Stone-lined ditch. Stone-lined ditches are not required if the toe of the ditch backslope is located outside of the town right-of-way.

   a. For slopes greater than or equal to 8% but less than 10%: minimum 6"-8" minus stone or the equivalent for new construction. Recommended fractured stone with 2-foot ditch depth from top of stone-lined bottom.

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[4] See check dam installation specifications.

b. For slopes greater than 10%: minimum 6-8" minus stone. Recommended 12" minus fractured stone or the equivalent. Recommended 2-foot ditch depth from top of stone-lined bottom.

4. If appropriate, bioretention areas, level spreaders, armored shoulders, and sub-surface drainage practices may be substituted for the above road drainage standards.

C. Drainage Outlets to Waters & Turnouts

Roadway drainage shall be disconnected from waterbodies and defined channels, since the latter can act as a stormwater conveyance, and roadway drainage shall flow in a distributed manner to a grass or forested filter area. Drainage outlets and conveyance areas shall be stabilized as follows:

1. Turn-outs - all drainage ditches shall be turned out to avoid direct outlet to surface waters.
2. There must be adequate outlet protection at the end of the turnout, based upon slope ranges below. Turnout slopes shall be measured on the bank where the practice is located and not based on the road slope.

   a. For turnouts with slopes of 0% or greater but less than 5%: stabilize with grass at minimum. Alternatively, stabilize using the practices identified in Sub-parts (b)-(c), below, when possible.

   b. For turnouts with slopes 5% or greater: stabilize with stone.

   c. For slopes greater than 5% but less than 10%: minimum 6"-8" minus stone or the equivalent for new construction.

   d. For slopes greater than 10%: minimum: 6-8" minus stone or equivalent for new construction. Recommended 12" minus fractured stone or the equivalent.

D. Municipal Cross Culverts and Intermittent Stream Culverts

1. All municipal culverts- Culvert end treatment or headwall required for areas with slopes 5% or greater, if erosion is due to absence of these structures. End treatment or headwall is required for new construction on road segment slopes 5% or greater.
2. All municipal culverts- Stabilize outlet such that there will be no scour erosion, if erosion is due to absence or inadequacy of outlet stabilization. Stone aprons or plunge pools required for new construction on road segment slopes 5% or greater.
3. Cross culverts- Upgrade to 18" culvert (minimum), if erosion is due to inadequate size or absence of structure.
4. In instances where intermittent streams enter the municipal road drainage network, the Secretary requires culvert sizing based on in-field and mapping techniques described in the Intermittent Stream Crossing Sizing Guidance, found in Appendix B.
5. Drainage culverts conveying perennial waters are subject to coverage under the DEC Stream Alteration General Permit. MRGP Standards do not apply to culverts conveying perennial waters.

6. A French Drain (also called an Under Drain) or French Mattress (also called a Rock Sandwich) sub-surface drainage practice may be substituted for a cross culvert.

E. Driveway Culverts within the municipal ROW

1. Culvert end treatment or headwall required for areas with road segment slopes of 5% or greater, if erosion is due to absence of these structures. End treatment or headwall is required for new construction.
2. Stabilize outlet such that there will be no scour erosion, if erosion is due to absence or inadequacy of outlet stabilization. Stone aprons or plunge pools required for new construction.
3. Upgrade to minimum 15" culvert, 18" recommended, if erosion is due to inadequate size or absence of structure.
4. Intermittent streams may enter the municipal road drainage network, and in these cases, the Secretary requires culvert sizing based on in-field and mapping techniques described in Appendix B.
5. Driveway culverts conveying perennial waters are subject to coverage under the DEC Stream Alteration General Permit.

Standards for Closed Drainage Roads

Catch Basin Outlet Stabilization: All hydrologically-connected catch basin outlets shall be stabilized to eliminate all rill and gully erosion. Catch basin outlet stabilization practices include: stone-lined ditch, stone apron, check dams, culvert header/headwall, and green stormwater infrastructure practices such bioretention practices, when appropriate.

Standards for Connected Class 4 Roads

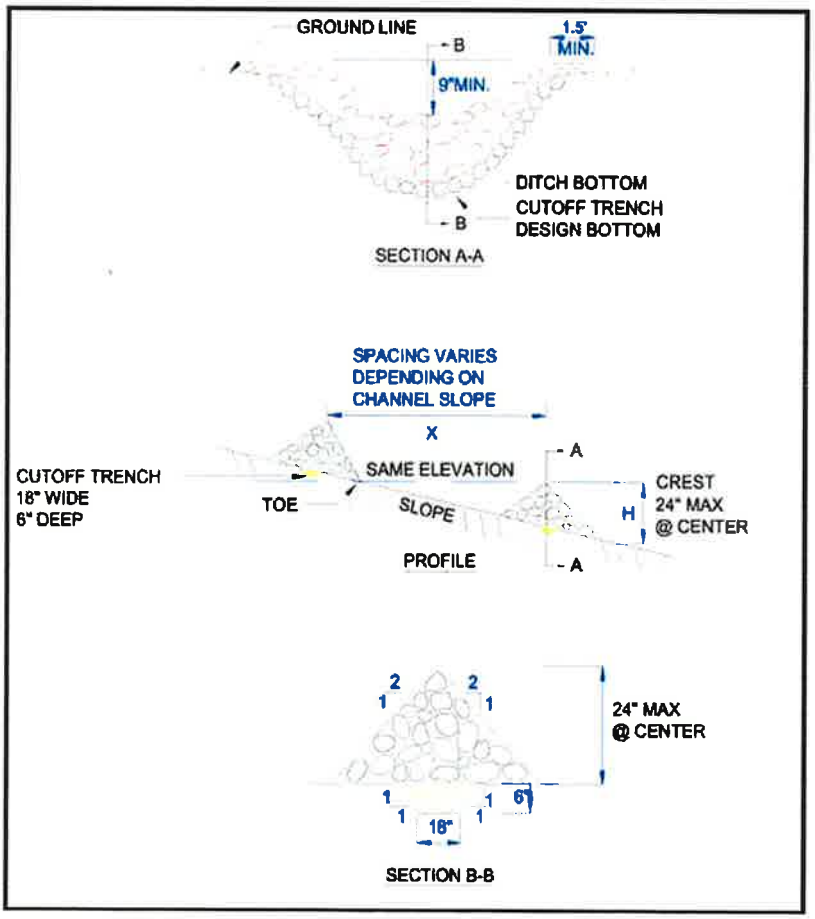
Stabilize any areas of gully erosion identified in the REI with the practices described above or equivalent practices. Disconnection practices such as broad-based dips and water bars may replace cross culverts and turnouts.

Stone Check Dam Specification

- Height: No greater than 2 feet. Center of dam should be 9 inches lower than the side elevation
- Side slopes: 2:1 or flatter
- Stone size: Use a mixture of 2 to 9 inch stone
- Width: Dams should span the width of the channel and extend up the sides of the banks
- Spacing: Space the dams so that the bottom (toe) of the upstream dam is at the elevation of the top (crest) of the downstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

$$\text{Spacing (in feet)} = \frac{\text{Height of check dam (in feet)}}{\text{Slope in channel (ft/ft)}}$$

- Maintenance: Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam. If significant erosion occurs between check dams, a liner of stone should be installed.



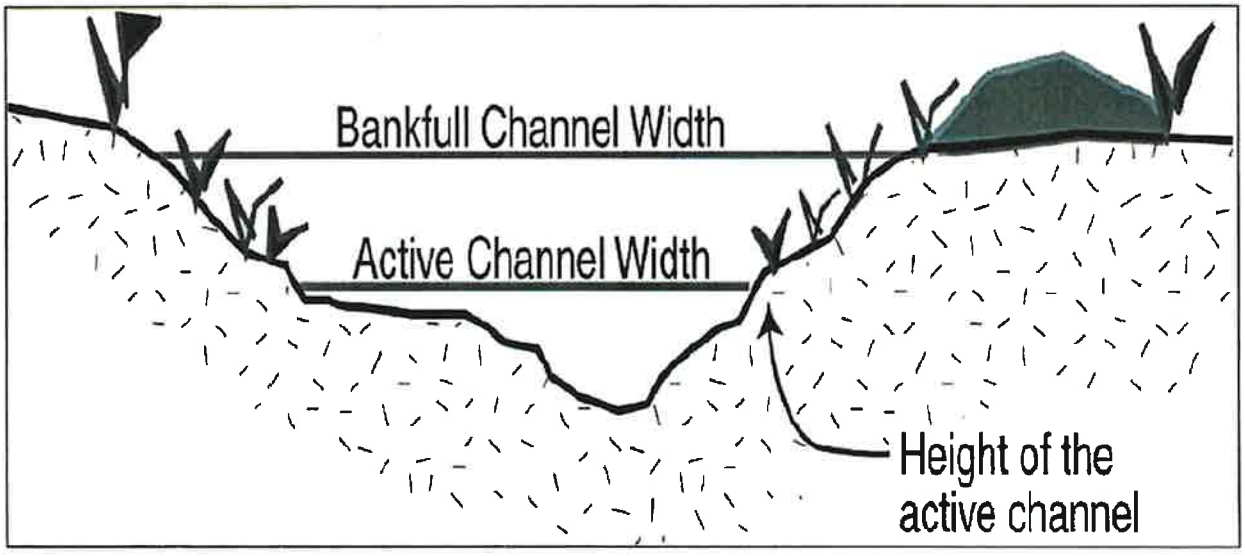
Appendix B. Intermittent Stream Crossing Specification

VT DEC Watershed Management Division Date: June 2022

Per 6.3.D of the Municipal Road General Permit, all municipal road crossings on intermittent streams require sizing of new and replacement structures to be based on the Active Channel Width (ACW).

1. Intermittent streams will be field identified and consist of a defined channel entering the road network and a define channel leaving the road network. The absence of surface base flows for an extended period of the year and the watershed size, typically under 0.25 mi2, differentiates these stream channels from perennial stream channels.
2. Hydraulics sizing of intermittent stream crossings will conform with the VTrans Hydraulics Manual for the roadway classification, Chapter 4 - Table 4-2. The design of these culverts will satisfy criteria in Chapter 6 - section 6.4.
3. Embedment of culverts on intermitted streams if often beneficial for sediment transport and to reduce the need to increase road heights when maintaining adequate cover above the pipe; minimum embedment of 1' for 4-6' culverts.
4. Culvert end treatments are required for intermittent stream crossings. Inlet and outlet headwalls must consist of any combination of VTrans stone fill with a grubbing layer, laid-up stone, reinforced concrete, and/or a culvert end section.
5. Culvert slope to match stream bed slope. Outlet apron at culvert end using of E-stone is recommended – see details.

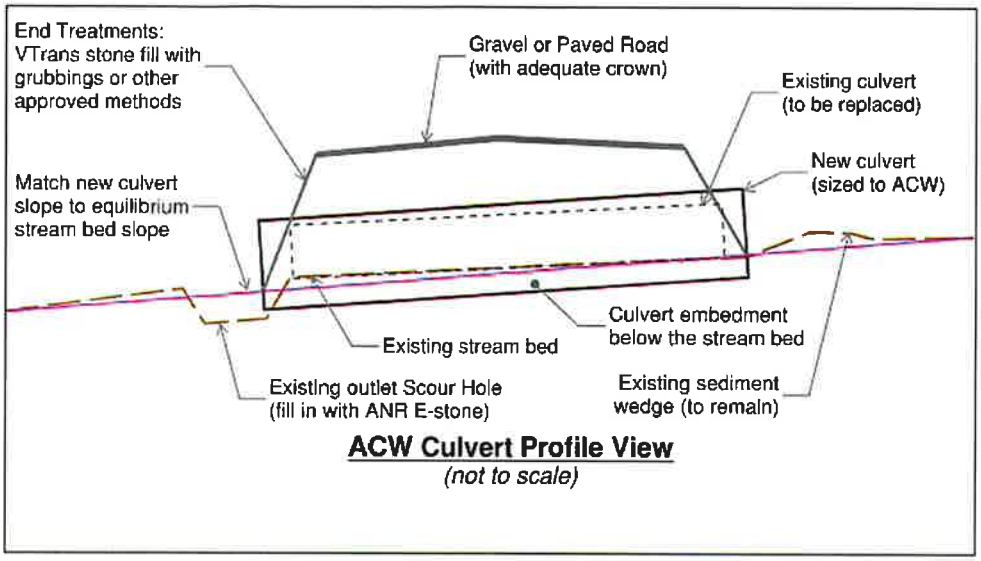
Determining the Active Channel Width on Intermittent Streams



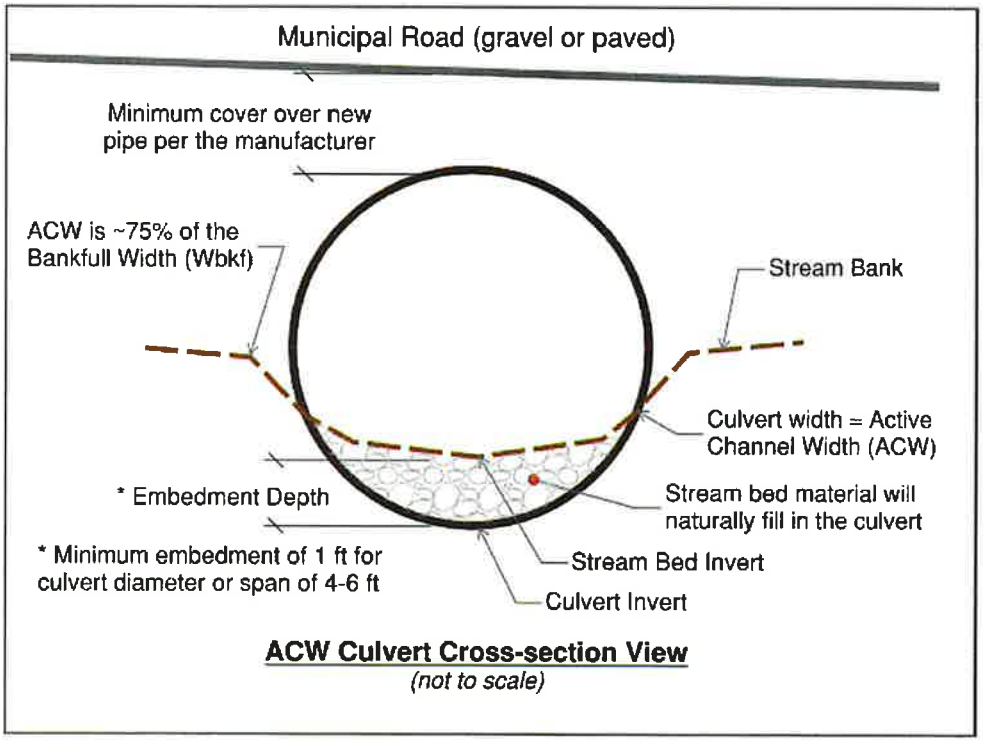
Active Channel Width (ACW) is defined as the limits of streambed scour on banks formed by prevailing stream discharges, measured perpendicular to streamflow. The active channel width is narrower than the bankfull width (~75%) and is defined by a break in slope on the channel bank, typically seen as the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

Culvert Sizing for Crossings on Intermittent Streams:

Determine the ACW through field measurements, ***the culvert sizing will meet or exceed the Active Channel Width***. * To obtain the measurements, go to a typical crossing location and obtain several upstream and downstream Active Channel Width measurements in riffles or straighter sections which are often the narrower channel width locations. * The selected active channel width for the structure will be a representative average of these field measurements.



ACW Culvert Profile View
(not to scale)



ACW Culvert Cross-section View
(not to scale)

Town of Ferrisburgh
Construction criteria

Following The Town Road and Bridge Standards (January 21, 2026) model Section 6. The Town Shall meet the applicable standards for any new or substantially reconstructed roads.

A. A-21 Class 3 Town Highway Guidelines for ADT 0-250
B. A-22 Class 3 Town Highway guidelines for ADT250-400
C. A-23 Other than Class 3 Highway guidelines for ADT 0-400
D. A-24 Guidelines for all ADT Highways 400-750
E. A-25 Guidelines for all ADT Highways 750+ <50mph
F. A-26 Guidelines for all ADT Highways 750+ >50mph
G. B-11 Design Standard for underdrain
H. B-71 Design Standard for Residential and Commercial Drives
I. D-2 Design Standard for Headwalls and other reinforcement
J. D-3 Design Standard for Treated Gutters