

# The Pipeline

the official Dufresne Group newsletter

## The Importance of Culverts

Culverts are a critical piece of our transportation infrastructure. Culverts are crucial to passing stream flows while protecting the roadways they pass under. They often go unnoticed until a large storm event, when the importance of properly sized and adequately maintained culverts becomes abundantly clear.

With the increased frequency of large rain storms throughout Vermont in the past decade, there has been a corresponding increase in the number of culvert failures. One such culvert in Barnet, Vermont, pictured to the right, failed during a Spring 2017 storm event. This culvert is both undersized and damaged. Damage such as this requires immediate attention and diversion of a municipality's resources. Events like this lead to road closures and traffic delays, which can continue until temporary or permanent improvements can be implemented.



*Failed culvert in Barnet, Vermont after Spring 2017 storm event*

To prevent these disruptions and maintain the integrity of our transportation networks, culvert design criteria typically include:

- Hydrological and hydraulic analysis to adequately sizing the culverts for appropriate storm event flows;
- Minimizing the risk of erosion by protecting inlet and outlet areas, including stream banks;
- Proper site grading including the use headwalls and wingwalls, and
- Minimizing disturbance to adjoining ecosystems and maintaining aquatic organism passage.

Dufresne Group has performed design and construction engineering services for numerous culverts throughout Vermont, including both replacement culverts and retrofits. Recent culvert projects at Dufresne Group include the following:

Project Location	Description
Springfield, Vermont	Retrofit of an existing 20'-7" by 13'-2" multi-plate arch culvert with a concrete invert lining, steel baffles, and improved inlet.
Rutland, Vermont	Replacement of a 10' wide concrete arch culvert with a 12' by 8' precast concrete box culvert.
Montpelier, Vermont	Replacement of corrugated metal culvert with 9' by 7' precast concrete box culvert.
Ludlow, Vermont	Replacement of a 9' dia. steel plate culvert with a 16' by 8' precast concrete box culvert.
Chester, Vermont	Replacement of a laid-up stone culvert with a 10' by 6' precast box culvert with stone facing to comply with Historic Preservation requirements.

If you are interested in learning more about Dufresne Group's services, please contact us at [info@dufresnegroup.com](mailto:info@dufresnegroup.com).

## 2017 Vermont Asset Management Grants

The Vermont Drinking Water and Groundwater Protection Division, Capacity Development Program, and the Drinking Water State Revolving Fund has funded a second round of Asset Management grants for 2017. In 2016, the program funded 27 grants with a total award amount of \$510,000. Of those 27 grant awards, DG assisted six communities to obtain the grant and start an Asset Management plan. In 2017, the program funded 21 grants with a total award of approximately \$400,000. The Vermont communities that Dufresne Group will be working with on water system Asset Management plans in 2017 include:

- Barre City
- Randolph
- St. Johnsbury
- Bellows Falls
- Brattleboro

If you are interested in learning how Asset Management can benefit your town or if you would like to apply for an Asset Management grant, please contact one of our offices.

