

# BCEMS EGRESS ROAD STORMWATER

CITY OF BARRE, VERMONT



Dufresne Group provided the site and stormwater design for an emergency egress road at the Barre City Elementary and Middle School. The project consisted of a 1,075 linear foot access road and required stormwater treatment due to expansion of impervious area for a previously permitted parcel.

Through initial discussions with the Stormwater Program, the preliminary concept was to disconnect all of the impervious area. However, due to the topography of the site, disconnection would not be possible for more than half of the road length. A sedimentation pond was considered but space constraints eliminated this option. NRCS soil data showed that soil conditions could be favorable for infiltration. Field testing resulted in an infiltration rate of 30 inches per hour, which was significantly greater than the NRCS estimate.

Runoff from the emergency egress road is conveyed via stone swales and drain pipes to a flow diversion manhole, which is sized to allow the water quality volume (WQv) to enter the treatment system and direct any additional runoff from larger storms to an overflow pipe. The WQv is directed to a hydrodynamic separator to provide pretreatment for 100% of the WQv. The WQv then flows to the infiltration system, which consists of prefabricated chambers. The infiltration system reduced the post-development peak discharge rate to below the pre-development peak discharge rate, eliminating additional treatment.

## KEY FEATURES:

- Site topography & space constraints limited the options for stormwater treatment.
- 100% pretreatment of water quality volume was obtained in a small footprint using a hydrodynamic separator.
- The infiltration system sized only for the Water Quality Volume Standard provided enough treatment to meet the Overbank Flood Protection Standards.
- HydroCAD was used to model the existing conditions and the proposed treatment system to calculate peak flow rates and verify hydraulic conditions within the system.