

SMARTDITCH USED TO CONTROL STORMWATER & PREVENT EROSION

Problem

Along the Western side of the St. Lawrence River in Quebec, Canada; is one of the oldest major highways, Échangeur Route 138. On a recent highway construction project, the Ministry of Transportation for the province of Quebec required a drainage system to convey water down a slope that was unstable. On the plateau, at the top of the slope, a subdivision created stormwater runoff that over time was causing severe erosion to occur. The project engineer for the Ministry, Frédéric Pellerin, worked with the consulting engineer firm Génivar to research many ways to stabilize the slope. They determined the best method was to use multiple products to form a drainage conveyance / erosion control system.

Solution

The key to stabilizing the 2 to 1 slope was to collect the water before the slope became fully saturated or the sheet flows reached a critical velocity causing scouring of the hillside. The engineer's design stabilized the top apex of the slope with vegetation and geo-composite membranes. In conjunction with the membranes, 24" Trapezoidal SmartDitch was installed laterally along the slope to collect the water from the subdivision as it flowed over the edge of the hill and down the slope. Two runs were benched on the slope approximately 1/3 and 2/3 of the way down the slope. The top run collected the water and conveyed it to sections of 24" Semi-circular SmartDitch that acts as a down chute. For this project, Penda developed a new fitting to transition from the 24" Trapezoidal to the 24" Semi-circular sections. In addition to the transition, the Semi-circular sections of SmartDitch were installed on saddles to allow them to cross over large boulders on the surface of the slope. To prevent lateral flow erosion along the sides of the SmartDitch Sections; a system of welding the geo-composite membranes to the top shoulder of the trapezoidal sections was developed by the local supplier of SmartDitch, Innovex. Utilizing this approach of combining the products provided a stable method of transitioning the water flow from the slope and into the rip-rap lined ditches at the bottom of the hill along the highway.

Additional Information

The SmartDitch system was chosen by the consultant and approved by the Ministry because it:

- Allowed stormwater runoff to be conveyed down the slope in a controlled manner without erosion occurring.
- Eliminated excess soil saturation that could cause a mud slide.
- Could be used in conjunction with geo-textile products, thus providing a drainage system that allowed vegetation the opportunity to become established on the slope.

The contractor liked using the SmartDitch on the jobsite because:

- The sections were lightweight and easy to move around on the slope.
- Installation of the SmartDitch required smaller equipment and fewer men than conventional methods.
- Installation was completed quickly, efficiently, and profitably.

Details and Contact Information

- ◆ **PROJECT LOCATION:** Échangeur Route 138 & Route 360, Beauré, PQ
Quebec, Canada
- ◆ **PRODUCT DETAILS:**
1,032 lf 24" Trapezoidal SmartDitch
360 lf 24" Semi-Circular Smart Ditch
24" Semi-Circular to 24" Trapezoidal Transition Fittings - 50 ea
24" Semi-Circular Saddles
- ◆ **OWNER:** Ministry of Transportation,
Quebec Frédéric Pellerin
Direction de la Capitale-Nationale
Service des projets
475, boulevard de l'Atrium, 2e étage
Québec, Qc G1H 7H9
- ◆ **CONSULTING ENGINEER:**
Génivar | Stéphane Bouffard
2500, rue Jean-Perrin, bureau 204
Québec, Canada G2C 1X1



SmartDitch is manufactured in the USA. It is a safe, economical, long-lasting, and environmentally sound irrigation channel lining solution. For more information on the SmartDitch and the MegaDitch HDPE Channel Lining Systems contact:



866.576.2783 SMARTDITCH.COM

