



SOLENO

Mastering Storm Water

1ST
DEVELOPER
OF SUSTAINABLE SOLUTIONS
FOR MASTERING STORM WATER



TEST OF A CULVERT FITTED WITH FISH WEIRS UNDER ROUTE R-200 IN MARTIN-VALIN ZEC, SAGUENAY

Conveying stormwater in compliance with the new RRSDf; a sustainable solution to ensure the free passage of the fish.

Outdated, the culvert located under route R-200 at kilometer 25, in the Martin-Valin ZEC, does not accommodate the flow of water caused by events of high intensities. Identified by the Ministry of Forests, Wildlife and Parks (MFFP) as the ideal site to test Soleno's prototype, the installation of a culvert equipped with fish weirs was executed in August 2017 by Groupe Forestra Coopérative forestière.

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THE CONTEXT

In anticipation of the implementation of the Regulation respecting the sustainable development of forests in the domain of the State (RRSDF), which entered into force in April 2018, several stakeholders in the forest industry, including Soleno, were involved in the development of solutions and products to meet the new regulatory requirements. Forest roads construction is one of the activities with the most potential adverse impacts on aquatic fauna. Eager to offer suitable solutions and products, Soleno developed a culvert equipped with fish weirs that meets the objectives of the new RRSDF by allowing the crossing of a water course while ensuring the free passage of fish. To validate its prototype, Soleno invited all stakeholders involved in the implementation of the RRSDF to visit the site of the installation, under route R-200 at kilometer 25 in Martin-Valin ZEC.



THE SOLUTION

In August 2017, Groupe Forestra has therefore installed 48 linear meters of corrugated galvanized steel pipe (CGSP) of 2400 mm (96 in) in diameter in a trench in 9.1 m (30 ft) wide by 4.5 m (15 ft) deep. Installed in parallel, the two pipes are composed of two lengths of 12 m (39 ft) each, assembled by a steel clamp with 9 corrugations. One is equipped with 12 fish weirs welded directly to the pipe, and the other, a standard corrugated steel pipe, ensures the evacuation capacity and respects the narrowing of the width of the water stream. In order to maintain access to the territory, the road was diverted at km 25 during the entire duration of the work, that spread for 5 days due to heavy rains the previous days.



THE BENEFITS

Mainly used in forest environment, the steel culvert offers an economic solution in large diameters. Welded to the pipe, the weirs are solid and resist to vibration and freeze/thaw cycles. With added reinforcements, the weirs provide optimal resistance to the pressures exerted by the flow of water, and to impacts caused by natural debris. The fish weir allows to meet the objectives of the new RRSDF, since it allows free flow of the water and free movement of aquatic fauna. Fitted with an opening for the passage of fish and fry, the fish weir is used in cases where the free passage of fish must be ensured, in compliance of Section 105 of the RRSDF and when conditions of Schedule 9 of the RRSDF can't be met. It is manufactured in compliance with the requirements of Section 106 and Schedule 10 of the RRSDF. By fostering the reduction of the water flow, the fish weirs ease the passage and upstream movement of the fish, while serving as a refuge for wildlife and fry. The reduction in the speed in the culvert reduces erosion at the output, fostering banks conservation and stability.



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THE IMPROVEMENTS

Conducted in August 2017, this facility has allowed to put to the test the prototype in collaboration with stakeholders involved in the implementation of the RRSDF. By collecting their comments, Soleno was able, in the following months, to improve the product, by making it removable. In these diameters, cost and handling are the main issues. Now removable, our fish weir allows to keep the pipes interlocked during transportation and to achieve savings through the optimization of the loading space. In addition, this improved version is easy to install on sites; the wide base of the weir fits in the steel pipe and provides an adequate interlock, thus ensuring the stability of the installation. Manufactured in hot galvanized steel, it is corrosion resistant, and the sealant joint applied during the installation ensures the system is watertight and perfectly retained. The official market entry of the removable fish weir, patent pending, will be during the Spring of 2019. [Discover this improved product.](#)



The realization of this project was made possible thanks to: the contractor [Groupe Forestra Coopérative forestière](#).

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