Oldcastle Infrastructure
A CRH COMPANY

PEPIN CREEK FISH PASSAGE

Split Box Culvert Solution

Owner
Washington Department of Transportation (WSDOT)

Contractor
Granite Construction, Inc.

Distribution Plant
Bellingham, WA

Featured Products

Split Box Culvert with Head Walls and Wing Walls

The Washington State Department of Transportation (WSDOT) has been working to remove fish passage barriers throughout western Washington since 2013 as the result of a federal culvert injunction*. Ruling in favor of twenty-one northwest Washington Tribes, the U.S. District Court required the expansive culvert removal because of a treaty-based duty to preserve fish runs. The older legacy structures were built to allow water to flow through, but not fish. Acting as barriers, these box culverts impede salmon migration and prevent the fish from accessing their natural habitats.

Granite Construction, Inc. partnered with Oldcastle Infrastructure to manufacture a box culvert solution for the Pepin Creek install that will work towards providing a sustainable fish passage for the area.

CHALLENGE

The install at Pepin Creek with Granite Construction, Inc. required removal of the current box culvert structures that impede fish passage and a larger box culvert replacement as a solution that supports the native stream, imitating a natural creek bed.

Specific challenges that the Oldcastle Infrastructure team faced during this project includes:

- Customizing a larger box culvert solution for fish passage purposes that would imitate the natural creek bed using rocks and dirt.
- Ensuring design approvals were within the project timeline.
- Fitting the culverts together prior to shipping to assist with the tight three-day installation window.
- Overseeing the loading and delivery of 60 trucks leaving the manufacturing facility in timely intervals.

SOLUTION

This project showcases Oldcastle Infrastructure's ability to provide comprehensive support from initial design and engineering services through timely delivery as a single source of supply for this split box culvert fish passage solution. With so many critical pieces to the project, thorough planning and departmental teamwork was required for success.

Three split box culverts with head walls and wing walls, were produced during a six-to-eight-month manufacturing period that ended with extensive quality checks, consistent with the specifications requiring the products to be dry fit and preassembled in the plant. These box culverts contributed to the overall coordinated effort of the removal and replacement of fish passage barriers.

BENEFITS

While the project met all time, budget, and specification parameters for the enlarged structure, the ultimate benefit is much bigger. This project is about restoring historic salmon and steelhead runs that have been interrupted for decades.

Sustainability

Restoring fish and wildlife habitats fits in naturally with Oldcastle Infrastructure's overall commitment to sustainability and we are proud to have partnered with WSDOT to have completed over 100 fish passage culvert projects. These projects have helped to improve access to hundreds of miles of blocked salmon and steelhead habitat. The Department of Fish and Wildlife has found fish spawning upstream at over half of the completed WSDOT fish passage project sites*. The opportunity to recreate these natural migration patterns as part of a sustainable ecosystem is historically significant. Oldcastle is a full solutions provider for barrier corrections and fish habitat improvements providing a permanent sustainable solution like a natural stream.

Resilience

The strength of concrete contributes to the resiliency of these box culverts. They will deliver long-lasting, high-performance with a service life of over 100 years. Built for the long-term, precast box culverts are engineered to withstand external forces and maintain structural integrity throughout their entire lifecycle. The product's long service life will prevent the need for replacement further contributing to its sustainability.

Installation Time

Precast concrete only requires onsite assembly, providing a quicker install compared to for allowing this project to be completed in 3 days.

Eliminating the need to pour concrete allowed this project to be completed in a tight timeline of 3 days and the roads were reopened in time for the Western Washington State Fair.

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https://wsdot.wa.gov/construction-planning/protecting-environment/fish-passage/federal-court-injunction-fish-passage

https://www.enr.com/articles/54660-wa-fish-passage-program-to-flood-contractors-with-work

> "With a project of this complexity, on this challenging time frame, we needed the right partner, and we chose Oldcastle Infrastructure," said Lance Chambers, Granite Construction. "They are a single-source company, meaning that the engineering team, the project leads, the plants, the capacity, and the experience – it's all under one roof. One phone call (even in the middle of the night!) and we're able to keep moving forward. The Oldcastle team was very responsive from the beginning and worked within a very short timeline to develop and submit the design needed. That dexterity and experience was one of the reasons we completed the project as projected."

Lance Chambers
Granite Construction