



Caltrans Division of Research,
Innovation and System Information

Research

Notes

Environmental

AUGUST 2020

Project Title:
Fish Passage Engineering

Task Number: 3233

Start Date: January 02, 2019

Completion Date: December 31,
2021

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Fish Passage Engineering Research

A research intended to select proper, long-term, and cost-effective engineering solutions for fish crossing design.

WHAT IS THE NEED?

California Department of Transportation (Caltrans) and the resource agency partners are required to prioritize and remove fish passage barriers on the state highway system based on the greatest biological needs and benefits to the listed threatened and endangered salmon and steelhead species. Geomorphic channel restoration provides access for the fish species to their upstream habitat, do not interfere with the natural stream processes, and require limited long-term maintenance.

However, Caltrans and the resource agency partners lack the data and science to accurately measure channel morphology and characterize channel evolution regime and trends for effective fish passage design solutions, especially when the goal is to seek a full-span solution.

WHAT ARE WE DOING?

The research team will test the current software and analysis methodology to determine the full-span channel solution. Furthermore, they will also conduct field evaluation of full-span road stream crossings and develop final guidance to determine the appropriate engineering analysis for varied road/stream crossing types, pertaining to full-span salmon and steelhead solutions on the California state highway system.



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California's transportation system

WHAT IS OUR GOAL?

This research will define methodologies that Caltrans and the resource agency partners can select and agree upon the most appropriate design solutions with respect to bank-full widths, channel slope, floodplain utilization, channel stability, and debris prone systems, as well as methodologies that address other key constraints.

WHAT IS THE BENEFIT?

Caltrans, California Department of Fish and Wildlife (CDFW), and National Marine Fisheries Service (NMFS) engineers will collaborate to develop tools for assessing full-span channel engineering solutions for salmon and steelhead fish passage projects with the ultimate objective of minimizing effects to ecological function of natural streams, thus supporting healthy streams where fish live, reproduce and migrate. To ensure the deployment potential of this research, hydraulic engineers and fish passage engineers from Caltrans, CDFW, and NMFS are serving as research panel members.

WHAT IS THE PROGRESS TO DATE?

This research was part of the Division of Research, Innovation, and System Information's (DRISI's) call for submissions in 2018-19 funding cycle following the completion of a Preliminary Investigation on September 2017.

A contract for the research was developed and a Humboldt State University research group led by Dr. Margaret Lang was selected.

The research project was progressing well until some of the field work was stopped because of COVID-19. For this reason, a contract extension was requested and a one year no-cost time only extension has been granted. The project end date is now December 2021.