Research Pay Off Webinar

Energy Dissipation Optimization for Circular Culverts

U.S. Department of Transportation
Federal Highway Administration

NEBRASKA
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DEPARTMENT OF TRANSPORTATION

About the Speaker

David Admiraal

Dr. Admiraal's primary expertise is associated with experimental hydraulics measurements, including both laboratory and field measurements. Past laboratory work has included scaled physical models of energy dissipation structures, gated and ungated culverts, stream channels with bridge constrictions, and lakes. Field measurements have included measurements of bathymetry, velocities, ice, flood-plain terrain, and other flow related parameters. Dr. Admiraal has experience with particle tracking and particle image velocimetry (PTV/PIV), acoustic instruments, GPS/GNSS measurements, and Uncrewed Aerial Survey (UAS) data. These measurements have been collected to help model sediment erosion and bed aggradation, ice jam effects, contaminant transport by stormwater, and for many other hydraulic and environmental analysis purposes.

Current research includes:

- Optimization of Energy Dissipation Using Staggered Weirs
- Sediment Collection and Analysis of Sediment Contributing to Storm Sewers
- Railroad Bridge Flume Scour Physical Modeling
- Impacts of Stream Bed Adjustments on Local Bridge Morphology at Bridge Crossings
- Drift Dynamics of Early Life-Stage Invasive Carps

Presentation Abstract: In the presentation, energy dissipation at culvert outlets will be explained, outlet energy and velocity calculations related to culverts and dissipation structures will be discussed, and findings of the laboratory research that was completed will be shown. In addition, staggered weir optimization research that was recently initiated will be introduced.

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This presentation will provide Professional Development Hours (PDHs)