Hydraulics Competition (V1.0)

Student Host Champion: TBD
Faculty Host Champion: Dr. Weston Koehn

Mid-American Enginuity

Overview

As part of the 2023 ASCE Mid-America Student Symposium, the Kansas State ASCE Student Chapter will host a Hydraulics competition/tour. The Hydraulics competition will include a tour guided by the United States Army Corps of Engineers (USACE). The tour will cover the construction and operational framework of the stilling basin, emergency spillway, and relief well/piezometer network. After the tour, each team will be tasked with measuring the discharge passing through four Parshall flumes that monitor the seepage emanating from a collection trench located just downstream of the dam toe. No pre-Symposium work is required; however, technical reference material is provided below so each team may become familiar with flume hydraulics.

Objective

Teams will be tasked with estimating the discharge through four Parshall flumes that monitor the seepage originating from the relief well system of the Tuttle Creek Dam. Each flume has a staff gauge mounted to it which can be used to obtain stage measurements. A measuring tape will also be provided. Each team will need to determine the dimensions of the appropriate flume components in order to accurately compute the discharge. Teams should be familiar with **ASTM D1941**, which covers the test method for measuring volumetric flowrates in open channels with Parshall Flumes. Additionally, each team will need to provide a one- to two-paragraph discussion in response to few questions about the collection trench network that will be posed at the time of the competition (no prior knowledge about system required). Points will be awarded based upon a variety of metrics related to the overall measurement process employed by each team and how close their discharge estimates are to the periodic measurements taken by the USACE.

Participation Rules

- Four undergraduate students per team.

Provided Materials

- Measuring Tape
- Stopwatch
- Overboots (if needed)

Recognition

The winner of the Hydraulic Competition will receive a plaque and all other finalists will receive an appropriate certificate recognizing their achievements.