**MFS Test Section Video Script**

**YouTube Information:**

Title: Virtual Hydraulics Lab Tour – MFS Test Section

Description: An overview about how measurements taken from physical experiments conducted in the test section of the MFS are used to calibrate computation fluid dynamics (CFD) models.

**Script:**

Full-scale CFD experiments involving existing or proposed bridge foundations are calibrated using the flume. This form of analysis allows researchers to study the performance of the proposed hydraulic design. 3D printed and laser-cut parts are used together to create a physical representation of the site of interest. After the computational model is verified through comparison with measurements in the physical tests, full-scale CFD experiments are conducted.

**508 Caption Description:**

The video shows a computer simulation of a bridge site undergoing a large flood event. The camera starts at a high altitude and a far distance showing a roughly mile-long reach both up and downstream. A darker rectangular section surrounding the bridge and river depicts the outer limits of the three-dimensional CFD model, which obtains its boundary condition data from the larger two-dimensional hydraulic model of the site. In the upper corner of the animation, a smaller video shows the actual bridge model mounted in the MFS. As the two videos play the computer animation slowly flies in towards the bridge, and large moving particles are revealed that show the path and speed of the flow discharge through the main and overflow channels. The particles converge and speed through the bridge opening and are distributed on the other side. Meanwhile, in the MFS video water approaches the model and ripples are visible in the water’s surface. The camera reveals multiple different angles of the model and pans back and forth. As the computer animation continues to zoom in on the bridge model, the particles vanish and varying colors show the range of shear stresses on the bed surface.