The Wave Tank with Material Release Gate (WTMRG) is designed to model a complex variety of waves. It is equipped with both a hydraulic wave paddle, located at one end of the facility, and a unique computer controlled material release gate, that can be arbitrarily positioned along the length of the tank. This release gate is designed to simulate landslide generated tsunamis (granular material releases) as well as sudden dam failures (water releases). The facility is constructed entirely of plexiglas and plate glass and has superb optical access, both for flow visualization and quantitative imaging measurements.

The test section, which is 15.0 m long, 0.800 m wide, and 0.880 m deep, has side-walls constructed of plate glass and a bed constructed of SAR abrasion resistant plexiglas. The facility is supported by a steel frame allowing excellent optical access from all sides, including from below. Located approximately at mid-tank is a false-bottom test section that can be utilized for a variety of studies, including sediment transport, fluid-structure interaction, and flow over irregular morphology.

The hydraulic wave paddle has a maximum stroke of 36 inches and is capable of driving regular and irregular waves across a broad frequency spectrum. The hydraulic material release gate can be positioned essentially anywhere along the test section and is capable of nearly instantaneous removal (for simulation of dam breaks) as well as following a detailed prescribed removal to simulate material slumps.

The facility was designed to our specifications by Engineering Laboratory Design, Inc. and funded through University facility renovation support.
Figure 3: View false-bottom section at mid-tank location.

Figure 4: Close-up view of false bottom section.

Figure 5: View from behind the wave paddle.