

FACILITIES

A number of laboratories and other facilities are available to TRAC researchers at the UW and WSU. Below is a select list:

Albrook Hydraulics Laboratory, WSU

For nearly 50 years the Albrook Hydraulics Laboratory has provided engineering services to solve a wide array of hydraulics-related problems. Major studies have been completed in fluid mechanics, hydrology, hydraulic model studies, and fisheries engineering. These include the effects of turbulence on body drag, storm water runoff and management, riverbed scour, fish passage facility performance, sediment removal from streams, and restoration of impacted stream habitats. The laboratory contains flumes of various sizes, flow capacities, and functions; and computing facilities for test control and analysis.

Environmental Science and Hazardous Waste Research, UW

Over 7,000 sq. ft. of lab space are well equipped with sophisticated research instruments, including gas, liquid, and ion chromatographs; total organic carbon and total organic halide analyzers; inductively coupled plasma and atomic absorption spectrophotometers; state-of-the-art particle size and particle mobility analyzers; and up-to-date instrumentation for conventional environmental engineering analyses. The labs are also equipped with several walk-in controlled temperature areas for experimentation.

Geotechnical Engineering Laboratory, UW

This laboratory contains standard soil mechanics laboratory testing equipment, including soil classification, permeability, consolidation, direct shear, and triaxial testing devices. Specialized research equipment includes a microcomputer-controlled GDS pressure control system and Bishop-Wesley cell for stress path testing, a recently developed cuboidal shear device, 250 mm on a side, with complete computer control of stresses and deformations, as well as data acquisition and control, CKC cyclic triaxial, and an SBEL (Stokoe) resonant column device.

Harris Hydraulic Laboratory, UW

This laboratory is fully equipped for both teaching and research in environmental fluid mechanics. The lab's five major research facilities are a three-dimensional water wave facility

(used for edge-wave research and tsunami run-up research); a two-dimensional water wave facility (used for tsunami sediment research); a flow exchange facility (used for tsunami run-up research and internal wave/gravity current research); a wind-wave facility; and a tidal flow facility (used for harbor flushing research). Three other water flumes are used for experiments in hydraulics and fluid mechanics ranging from fish-screen hydrodynamics to swash-zone mechanics.

Quaternary Research Center, UW

Cooperating faculty members come from fields as diverse as anthropology, chemistry, civil engineering, forest resources, geophysics, and zoology to study the processes that currently shape the environment and those that have operated on it for several million years. The center's Periglacial Laboratory contains cold rooms equipped for manipulating and studying the freezing and thawing of soils, rocks, and building materials. A large, unique tilt table permits the study of ground surfaces under controlled conditions of slope, temperature and moisture.

Structural Research Laboratory, UW

The Structural Research Laboratory contains a 2.4-million-lb capacity Baldwin universal hydraulic testing machine, together with two smaller Baldwin testing machines of 300,000- and 120,000-lb capacities. A modern MTS Testing system includes 60-GPM pumping capacity and numerous controllers and actuators of various sizes. The laboratory also includes a strong floor, a reaction wall, and an earthquake simulator. A wide range of electronic and mechanical equipment is available to measure load and response in structures. This includes fully computerized data acquisition and processing systems.

University of Washington Aeronautical Laboratory, UW

The Department of Aeronautics and Astronautics offers several facilities used by companies, individuals, and the government for testing the aerodynamics of various models. The main facility is the F.K. Kirsten Wind Tunnel, a subsonic, closed circuit, double return wind tunnel. The test section is 8-feet high, 12-feet wide and 10-feet long. It is vented to the atmosphere and can be viewed from all sides. Two 500 hp dc motors drive two 14-ft 9-in-diameter, seven-blade fans to provide the test section with airspeeds of 200 MPH for a typical-sized wind tunnel model.

Washington Center for Asphalt Technology, WSU

WCAT was established through partnership among WSU, WSDOT, and the Washington Asphalt Paving Association. The National Science Foundation also contributed by funding the acquisition of a material testing system. The asphalt materials laboratory has the equipment and capabilities to test absolute viscosity, kinematic viscosity, flash point, rolling thin film oven, penetration, asphalt extraction, kneading compaction, Hveem stability, specific gravities, percentage of air voids, and more. WSU also has facilities for testing portland cement concrete and other materials.

Wood Materials and Engineering Laboratory, WSU

This interdisciplinary research facility develops new building materials from a range of recycled and virgin resources and develops innovative structural systems to effectively utilize new materials while maintaining economic viability and public safety. The laboratory is equipped with equipment for materials and structural testing; thermal and surface analysis; spectroscopic and microscopic analysis; composite manufacture analysis; sorting, drying, blending and forming; furnish generation; nondestructive evaluation; and computer-based modeling and data analysis.

CREDITS

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