

# CIVIL ENGINEERING



**Hampden**  
ENGINEERING CORPORATION



CIVIL ENGINEERING SYSTEMS

*Civil Engineering involves the design and supervision of the construction of roads, buildings, airports, tunnels, dams, bridges, and water supply and sewage systems. It is considered one of the oldest engineering disciplines and encompasses many specialties including: structural, water resources, environmental, construction, transportation, and geotechnical engineering. Hampden offers a number of trainers and demonstrators that can provide the future Civil Engineer with the knowledge needed to succeed in this broad field.*

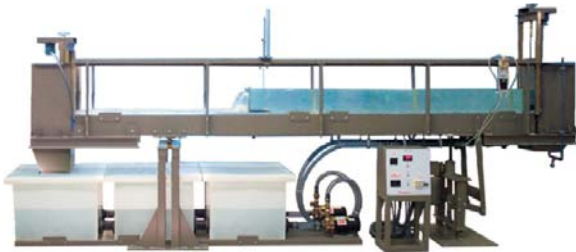


Water Resources Engineering

*Water Resources Engineers design works such as canals, dams, levees, diversions, and drainage channels and ditches that control the flow of water. Water Resources projects provide benefits such as: flood control, hydroelectric power, recreation, irrigation, water supply, and enhancing the environment and may even include fountains and water slides. The Water Resources Engineer must determine how much water is needed, where and how much water is available and how to transport it. HAMPDEN ENGINEERING offers a number of models that demonstrate various types of flow and its effect on the environment.*

The Hampden **Model H-6531** Hydraulic Demonstration Channel has been developed to investigate analytical applications of fluid mechanics to situations in which fluids can be treated as continuous media. The particular laws involved include conservation of mass, continuity, energy, and momentum. Application of these laws may be simplified in order to describe quantitatively the behavior of the fluid.

*See back cover for other models available in Water Resources Engineering.*



Construction Engineering

*Construction Engineers must have a good technical understanding of construction methods and equipment. They are responsible for turning designs of other engineers into reality. HAMPDEN ENGINEERING offers several models that can provide students with a better understanding of Construction Engineering.*

The Hampden **Model H-6320** Structures Test System demonstrates literally thousands of investigations into the effects of statically or dynamically loading mechanical structures. Costs are so low that tests may be carried to destruction by individual students.

The Structures Test System is a bench-top sized “learning laboratory” system designed to test and indicate the effects of static and dynamic mechanical loading on models of various engineering components and structures such as beams (“I”-beams, “T”-beams, rectangular and round beams, etc.), simple and complex bridge trusses, cantilever beams and trusses, crane trusses and the like. The Hampden **Model H-6320** can be supplied with the necessary accessory equipment to permit acquisition of appropriate signals/values. This includes the following equipment: ten strain gauges, two precision linear potentiometers with cable, Data Translations data acquisition board and signal conditioning unit, complete with Data Translation LabTech software, for IBM compatible computer.

*See back cover for other models available in Construction Engineering.*



Environmental Engineering

*Environmental Engineering involves the protection of human health and safety and the protection of our natural environment from pollution. Environmental Engineers are essential to the preservation of our natural resources. Their responsibilities include the planning, designing, operation and maintenance of systems that treat drinking water, remove pollutants from water and air, and dispose of solid and hazardous wastes. HAMPDEN ENGINEERING offers numerous models that provide a better understanding of our ecological system and how best to protect it.*

The Hampden **Model H-6510** Drainage and Seepage Tank Demonstrator has been developed to investigate water flow through permeable media. Using sand as the medium and two-dimensional models, flow lines can be determined as well as the distribution of up-lift pressure and seepage rates. Experimental capabilities include: Uplift Pressure on Hydraulic Structures, Seepage Through Earth Embankments, Flow Under Wall Pileings, and Flow Nets in Porous Media (Sand).

*See back cover for other models available in Environmental Engineering.*



Structural Engineering

*Structural Engineering involves the design of all types of structures including: buildings, bridges, towers, and dams. The design of the beams, columns, trusses, frames, and foundations of these structures must withstand the forces of their own weight as well as the natural forces of wind, snow, and earthquakes. HAMPDEN ENGINEERING offers several models that can provide students with a better understanding of Structural Engineering.*

The Hampden **Model H-6310** Hydraulic Tension Testing Machine is a hydraulic tensile testing machine with a screw-type operating cylinder which gives completely smooth and step-less loading. The cylinder is operated by means of a crank which is designed so that only light hand power is required to obtain maximum load. The pedagogic design of the machine means that the student can observe what is happening throughout the entire procedure. The convenient size and the sturdy structure make the Hampden **Model H-6310** a highly reliable and risk-free machine. The power is read on a large and clearly visible indicating instrument which is graduated in kN (kilo Newton). The instrument is provided with a maximum-value indicator which shows the power at failure on the test rod. The extension is measured by means of a gauge which has a reading accuracy of 0.01 mm.

*See back cover for other models available in Structural Engineering.*





# CIVIL ENGINEERING PROGRAM OVERVIEW

## Water Resources

**H-6530** Hydraulic Demonstration Channel with 6" Channel  
**H-6531** Hydraulic Demonstration Channel with 12" Channel  
**H-6535** Hydrostatics Bench  
**H-6540** Water Hydraulics System  
**H-6940** Multi-Purpose Flume  
**H-6950** Flow Measurement Bench  
**H-6960** Laminar Flow Analysis Demonstrator  
**H-6970** Hydrokinetics Demonstrator

## Environmental

**H-6510** Drainage and Seepage Tank Demonstrator  
**H-6520** Infiltration Demonstrator  
**H-6522** Surface Irrigation Demonstrator  
**H-6523A** Sediment Transport Channel Demonstrator  
**H-6524** Mobile Bed and Flow Visualization Tank Demonstrator  
**H-6526** Ground Water Flow Tank  
**H-6527** Sedimentation Study Trainer  
**H-6990** Tilting Water Channel and Gate

## Construction

Fluid Power Learning Program:  
**H-FP/H-6032** Basic Bench  
**H-FP/BH** Basic Hydraulics  
**H-6320** Structures Test System  
**H-6640** Air Flow Unit  
**H-6740** Air Ventilation System Trainer  
**H-6850-20** Double Pipe Heat Exchanger  
**H-6910** Wind Tunnel  
**H-6920** Pipe Friction Demonstrator  
**H-6925** Fluid Circuit Demonstrator

## Structural

**H-6310** Hydraulic Testing Machine  
**H-6311** Torsion Test Demonstrator

Shown **Model H-6920** with optional **H-6920-MR** Mobile Storage Cart (left) for storage of Sensing and Transmitting accessories.

Also shown, optional **H-6920-22** Water Pump system (right), and optional **H-6920-20** Differential Pressure Transmitter mounted.

Dimensions: 78"H x 98"W x 30"D  
Weight: 1000 lbs.



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