LAB GUIDE

Euler’s Column Buckling Lab
New Instron Compression Tester, 30,000 lb load
◊ This lab is designed to demonstrate the effects of column buckling on an assortment of intermedi-
◊ The samples that are used are generally mild grade steel that is cnc machined in house to

Torsion Testing
New In-
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ENVIRONMENTAL TEACHING LAB

Houses a variety of regular wet laboratory functioning facilities and instruments

This lab provides students with hands-on experiences and learning of class subjects ranging from environmental technologies for water/wastewater treatment to microbiological operations such as disinfection

This facility has all major regular wet laboratory functioning facilities such as microbalances, pH/conductivity/ion testing, and more.

ITS VIDEO ANALYTIC/INSTRUMENTATION LAB

Variety of different functions are performed in the various labs.

Wireless traffic sensors for work zone travel time and vehicle volume data collection (Bluetooth, Radar, Video, RFID, and WiFi detectors)

High speed internet infrastructure

High-end workstations for development of the WIMAP application

Workstations for traffic simulation and computer modeling

Small Unmanned Aerial Vehicles (UAV)

Traffic data collection technologies

Driving Simulator

Adaptive traffic signal controllers

Adaptive signal control software

Large HD screen for adaptive signal control monitoring and management in simulation environment

Traffic simulation modeling software

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HYDRAULICS LAB

Demonstrates weirs and abutments for lab

Water Flume

Water Ham-

Demonstrates shock waves in water at sonic

Water Wall

Demonstrates flow controls, minor loss differences and pumps

SOIL MECHANICS LAB

Compressive strength, modulus of elasticity, Poisson’s ratio, density, and other soil properties

Soil Test Split Tensile

Tests traditional sized concrete cylinders

CNC Lathe and CNC Mill

Drives Cylinder Test

Automated Triaxial Test

CD, CU, UU

MTS Compression

Our largest cylinder tester, designed to crush high strength 6x12 concrete cylinders or any other specimen

Sieve Analysis

Sieves (4, 10, 20, 40, 60, 140, 200), sieve

Hydrometer Analysis

Hydrometer

Atterberg Limits

Casagrande Apparatus

Field Compaction

Sand cone

Compaction

Proctor mold and Proctor hammer

Constant Head Permeability Test

Permasemeter

Consolidation Test

Consolidator (ASTM D2435, D4546, D38 Manual and Automated

Unconfined Compression Test

Unconfined compression (3 manual and 1 automated)

Direct Shear Test

3 Geo-Jack machines (2,000 lbs loading sensor

Environmental Teaching Lab

The top level is used primarily for class work and has testing equipment tailored to match the labs provided in our CE 431 class as well as an array of CIM and CET classes.

The lower level is also being transformed into a more usable space with the addition of our CNC prototyping machine shop that is

Compression Machine

(400,000 lb capacity)

Soil Test Split Tensile

Tests traditional sized concrete cylinders

MTS Beam Tester

(250,000 lb capacity)

Tests beams that need additional information than load at failure

MTS Compression

Our largest cylinder tester, designed to crush high strength 6x12 concrete cylinders or any other specimen

CNC Lathe and CNC Mill

Drive Cylinder Test

Automated Triaxial Test

CD, CU, UU

The mission of the ITS Labs is to provide resources and assistance to New Jersey DOT in improving safety, mobility, and efficiency of New Jersey’s surface transportation systems. By implementing ITS, and innovative transportation planning and management methods and strategies this can be accomplished.

By conducting planning and research studies, operational tests, evaluation of deployment scenarios and strategies, training, and outreach.

Specifically focusing on technology assessment, development of new technology applications, testing deployments of new technologies, evaluation of ITS implementation strategies and scenarios, application of advanced transportation and traffic modeling tools for ITS deployment evaluation and planning, maintain-