Department of Civil Engineering

Center for the Built Environment and Infrastructure Studies

FACILITIES AND TECHNICAL CAPABILITIES
Morgan State University  
“Growing the Future, Leading the World”

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### MORGAN STATE UNIVERSITY
### INVENTORY LIST OF EQUIPMENT IN CBEIS
### AT-A-GLANCE

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### SOFTWARE CAPABILITIES
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Morgan State University
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Center for the Built Environment and Infrastructure Studies (CBEIS)

Morgan State University’s Department of Civil Engineering is located in the Center for the Built Environment and Infrastructure Studies (CBEIS), a new 126,000-GSF shared facility for academic engineering and design programs. CBEIS houses research and instructional programs for the School of Architecture and Planning, the School of Engineering’s Civil Engineering, Transportation and Urban Infrastructure Studies Programs, and School of Engineering’s National Transportation Center, in a highly collaborative environment within and among these disciplines. By housing these programs under one roof, CBEIS promotes interactivity among constituent student and faculty from these areas. CBEIS also serves as a laboratory for sustainability in design and engineering. Toward this end, the University is targeting USGBC LEED Gold certification. CBEIS is a gateway building on the northern-most edge of the Morgan State campus. It also creates a strong link between the University’s North Campus and its main campus and acts as a link between two different environments: the urban context along Perring Parkway and the natural landscape of the Herring Run.

Photos Courtesy of Barton Malow Company and HCM Sustainability
The facilities in the structures area include the following:

1) CE Materials Laboratory (CBEIS 124),
2) CE Structures Laboratory (CBEIS 125),
3) CE Structures Research Laboratory (CBEIS 123), and
4) CE Seismic Simulator Laboratory (CBEIS 121).

The CE Materials and Structures Laboratories are for both teaching and research. Equipment in these labs support concrete and asphalt tests, universal tension and compression and torsion testing, fatigue and creep measurements, pendulum impact testing, hardness tests, structural mechanics experiments as well as load frame measurements of structural response. The CE Seismic Simulator Laboratory includes a 6DOF seismic simulator and strong-floor, strong-wall facility that supports research and contracts in seismic testing and simulation, structural dynamics and control, materials characterization and behavior, and advanced macro- and micromechanics; with advanced displacement (including 3D noncontact) measurement tools, sensors and actuators of various types, and data acquisition and control systems. The structures area laboratories are also supported by a Student Projects Lab with welding, cutting, drilling, and various tools for fabrication of small and large articles, including a five-axis machining center.

Contact Information:

CE Materials Lab and Dr. Monique Head
CE Structures Lab Monique.head@morgan.edu
(443) 885-3295

CE Structures Research Lab and Dr. Iheany Eronini
CE Seismic Simulator Laboratory Iheanyi.eronini@morgan.edu
(443) 885-3868
INSTRON 1000HDX – Universal Testing Machine

The HDX Models are designed for high-capacity tension, compression, bending/flexure, and shear testing, and feature a dual test space and long test stroke. These frames incorporate high-quality materials, components, and craftsmanship, and are ideal for testing metals, wire, fasteners, concrete, and wood.

Features and Benefits

- 1000 kN (220,000 lbf) capacity
- Two test space design makes changing between tension and compression testing safer and more efficient: no need to remove heavy fixtures
- Optional open-front grip design improves operator safety and throughput, and allows a limited number of jaw faces to cover a large range of specimen sizes
- Long test stroke accommodates a variety of test fixtures and applications, such as rebar bending tests
- Productivity panel with multiple function keys and displays improves ergonomics and allows the operator to perform common testing functions and view key test information without returning to the computer
- Powerful, yet user-friendly materials testing software provides repeatable and reproducible results for simple to sophisticated testing requirements
High-Frequency Shaker MB Dynamics

The S&R (squeak and rattle) shaker by MB Dynamics is designed to perform well in environmental testing, durability, and S&R. The SILVER shaker works with a maximum payload of 1000 lb and frequency range of 2500 Hz.

SI Series Pendulum Impact Tester (INSTRON)

Ideal for Izod and Charpy metals impact testing, the SI Series is recognized for its rugged design, high accuracy, and low operating costs. The tester is anchored to the floor of the lab and is capable of delivering energy up to 300 ft-lb (406.7 J). It complies with requirements of ASTM E23. Accompanying Fracta™ Software is used for gathering, calculating, and storing impact test results.
INSTRON-CEAST 9350 Drop Tower Impact System

The CEAST 9350 is a floor standing impact system designed to deliver 0.59 - 757 J (0.44 - 558 ft-lb) of energy. As the premier model in the CEAST 9300 line, this model includes many time-saving features and supports a large variety of options – from chambers to extra energy. The CEAST 9350 works with our impact software and data acquisition system to make analysis simple. This versatile instrument can be used to test anything from composites to finished products and is suitable for a range of impact applications, including tensile impact, puncture, Izod, and Charpy.

Features

- High-performance test frames with powerful belt drive and motor system
- Easy-to-use operator control panel for precision manual control
- Protective doors and panels on all sides for operator safety
- Modular crossheads with interchangeable dropweights; change weights safely in seconds
- VisualIMPACT Software — for collecting, analyzing, and reporting detailed impact performance data
- High-speed data acquisition rates: up to 2 MHz simultaneous sampling — more data where you need it
- Optional features such as high-energy configuration, weighing system, automatic lubrication, anti-rebound, environmental chamber, pivoting specimen loader, and automatic specimen feeding system
A portion of the CE Structures Laboratory is dedicated to simple experiments that are used to enhance basic concepts, thereby transforming the classroom into a living laboratory. During the experiments, students apply principles of structural engineering, bridge engineering, and engineering mechanics to validate theory that is taught in class. Morgan State University has acquired about 14 modules from PA Hilton for these hands-on demonstrations varying from “Equilibrium of a Particle” to “Deflection of Beams.” The experiments also provide for evidence-based and experiential-based learning to create a more active and exciting learning environment. This lab also hosts the Vibrating Machine, where small vibration tests can be conducted for research and/or hands-on laboratory demonstrations to assist students with topics covered within dynamics.
CE Structures Research Laboratory

The laboratory encompasses a six-degrees-of-freedom seismic simulator and strong-floor–strong-wall facility having a 3m x 3m shake table with 10,000 kg specimen mass capacity, a 10-20-6 inches x-y-z working displacement range, 0-60 Hz operating frequency and acceleration of up to 3G; and a 4.6 m L-shaped strong wall and included strong floor with seven double-ended fatigue-rated hydraulic actuators in the dynamic force range 15 to 500 kN.

Other equipment includes an Axial-Torsion Test Facility capable of simultaneous 250 kN axial, 2200 N.m torsion, and controlled heating in a 1200 °C split-tube two-zone furnace; a top-loading controlled atmosphere High-Temperature (2000 °C), High-Vacuum (10^-5 - 10^-6 torr) Oven; a Drop Tower tester with environmental thermostatic chamber, high-energy and high impact velocity capacity to 1800J and 24 m/s, and changeable tups and inserts for instrumented and non-instrumented tests on plates, films, and 3D components; Universal Hardness and Izod/Charpy V-Notch Testers; a 70 kg payload capacity Electrodynamic Shaker and Amplifier System with trunnion base and stinger kit, and frequency response DC to 2 kHz for Sine, PSD Random and Shock tests; an Atomic Force Microscope with 90 µm x 60 µm X-Y scan range and 8 µm Z range, an environmental chamber, and capable of open and closed loop operation and true non-contact, contact, lateral force, phase imaging, and various other modes; sample preparation equipment; a multipurpose Active Vibration Isolation Table; and various actuation, measurement, and control devices.

Sensors cover strain gages, various LVDTs, load cells, accelerometers, a high-temperature axial-torsion extensometer system and a non-contact three-dimensional Scanning Laser Doppler Vibrometer system with integrated Geometry Scan unit. Actuators include various hydraulic, pneumatic, piezoelectric, and shape memory alloy (SMA) types. Other components for measurement and control include a 1-GHz Mixed Signal Oscilloscope, High Voltage Amplifier and Function Generator, and a High-Voltage, High-Bandwidth Power Amplifier.
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CE ENVIRONMENTAL RESEARCH LABORATORIES

Environmental research in the Department of Civil Engineering focuses on the identification of chemical pollutants in water and wastewater, development of innovative physical, chemical and biological treatment processes, along with the necessary management and decision support strategies for establishing green infrastructure to mitigate impacts that threaten our water resources. Our academic and research programs also build upon Morgan’s strong interdisciplinary focus on studying the resilience of existing and future water infrastructure, and protection of the ecological services yielded by the Chesapeake Bay Watershed.

The environmental labs in CBEIS feature analytical equipment available in two environmental research laboratories, including the latest equipment available from PerkinElmer:

PerkinElmer NexION® 300
(Located in Environmental Faculty Lab)
Inductively coupled plasma mass spectrometry (ICP-MS) For analysis of metals and some non-metals at concentration detection limits as low as parts per trillion (ppt).

PerkinElmer PinAAcle 900 (Located in Environmental Faculty Lab and Environmental Graduate Lab, CBEIS 300) Atomic Absorption Spectrometers (AA) Using atomic absorption (AA) spectrometry will allow us to analyze water, soil, and biomass samples for their chemical concentrations of more than 70 different elements.

PerkinElmer Clarus® SQ 8 GC/MS (Located in Environmental Graduate Lab)
Gas Chromatography/Mass Spectrometry (GC/MS) Applications of GC/MS include environmental analysis of inorganic and organic pollutants; detection of pharmaceuticals and explosives; and identification of unknown samples.

These instruments will give us state-of-the-art capability to perform numerous environmental, biomonitoring, geochemical applications and analysis of materials, water, soil, and hazardous waste.
Bioreactor

Perkin Elmer PinAAcle 900 Atomic Absorption Spectrometer

Perkin Elmer NexION® 300 Inductively Coupled Plasma

Flash Purification System

Contact Information:

CE Environmental Lab (CBEIS 300)…………………………………….. Dr. Gbekeloluwa B. Oguntimein
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CE Environmental Lab (CBEIS 360)…………………………………….. Dr. James Hunter
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CE GEOTECHNICAL RESEARCH LABORATORY
(CBEIS 365)

This lab focuses on experimental investigation of soil property, in particular, on mechanical behavior of soil, such as deformation and failure under different types of loads. Various factors are considered in design of various experimental investigations for various types of soils, such as frozen and defrost soils, soils physically reinforced with geofiber, soils chemically stabilized with fly ash or lime, etc. Various tests with different testing conditions can be conducted, such as saturation and consolidation tests, dynamic and static loading test, resilient modulus tests, resonant column tests, etc. Dynamic loading systems can simulate various types of forces inducted by traffic loads, wind blow, sea waves, earthquakes, foundation vibration, etc. Static loading systems can be applied to various experiments with either stress or strain control to investigate stress-strain relation, soil failure, elastic modulus, and other soil properties. This lab has six new testing systems, including a solid consolidation device, a static triaxial apparatus, two dynamic triaxial testing systems, a soil resonant column, and a triaxial-torsional shear system.

Contact Information:

CE Geotechnical Lab…………………………
Dr. Jiang Li
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(443) 885-4202

CE Geotechnical Lab…………………………
Dr. Duowen Ding
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(443) 885-3183

Geocomp Triaxial UU, CU, CD & Unconfined Compression Testing System
Morgan State University
“Growing the Future, Leading the World”™
CE Geotechnical Research Laboratory

Geocomp Rowe Consolidation Testing System

A Triaxial and Torsional Shear Testing System
Morgan State University
“Growing the Future, Leading the World™

CE Geotechnical Research Laboratory

GDS Small-Strain Hollow Cylinder Testing System

GCTS Cyclic Hydraulic Soil Triaxial System

Geocomp Cyclic Triaxial & Resilient Modulus Testing System

Geotechnical Graduate Research Lab (CBEIS 365)
Although it is not located in CBEIS, the Undergraduate Geotechnical Laboratory, in the Clarence M. Mitchell Building, is an essential research facility of Morgan’s Civil Engineering Program. The lab is well-equipped to assess and evaluate all engineering properties of soils, including classification and index properties, compaction characteristics of soils, hydraulic characteristics, compressibility, rate of consolidation and shear strength. This lab has a static triaxial testing machine, direct/residual shear machine, ro-tap sieve shaker, hydrometer analysis testing apparatus, constant/falling head permeability apparatus, Marshall stability tester AP-170C, compaction/proctor test machine, CBR machine, set of sieves and other index properties testing equipment.

Contact Information:

CE Geotechnical Undergraduate Lab………………. Dr. Oludare Owolabi, P.E., MCIHT
oludare.owolabi@morgan.edu
(443) 885-5445

Direct/Residual Shear Machine

Marshall Stability Tester AP-170C

Set of Sieves and Compaction Molds
CATIER seeks solutions to complex engineering problems primarily dealing with optimization in the areas of transportation and infrastructure engineering, with a recent focus in interactions among transportation, energy, and environment. Over the last 10 years, the center has conducted research related to highway design, infrastructure maintenance, traffic engineering, asset management system, and transportation security.

Contact Information:

CATIER Research Lab………………. Dr. Oludare Owolabi, P.E., MCIHT, Assistant Director
oludare.owolabi@morgan.edu
(443) 885-5445
The facilities in the Geospatial Technology area include the following:

1) CE Undergraduate Geospatial Research and Training Laboratory (CBEIS 257),
2) CE Graduate Geospatial Instructional and Research Laboratory (CBEIS 357), and
3) CE Faculty Geospatial Research Laboratory (CBEIS 358)

Contact Information:

CE Geospatial Technology Laboratories……………… Dr. Frederick K. Wilson, Director
frederick.wilson@morgan.edu
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ASD FieldSpec 3 Spectroradiometer
Morgan State University
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CE Geospatial Science & Technology (GST)

CE Undergraduate Geospatial Research and Training Laboratory (CBEIS 257)

This lab is for undergraduate research and training in the geospatial sciences and technologies. Research focuses on data acquisition, analysis, and synthesis in both STEM and non-STEM disciplines. It is equipped with 20 high-resolution double-monitor workstations, GTICO ACCUTAB digitizer, wide-format scanner, Trimble Handheld DGPS, a suite of remote sensing and GIS software, and several remotely sensed datasets including Landsat MSS/TM, SPOT, and IKONOS satellites images.

Undergraduate GST Lab (CBEIS 257)

CE Graduate Geospatial Instructional and Research Laboratory (CBEIS 357)

This lab is used for training of graduate students in the geospatial technologies and sciences. Students focus on utilizing remote sensing, geographic information system (GIS), and global positioning system (GPS)/differential GPS in their research. It is equipped with 10 high-resolution double-monitor workstations, Leica TotalStation for surveying, a 6-panel VisWall state-of-the-art visualization capability, a spectroradiometer for hyperspectral remote sensing, and a suite of GST software including ArcGIS and ENVI. Remotely sensed datasets include both multispectral and hyperspectral satellite images.

Graduate GST Lab (CBEIS 357)
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CE Geospatial Science & Technology (GST)

GTICO ACCUTAB High-resolution Digitizer

CE Faculty Geospatial Research Laboratory (CBEIS 358)

This lab is dedicated to faculty and collaborators involved in joint research projects utilizing GST. It is equipped with 6 high-resolution double-monitor workstations, an high-resolution HP wide-format plotter, an 18-panel VisWall state-of-the-art visualization capability, an ASD FieldSpect 4 Spectoradiometer for hyperspectral remote sensing, Trimble GoExplore 6000 DGPS, and a suite of GST software including ArcGIS and ENVI. Remotely sensed datasets include both multispectral and hyperspectral satellite images.
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CE Geospatial Science & Technology (GST)

(left) Trimble’s Differential Global Position System (DGPS) & (right) Magellan’s Global Position System (GPS) Units
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CE FLUID MECHANICS RESEARCH LABORATORY

Fracture Mechanics, Plasma Aerodynamics, Heavy Lift

Morgan State University is embarking on cutting-edge research in the areas of heavy lift, fracture mechanics, plasma aerodynamics and super cavitation. As such, Morgan is fortunate to have approval for additional assets, such as subsonic and supersonic wind tunnels, with access to hypersonic wind tunnels located at the Department of Defense White Oak, Maryland Facility. Moreover, Morgan is a user of NASFRO, ANSYS, FLUENT, CFX and NASA OVERFLOW2. Finally, Morgan has past experience with NASTRAN.

This lab will host research focusing on Fracture Mechanics (fracture growth and failure in airplane parts and materials), Plasma Aerodynamics (modeling and simulation), and Heavy Lift (space travel assistance) activities.

Contact Information:

CE Fluid Mechanics Research Laboratory .................Professor Arthur Willoughby
arthur.willoughby@morgan.edu
(443) 885-4238

FRACTURE MECHANICS

Internal crack growth may inhibit the safe air travel of passengers in both the commercial and military sectors. Using NASGROW and ANSYS along with the Finite Element Modeling (FEM) Methodology fracture growth and failure analysis in airplane parts and materials was studied. The Boeing 787 Dreamliner was the identified aircraft to be researched against material abnormalities. Moreover, failure analysis plays a critical role in our transportation sector.
PLASMA AERODYNAMICS

Plasma Aerodynamics has a bright and promising future in the aerodynamics area. Decrease in drag potentially 10–30% as well as creating invisible radar signature. Morgan State University is in the initial stages of modeling and simulation of this critical and revolutionary area. The European Space Agency and others have capitalized on the initial work done in Russia. Aircraft bodies immersed within a plasma field will increase lift-to-drag ratio, thus allowing a fuel cost saving within the transportation sector. Moreover, underwater supercavitation offers the same.

HEAVY LIFT

Morgan State University proposes and is actively seeking research in heavy lift to assist in space travel for the race back to the Moon. Morgan is a user of Satellite Tool Kit (STK) and ARcView-ARcInfo and can assist in trajectory plotting for this lunar mission. Heavy orbital lift becomes a major player for on-orbit travel and exploration.
C6MKII Fluid Friction Measurement

This is a unit for the detailed study of fluid friction head losses, which occur when an incompressible fluid flows through pipes, fittings and flow metering devices.

S12 MKII Advanced Hydrology Study System

Instructional Capabilities

- Determination of run-off hydrographs from model catchments, including multiple storms, moving storms, effect of reservoir storage and land drains
- Construction of draw-down curves for one- or two-well systems in a sand bed
- Hydraulic gradients in ground water flow Investigation of model stream flow in alluvial material
  - Formation of river features and development over time
  - Sediment transport, bed load motion, scour and erosion
CE Fluid Mechanics Research Laboratory

S16 Hydraulic Flow Demonstrator

The Armfield S16 Hydraulic Flow Demonstrator simply connects to a standard F1-10 Hydraulics Bench to permit the study of the following basic aspects of fluid flow:

**Closed conduit flow**
- Application of the Bernoulli and Continuity equations to converging and diverging flow
- Effect of gradual and sudden changes in cross section (energy losses)
- Using a contraction as a flow measuring device
- Using a Pitot tube to measure velocity/velocity profile
- Flow through a Culvert

**Open channel flow**
- Flow beneath an Undershot Weir (Sluice Gate)
- Flow over Sharp Crested, Broad Crested and Ogee Weirs
  - Using hydraulic structures to measure flow in an open channel
  - Effect of changes in upstream and downstream water level
  - Characteristics of Clinging, Aerated, Depressed and Drowned Nappes
- Sub-critical, Critical and Super-critical flow/depth. Changes in Specific Energy and control imposed by the minimum energy condition
- Characteristics of Hydraulic Jumps
  - Force and energy conditions in a Hydraulic Jump
  - Flow patterns associated with Hydraulic Jumps
- Flow over Drop Structures/Energy Dissipation
- Changes in flow profile in relation to the Froude Number (predicting flow conditions in an open channel)
- Observation of flow patterns associated with flow around hydraulic structures
- Velocity of gravity waves in shallow water / Formation of surface waves near critical depth
- Project work Evaluation of user constructed hydraulic structures
FM62 Pelton Turbine

This is a small-scale hydropower unit designed to demonstrate the operating principles of an impulse turbine.

Instructional Capabilities

- Determining the characteristics of the turbine, including the relationships of volume flow rate, head, torque produced, power output and efficiency to rotational speed
- Comparison of throttle control and spear valve control of the speed of a Pelton Turbine

Fluid Mechanics Laboratory (CBEIS 018)

This lab will have research focusing on fracture mechanics (fracture growth and failure in airplane parts and materials), plasma aerodynamics (modeling and simulation), and heavy lift (space travel assistance) activities.
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CE Fluid Mechanics Research Laboratory

F1-30 Flux Instructional Capabilities

- Measuring fluid density and relative density (specific gravity) of a liquid using a universal hydrometer
- Measuring fluid viscosity using a falling sphere viscometer
- Measuring fluid density and relative density (specific gravity) of a liquid using a pycnometer (density bottle)
- Observing the effect of capillary elevation between flat plates
- Measuring the effect of capillary elevation inside capillary tubes
- Verifying Archimedes principle using a brass bucket & cylinder with a lever balance
- Measuring atmospheric pressure using an aneroid barometer

This apparatus introduces students to the following properties of fluids:

- Density and Relative Density (specific gravity)
- Viscosity Capillarity – capillary elevation between flat plates and in circular tubes
- Buoyancy (Archimedes’ principle)
- Atmospheric pressure

The apparatus consists of a collection of components that demonstrate individual fluid properties. The components are stored on a common support frame manufactured from PVC with circular spirit level and adjustable feet for leveling. The apparatus is designed to stand on a suitable bench top, where some of the components can be operated independent from the support frame.

A freestanding dual-scale lever balance is also supplied to support several of the demonstrations.
This unit has been designed to demonstrate the hydraulic characteristics and settling efficiencies of a model settling basin. Although scale-up to industrial size sedimentation tanks is difficult, relevant deductions can be made as to how non-uniform flows occur and how these interact with the settling characteristics of particular suspensions.

**Demonstration Capabilities:**

- Measuring flow short-circuiting and dead space using a tracer
- Comparison of real flow regimes with idealized flow models
- Effect of flow rate and baffle position on dispersion
- Measuring sediment removal efficiencies and relating these to the hydraulic characteristics

S12 MKII Advanced Hydrology Study System
Dr. Reginald L. Amory, F.ASCE, Professor and Chair, joined the Morgan State University (MSU) faculty in the summer of 1996. He brings to MSU a distinguished career which is noted for its breadth as well as its depth. He has more than 40 years of experience in teaching, administration, research, consulting, and professional practice in academia, industrial research laboratories, and government agencies. Before accepting his current position, he was professor of civil engineering at Northeastern University, where he also served as ALCOA Foundation Professor of Civil Engineering. He has also held faculty positions at Rensselaer Polytechnic Institute and North Carolina A&T State University, where he served as Dean of the School of Engineering.

Dr. Iheanyi Eronini, P.E., Professor of Civil Engineering, joined the MSU faculty in January 1997. His research interests encompass analytical and experimental studies of adaptive retrofits to control stresses in steel girders; seismic qualification testing and acceptance criteria for non-structural and structural components; analytical and laboratory studies in active structural control, vibration suppression, noise reduction, and damage detection; modeling, measurement, and automatic control in dynamic systems, adaptive structures, reconfigurable and deployable structures and machines; contact dynamics and mechanics of novel construction equipment and machines and spacecraft; micromechanics; and smart material systems.
Dr. Monique Head, an Associate Professor of Civil Engineering, joined the faculty in 2011. Her research and teaching interests include structural dynamics, earthquake engineering, innovative experimental testing, performance-based design, reinforced concrete design, and seismic retrofitting of bridges. Her additional research interests include hybrid simulation of bridge structures, multi-hazard mitigation of transportation structures to establish guidelines for new design and retrofit criteria, and structural health monitoring of bridges prestressed with aramid fiber reinforced polymers (AFRPs) to assess long-term performance, strength capacity, and serviceability.

Dr. Gbekeloluwa Oguntimein, P.E., Associate Professor of Civil Engineering, joined the MSU faculty in February 1997. He has more than 30 years’ experience in teaching, research, and administration in environmental engineering, biochemical engineering, chemical engineering, and biological processes. His has served as Associate Professor, Acting Head of the Industrial Coordinating Unit, and Sub-Dean of the Faculty of Technology at the University Of Ibadan, Nigeria. He is now teaching, at the undergraduate and graduate levels, courses in environmental engineering, environmental impact and risk assessment, water supply engineering, biological wastewater treatment, civil engineering project management, and advanced project management.
Dr. James G. Hunter Jr., Assistant Professor of Civil Engineering, joined the MSU faculty in November 2009. He conducts research and teaches courses in the areas of environmental engineering, ecological engineering, coastal and urban green infrastructure, and watershed systems design. Dr. Hunter is a 2000 graduate of Morgan’s Civil Engineering Program and received his M.S. (2002) and Ph.D. (2006) in Environmental Engineering at Purdue University. As a postdoctoral researcher with Purdue’s Department of Agricultural and Biological Engineering, he worked on research funded by USEPA and USACE to develop decision support tools for watershed management, BMP/LID implementation, and TMDL analysis.

Dr. Charles Oluokun, R.E., Lecturer in the Department of Civil Engineering, joined Morgan State University faculty in August 1997. Before joining MSU, Dr. Oluokun worked with the Maryland National Capital Park and Planning Commission (MNCPPC), Upper Marlboro and established and ran a successful Traffic Engineering Consulting Practice in Upper Marlboro, Maryland specializing in transportation planning, traffic impact analyses and construction inspection management. He has more than 20 years experience in teaching, research and practice at George Washington University, Howard University, and the U.S. Naval Academy. He is now teaching courses at the undergraduate and graduate level in traffic, transportation, construction engineering and management, airport planning and design, transportation models and simulation. He is pioneering the construction management program at the Graduate Level in the Department.
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Civil Engineering Faculty & Staff

Dr. Oludare Owolabi P.E., joined the Morgan State University (MSU) faculty in the summer of 2010. He is the Assistant Director of the Center for Advanced Transportation and Infrastructure Engineering Research (CATIER) as well as the Director of the Undergraduate Geotechnical Laboratory. He has more than 18 years of outstanding experience in practicing, teaching, and research in civil and transportation engineering. He is an expert in advanced modeling and computational mechanics. His major areas of research interest are pavement engineering, soil mechanics, physical and numerical modeling of soil structures, computational geo-mechanics, geo-structural systems analysis, structural mechanics, sustainable infrastructure, and material development. He is considered to be a paradigm of a modern engineer, possessing a combination of practical experience with the most advanced numerical analysis tools, and knowledge of material constitutive relations — things essential to addressing the challenges of advanced material research and development.

Dr. Jiang Li, P.E., P.HG, D.WRE., Professor of Civil Engineering and an occupant of the US-DOE S. P. Massie Chair of Excellence, joined the MSU faculty in August 1997. He has more than 30 years of teaching, research, and professional experience in geosciences, applied mathematics, and engineering. In particular, he has expertise in hydrology, hydrogeology, and geomechanics, as well as applications to environmental engineering (i.e., groundwater modeling, surface and subsurface water contamination, solute transport, particles tracking, and site remediation) and geotechnical and geological engineering (soil and rock mechanics, aquifer mechanics, geosynthetics, stability analysis of slopes and foundations, modeling and prediction of liquefaction caused by earthquake and land subsidence, and modeling and prediction of earth fissures caused by groundwater withdrawal).
Dr. Frederick K. Wilson is a Research Scientist/Lecturer who joined the MSU faculty in January 1998. He teaches and conducts research in the areas of environmental science, land use/land cover change, oceanology, hydrometeorology, GIS, and remote sensing. Dr. Wilson was a NASA Fellow, Global Change Research Program; and a Fellow of the World Meteorological Organization (WMO). He holds a Certificate in ARC/INFO from the Environmental Systems Research Institute (ESRI). He is also trained in remote sensing oceanography by NASA and in Earth Science/Global Climate Change by California Institute of Technology/Jet Propulsion Laboratory (JPL). Dr. Wilson is the Director of the Office for Spatial Data Analysis and Applications (OSDAA), which focuses on training, research, and applications of remote sensing (RS)/geographic information systems (GIS) in STEM. He has also worked at NASA, Stennis Space Center and was an Assistant Professor of Biology and Director of the Marine Science Program at the Department of Biology, Southern University of New Orleans, Louisiana. He is a member of ASPRS.

Dr. Duowen Ding, P.E., Research Professor of Civil Engineering, joined the MSU faculty in August 1998. His background is in geotechnical engineering, CE materials, geomechanics, and thermo-hydro-mechanical-chemical processes in geosystems. He started his career in geotechnical engineering about 25 years ago, when he graduated from graduate school, and then earned his professional engineering certification. He has served as faculty at international and national universities and consultant firms. He has been involved in many construction and transportation projects in Maryland, Texas, Tennessee, and China over the past 25 years.
Dr. Donghee Kang has expertise in the area of contaminant fate and transport at soil and groundwater and in developing innovative, efficient, and economical remediation methods. Dr. Kang earned an M.S. degree in hydrology area at Chung-Ang University (Seoul, Korea) and a Ph.D. in environmental engineering at Purdue University. Dr. Kang has studied and conducted research on the potential for phytoremediation of cyanide-contaminated soils using cyanogenic plants. The use of phytoremediation to reduce landfill leachate volume and to reduce cyanide and fluoride concentrations in groundwater was also assessed. Dr. Kang also conducted research on heavy metal immobilization by different amendments to immobilize the potentially problematic pollutants of lead and arsenic that occur at a mining site. Dr. Kang has also worked as a research scientist at the University of Minnesota.

Mrs. Vanessa Branch-Nance serves the Department of Civil Engineering.
APPENDIX

Dimensions for Seismic and Structures Laboratories

Plan View of Seismic Lab Morgan State University
Plan View of Seismic Lab Morgan State University
Floor Plate

All dimensions in inches

Plan View of Seismic Lab Morgan State University
Wall and Hole Dimension

Seismic Lab Morgan State University
View From West to East

Section View of Seismic Lab Morgan State University