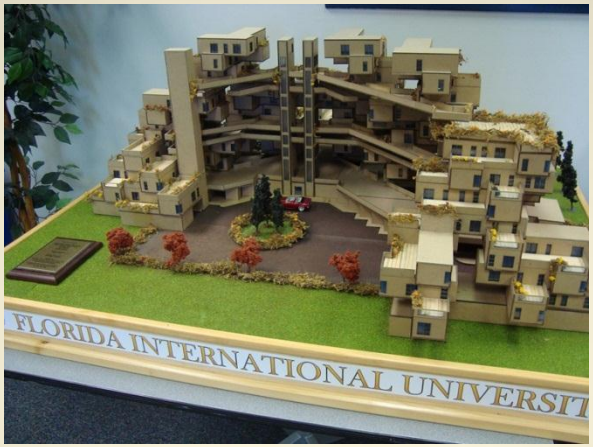
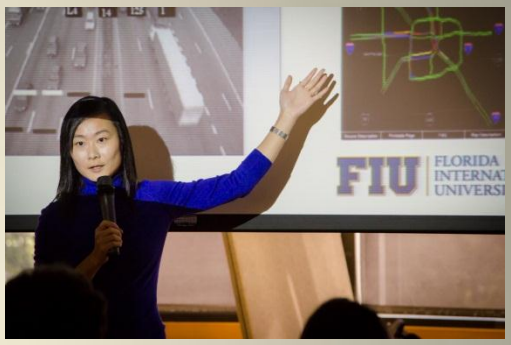
Civil & Environmental Engineering

Florida International University





FIU Engineering Center
10555 West Flagler Street
Miami, FL 33174
305-348-2802

FIU | Civil and Environmental Engineering
Florida International University

About FIU

Florida International University

- **Located in Miami, Florida**
  - Miami's first and only public research institution
  - Diverse population
  - Tropical climate
- **Two major campuses**
  - Modesto A. Maidique Campus (MMC) in West Miami-Dade
  - Biscayne Bay Campus in North Miami Beach
- **Five additional locations**
  - Engineering Center near MMC
  - Broward Pines Center; Downtown Brickell Business Center; Miami Beach Urban Studios; Wolfsonian FIU on South Beach

Be Worlds Ahead

FIU | Civil and Environmental Engineering
Florida International University

About the College of Engineering & Computing (CEC)

Florida International University

- **Housed in Engineering Center (EC)**
  - 250,000-sqft. building on 38 acres
  - Two miles from main FIU campus
  - 6 Departments, including CEE
- ***WorldsAhead* faculty**
  - American Society for Engineering Education (ASEE) found FIU CEC to have most productive faculty in Florida and ninth most productive faculty in the U.S.
- **Commitment to student success**
- **First-class research centers and teaching laboratories; access to cutting-edge technology**

FIU | Civil and Environmental Engineering
Florida International University

About the Department of Civil & Environmental Engineering (CEE)

Florida International University

- **Five degrees offered**
  - BS in Civil or BS in Environmental
  - MS in Civil or MS in Environmental
  - PhD in Civil
- **Five specialty areas in Civil Engineering**
  - Structural, Geotechnical, Construction, Transportation and Water Resources Engineering
- **28 full-time faculty members**
- **1,010 students enrolled**
  - 832 undergraduate, 107 Masters, 71 Doctoral
- **State-of-the-art research centers & facilities**
  - Lehman Center for Transportation Research (LCTR)
  - Center for Accelerated Bridge Construction
  - Titan America Structures Testing Laboratory
  - Wall of Wind

Faculty in the Driving Simulation Lab of the LCTR

FIU | Civil and Environmental Engineering
Florida International University

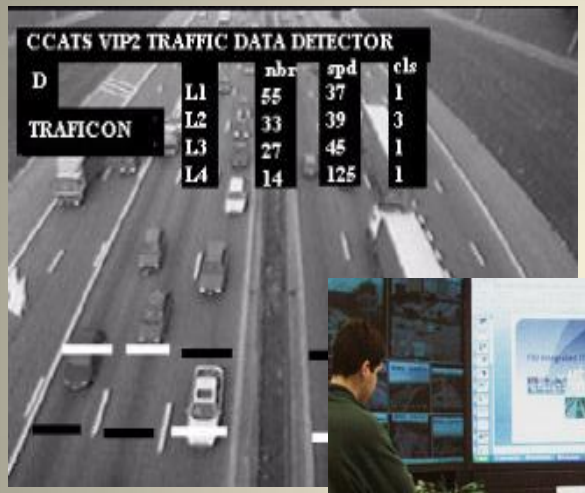
CEE Student Organizations at FIU

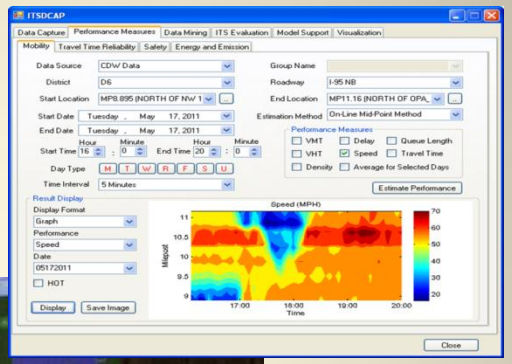
- **American Society of Civil Engineers (ASCE)**
  FIU and UM are hosts of the 2013 ASCE Southeast Region ASCE Student Conference
- **ACI Student Chapter at FIU**
- **Chi Epsilon National Civil Engineering Honor Society**
- **Institute of Transportation Engineers (ITE)**
  10-time Winner of ITE 'Best Student Chapter' Award
- **Tau Chi Alpha National Environmental Engineering Honorary**
- **Water Environment Federation (WEF)**

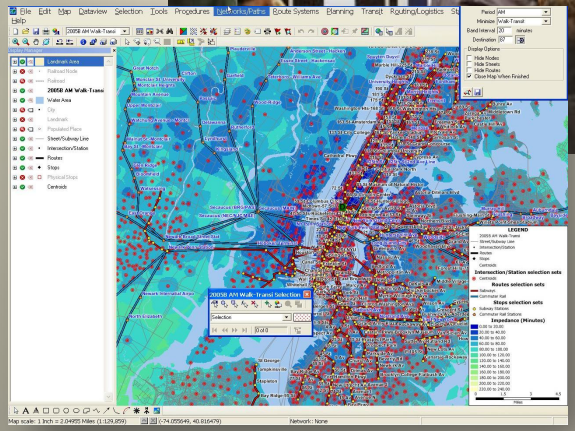
FIU | Civil and Environmental Engineering
Florida International University

Transportation Engineering

Florida International University
Civil & Environmental Engineering







FIU | Civil and Environmental Engineering
FLORIDA INTERNATIONAL UNIVERSITY

Transportation Engineering Faculty

- **Fabian Cevallos, Ph.D.**
  Transit Program Director

- **Albert Gan, Ph.D.**
  Professor

- **Mohammed Hadi, Ph.D., P.E.**
  Associate Professor

FIU | Civil and Environmental Engineering
Florida International University

Transportation Engineering Faculty

- **Xia Jin, Ph.D., A.I.C.P.**
  Assistant Professor

- **Sylvan Jolibois, Ph.D.**
  Associate Professor

- **L. David Shen, Ph.D., P.E.**
  Professor &
  Graduate Program Director

FIU | Civil and Environmental Engineering
Florida International University

Transportation Engineering Research Associates and Staff

- Dr. Yan Xiao
- Dr. Halit Ozen
- Dr. Tao Wang
- Dr. Priyanka Alluri
- Dr. Feng Gui
- Dr. Kirolos Haleem
- Dr. Kaiyu Liu
- Ms. Meng Ma
- Mr. Haifeng Wang
- Dr. Wanyang Wu

FIU | Civil and Environmental Engineering
Florida International University

Transportation Engineering Ph.D. Students

1- Jinyan Lu - **Safety Performance Functions**
2- Li Tang - **Automatic Extraction from Aerial Images**
3- Dibakar Saha - **Improved Processes for Safety Manual**
4- Ayman Elbermavy - **Bay Overflow Impact at Intersections**
5- Shaghayegh Shabanian - **Dynamic Traffic Assignment**
6- Ali Darroudi - **Connected Vehicle Technologies Impacts**
7- Xuanwu Chen - **Railroad Crossing Signal Preemption**
8- Hamidreza Asgari - **Activity-Travel Patterns**
9- Md Sakoat Hossan - **Ancillary Transportation Demands**

FIU | Civil and Environmental Engineering
Florida International University

Transportation Engineering Faculty Research Interests

Fabian Cevallos, Ph.D.

Advanced public transportation systems (APTS), transit planning and operations, business intelligence, traffic safety, information technology

Albert Gan, Ph.D.

Public transit, traffic simulation and control, ITS, highway safety, access management, information technology

Mohammed Hadi, Ph.D., P.E.

ITS, connected vehicles, traffic control systems, freeway operations, simulation/DTA, traffic safety

FIU | Civil and Environmental Engineering
Florida International University

Transportation Engineering Faculty Research Interests

Xia Jin, Ph.D., A.I.C.P.

Transportation planning, travel demand modeling, surveys, GIS and database management

L. David Shen, Ph.D., P.E.

Airport design and planning, public transportation, intermodal facilities

FIU | Civil and Environmental Engineering
Florida International University

Centers Associated with Transportation Engineering at FIU

LCTR – Lehman Center for Transportation Research

Transportation Engineering Sponsor Organizations

- USDOT University Transportation Centers
- US Department of Transportation
- Florida Department of Transportation
- Florida Turnpike
- Miami-Dade Expressway Authority
- Miami-Dade Transit
- Miami-Dade Metropolitan Planning Organization

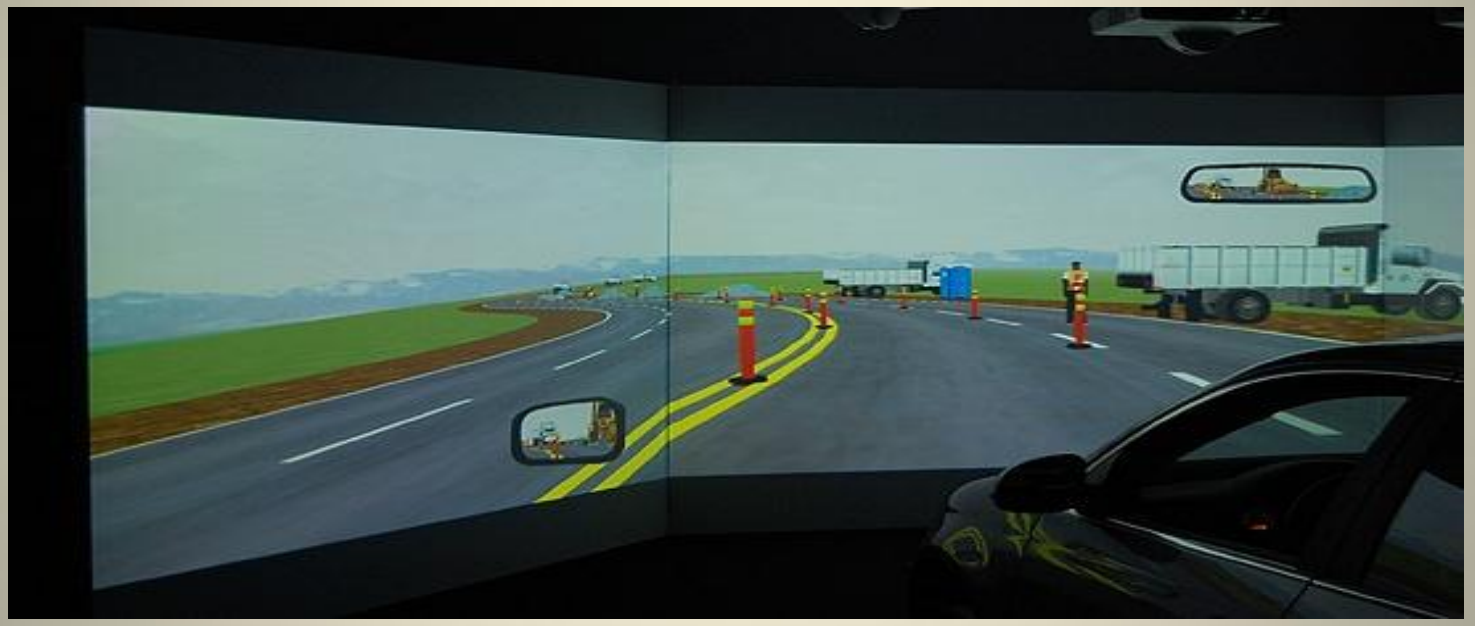
Transportation Laboratories and Testing Facilities

FIU | Civil and Environmental Engineering
Florida International University

Integrated Intelligent Transportation Systems Laboratory (IITS)

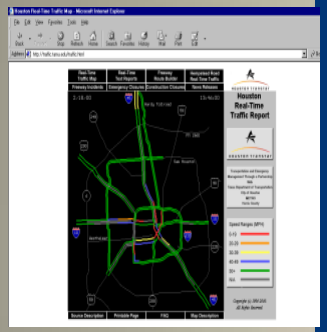
FIU | Civil and Environmental Engineering
Florida International University

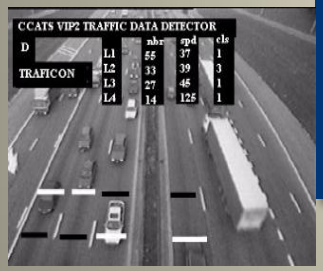
The Driving Simulator: STISIM Drive Model 400 with Car Conversion Kit



FIU | Civil and Environmental Engineering
Florida International University

Next Few Slides Show Sample Projects in Transportation Engineering





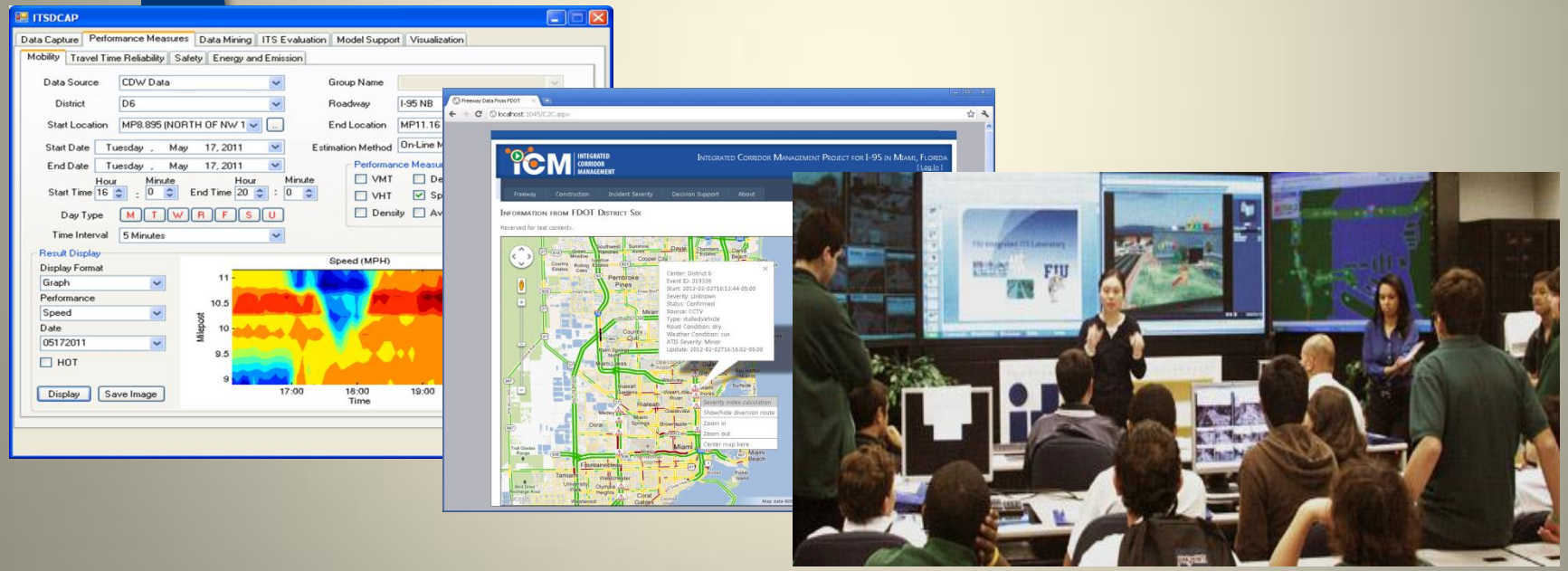
Intelligent Transportation Research

- Testing and assessment of new ITS Technologies
- ITS evaluation and benefits-cost of ITS
- Data capture, mining, and performance assessment
- Off-line and real-time decision support systems for traffic management
- Macroscopic, microscopic, and mesoscopic simulation
- Dynamic traffic assignment
- Managed lane simulation

FIU | Civil and Environmental Engineering
Florida International University

Integrated ITS Lab

- One of the most advanced in the nation
- Share video and data with traffic management centers
- Develop and test off-line and real-time tools and methods



FIU | Civil and Environmental Engineering
FLORIDA INTERNATIONAL UNIVERSITY

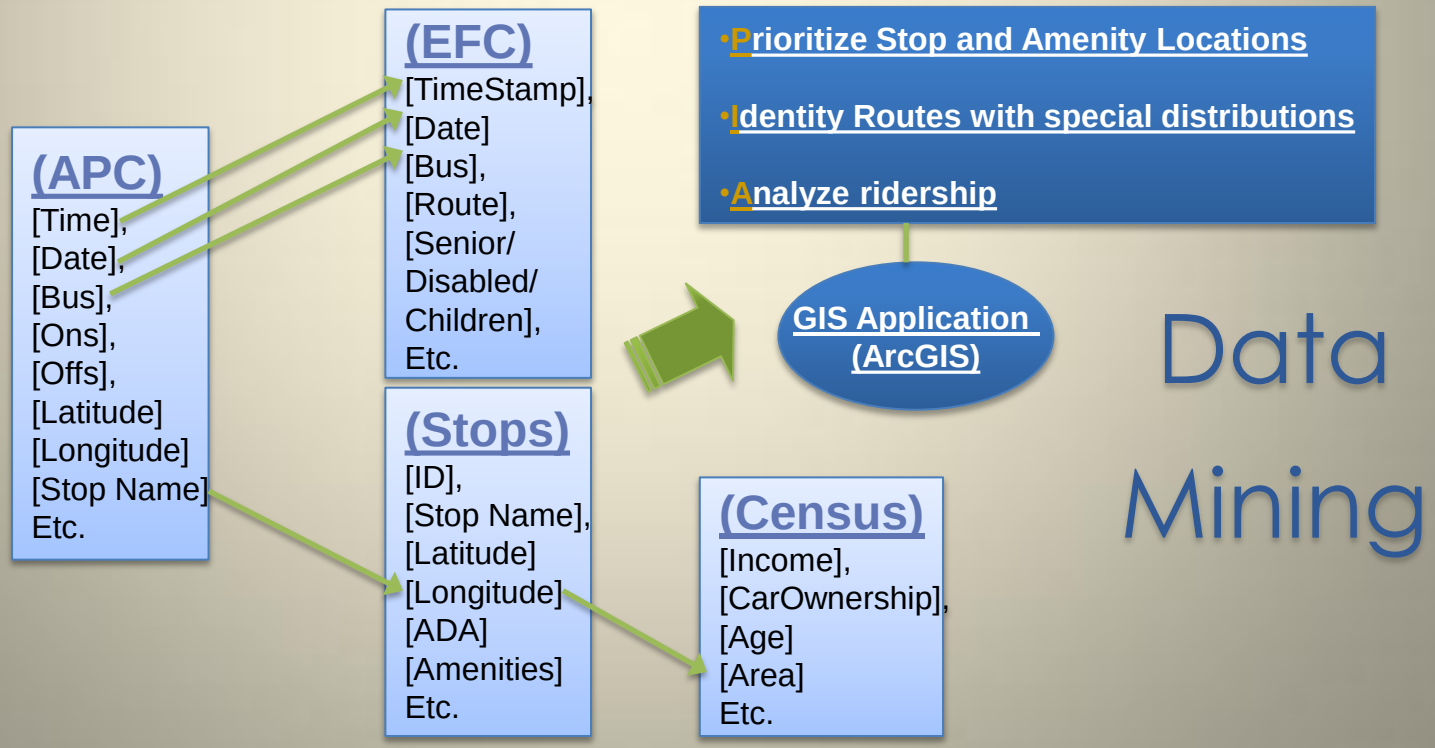
ATSIM 4.0

- Designed to keep track of transit stop facilities and their amenities. It automates the data collection and analysis process. It avoids time-consuming manual data entry and duplication of records and facilitates data management.

FIGURE 2: ATSIM DATA FLOW DIAGRAM

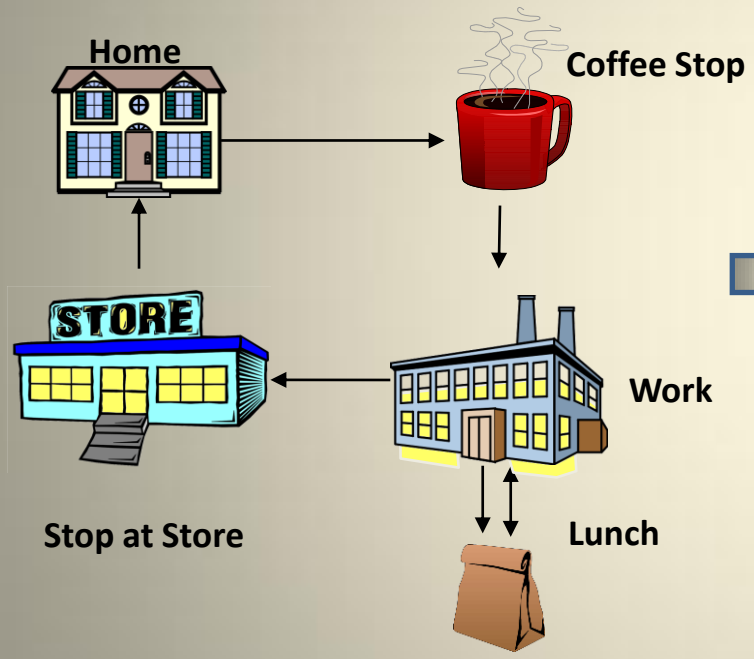
Florida APTS Program

- Develops strategies, promotes knowledge sharing, and supports the implementation of transit Intelligent Transportation Systems (ITS). The program is a key component in the Florida Department of Transportation efforts to provide transit agencies with ITS technical assistance and technology transfer.



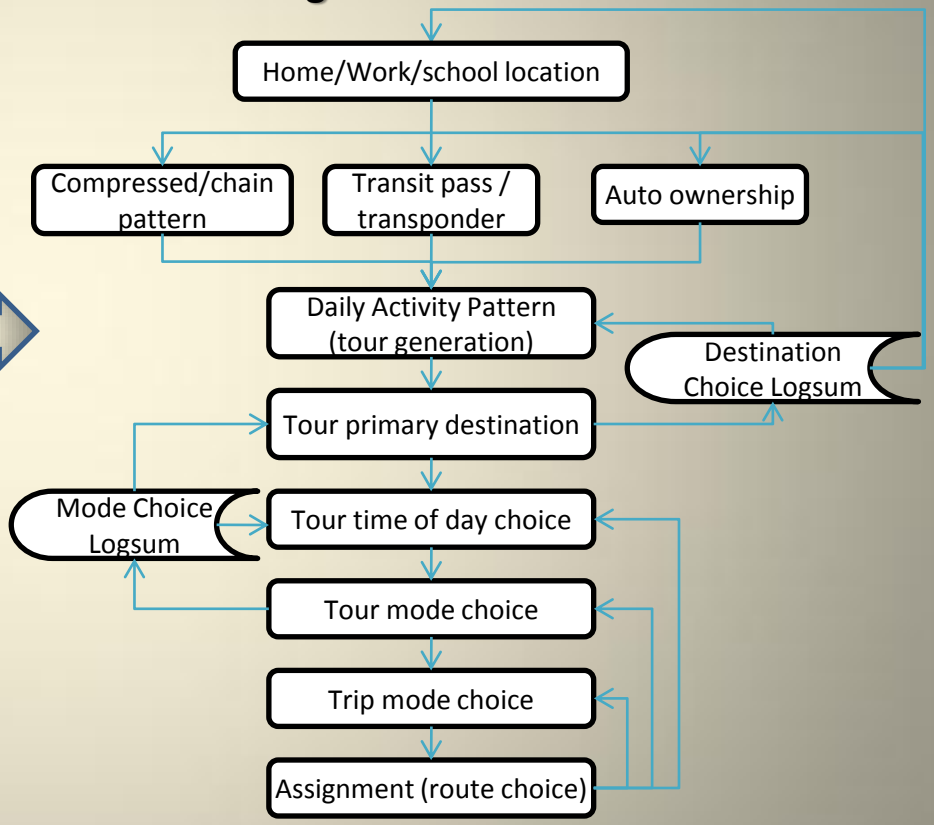
Travel Demand Forecasting and Behavior Analysis

Daily Travel Activities



Where – destination How – mode
When – time of day What – route

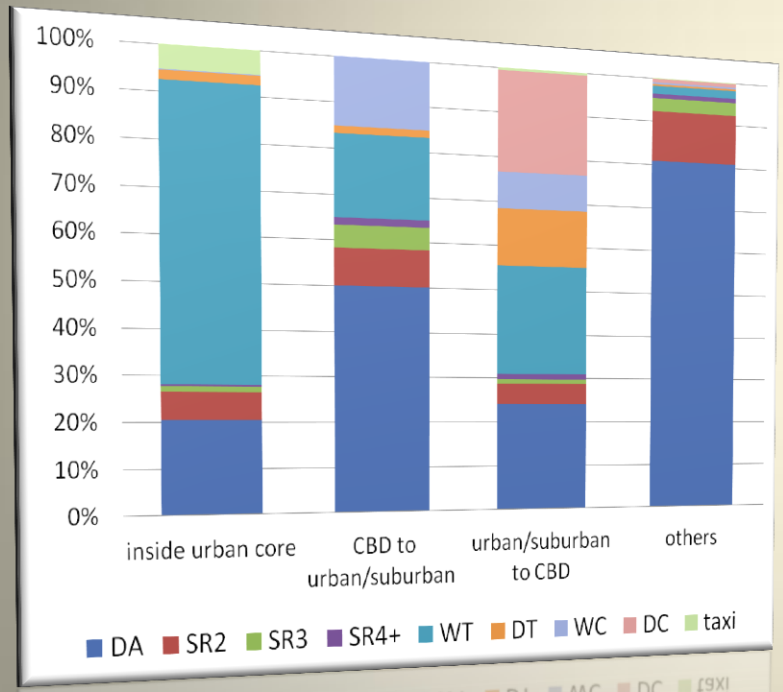
Demand Modeling Framework



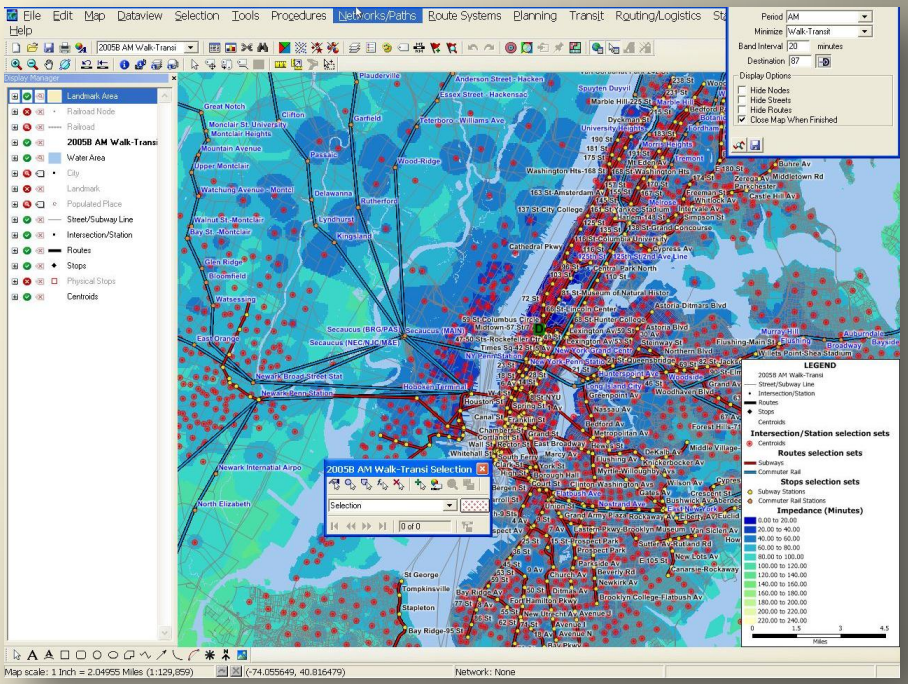
FIU | Civil and Environmental Engineering
Florida International University

Transportation Infrastructure and Urban Form Development

Mode Share by Land Use Pattern



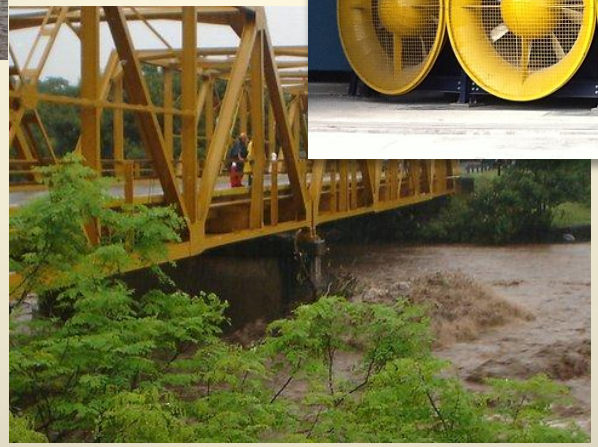
Land Use Accessibility by Transit Modes

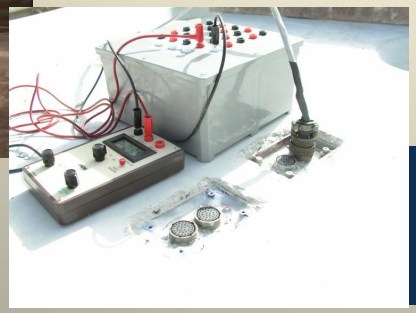


FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering

Florida International University
Civil & Environmental Engineering





FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering Faculty

- **Atorod Azizinamini, Ph.D., P.E.**
  Professor & Chair

- **Amir Mirmiran, Ph.D., P.E.**
  Professor & Dean

- **Ton-Lo Wang, Ph.D., P.E.**
  Professor & Assoc. Chair

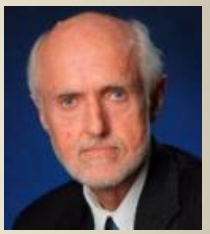
- **Caesar Abi Shdid, Ph.D., P.E.**
  Director of External Programs

FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering Faculty

- Ralf W. Arndt, Dr. –Ing.

- Arindam Gan Chowdhury, Ph.D.



- Peter A. Irwin, Ph.D., P.Eng.

- Kingsley Lau, Ph.D.

- Nakin Suksawang, Ph.D.

- Ioannis Zisis, Ph.D.

FIU | Civil and Environmental Engineering
Florida International University

Structural/Geotechnical Engineering Faculty

- **Hesham Ali, Ph.D., P.E.**
  Green Paving Professor of Practice

- **Michael Bienvenu, Ph.D., P.E.**
  Karl Watson, Jr. Professor of Practice in Concrete Pavement Sustainability

FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering Research Associates and technical Staff

Dr. Aaron Yakel
Dr. Pedram Zohrevand
Mr. Edgar Polo
Walter Conklin – Lab Manager
Jimmy Erwin – Research Scientist
Roy Liu – Research Scientist

FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering Ph.D. Students

1- Jawad Gull - **Steel bridges**
2- Alireza Mohammadi - **Steel bridges**
3- Brian Chun - **Steel bridges**
4- Xiong Yang - **Segmental Bridge**
5- Sahar Ghasemi - **Movable Bridge**
6- Md. Ahsan Sabbir - **Infrastructure Coating Durability**
7- Maryam Asghari Mooneghi - **Wind Engineering**
8- Mojtaba Afzali - **Pavement Recycling**
9- Shuo Zhang - **Concrete Durability**
10- Daniel Yohannes - **Fiber Reinforced Concrete**

FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering Ph.D. Students

11- Brandon Mintz - **Innovative Roofing Systems**

12- Arash Tarighi - **Bridge Vibration**

13- Tuan-Chun Fu - **Large-Scale Aerodynamic Testing Approaches for Low-Rise Buildings**

14- Thomas Baheru - **Wind-Driven Rain Intrusion in Buildings**

15- Debbie Meyer - **Wind Induced Effects on 3-D Variable Message Sign**

16- Ramtin Kargarmoakhar - **Vortex Induced Loading on Lang Span Bridges**

FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering
Ph.D. Students

17- Filmon Habte - **Wind-Induced Internal Pressures in Buildings**

18- Workamaw Warsido - **Computational Wind Engineering**

19- Edgar Polo - **Concrete Pavement**

Structural Engineering Faculty Research Interests

Caesar Abi Shdid, Ph.D., P.E.

sensing technologies in construction, use of artificial intelligence algorithms to predict thermal lifecycle costs of buildings

Ralf W. Arndt, Dr. –Ing.

developing and adapting non-destructive testing (NDT) technologies for inspection of aging infrastructure

Atorod Azizinamini, Ph.D., P.E.

high performance steel, accelerated bridge construction, seismic resistance

FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering Faculty Research Interests

Arindam Gan Chowdhury, Ph.D.

wind engineering, effects of hurricane winds on buildings and structures

Peter A. Irwin, Ph.D., P.Eng.

local wind pressures on building wall cladding and roofing elements

Kingsley Lau, Ph.D.

corrosion of engineering materials, durability of reinforced concrete and prestressed concrete, infrastructure materials durability

FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering Faculty Research Interests

Amir Mirmiran, Ph.D., P.E.

fiber reinforced plastic (FRP) composites for infrastructure, bridge engineering, non-destructive testing of concrete and composites, ultra high performance concrete (UHPC) and post-tensioned segmental bridge

Nakin Suksawang, Ph.D.

structural health monitoring and field testing, bridge engineering, structural reliability, materials

FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering Faculty Research Interests

Ton-Lo Wang, Ph.D., P.E.

railway and highway bridge vibration, impact, reliability, load distribution, fatigue damage analyses

Ioannis Zisis, Ph.D.

structural and environmental wind engineering

FIU | Civil and Environmental Engineering
Florida International University

Structural/Geotechnical Engineering Faculty Research Interests

Hesham Ali, Ph.D., P.E.

research and development of green paving methods, including pavement recycling and innovative paving materials; pavement design, analysis and construction

Michael Bienvenu, Ph.D., P.E.

design and analysis of ultra-high performance concrete overlays for pavements; impacts of concrete pavement construction on state and local Florida economies; safety and social sustainability of concrete pavements

FIU | Civil and Environmental Engineering
Florida International University

Centers Associated with Structural Engineering at FIU

IHRC Wall of Wind

Center for Accelerated Bridge Construction

FIU | Civil and Environmental Engineering
Florida International University

Structural Engineering Sponsor Organizations

National Science Foundation
Florida Department of Transportation
Strategic Highway Research Program (SHRP2)
National Steel Bridge Alliance
National Cooperative Highway Research Program
Florida Department of Emergency Management
Florida Sea Grant
National Park Service
HIP Paving
Private Industries

FIU | Civil and Environmental Engineering
Florida International University

Structural Laboratories and Testing Facilities

FIU | Civil and Environmental Engineering
Florida International University

Wind Engineering and *Wall of Wind*

FIU | Civil and Environmental Engineering
Florida International University

Titan America Structures and Construction Testing Laboratory

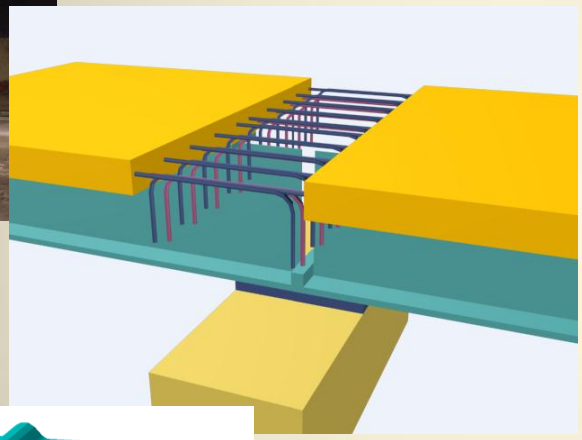
FIU | Civil and Environmental Engineering
Florida International University

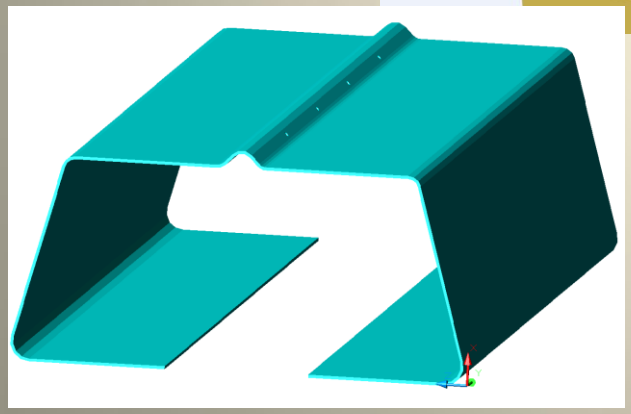
Green Paving Laboratory

FIU | Civil and Environmental Engineering
Florida International University

Next Few Slides Show Sample Projects in Structural Engineering

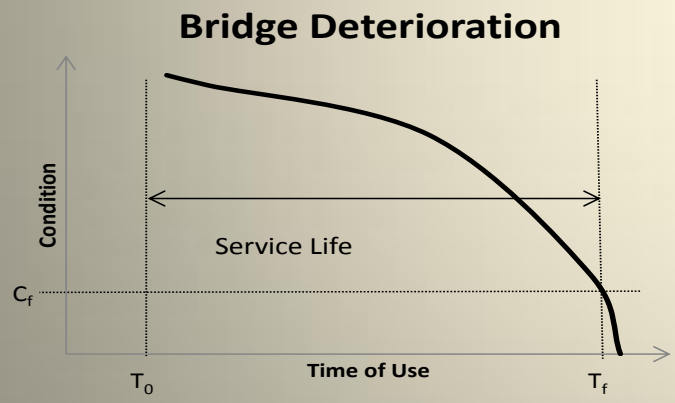
Accelerated Bridge Construction

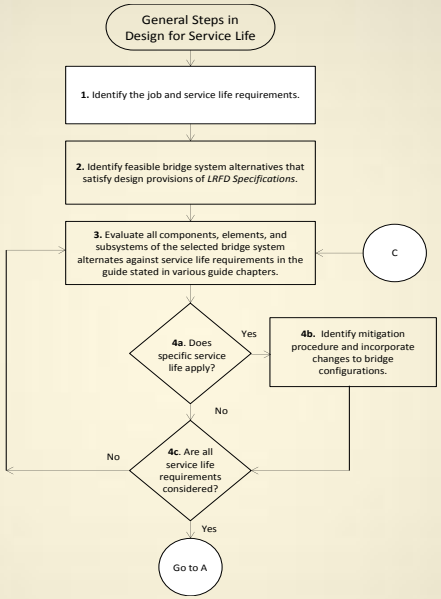


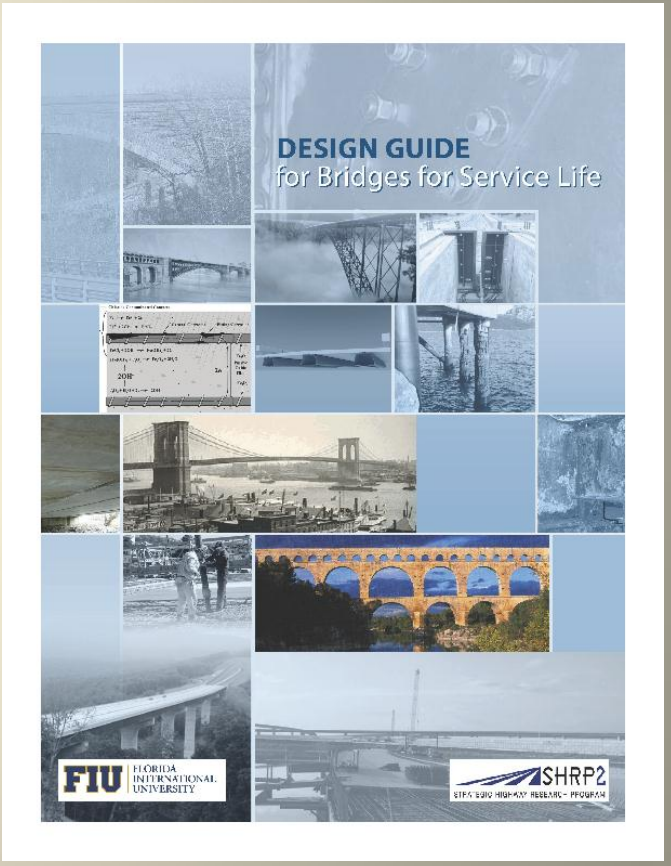


FIU | Civil and Environmental Engineering
Florida International University

Service Life of Bridges



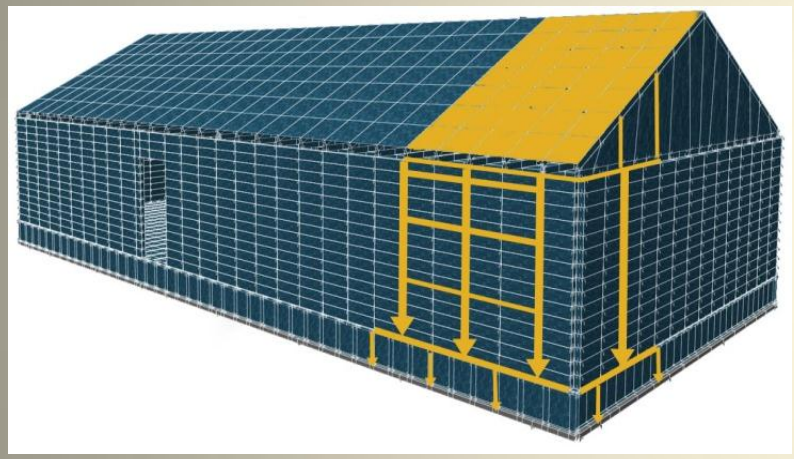




FIU | Civil and Environmental Engineering
FLORIDA INTERNATIONAL UNIVERSITY

Wind Engineering

Wind load paths on wood buildings



Codification of wind-induced loads on structural and non-structural building attachments

12-Fan WOW is the nation's only university research facility capable of simulating a Category 5 hurricane with wind-driven rain

FIU | Civil and Environmental Engineering
Florida International University

Impact on Florida Building Code

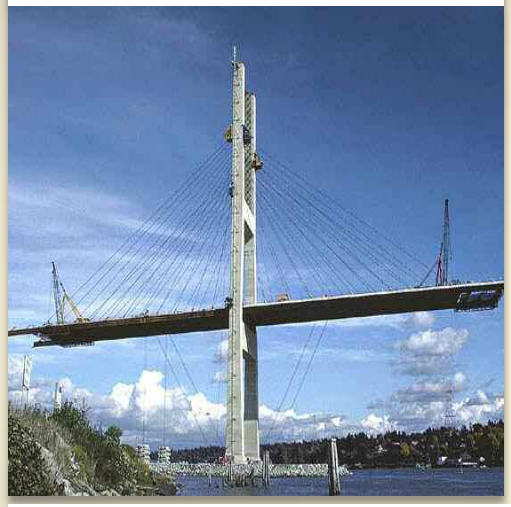
- Recommendations made as a result of testing at the 6-Fan Wall of Wind (WOW) were published in the 2010 Florida Building Code (FBC).
- The new code provisions are geared toward decreasing the vulnerability of roofs.
- This research-to-application endeavor, at such a rapid pace, underscores the importance of FIU's WOW.

Future Wall of Wind Testing

Tall Building Studies

Realistic building shape optimization and high Reynolds number tests

Wind Loading During Bridge Construction



Wind effects on Traffic Infrastructure and Utilities

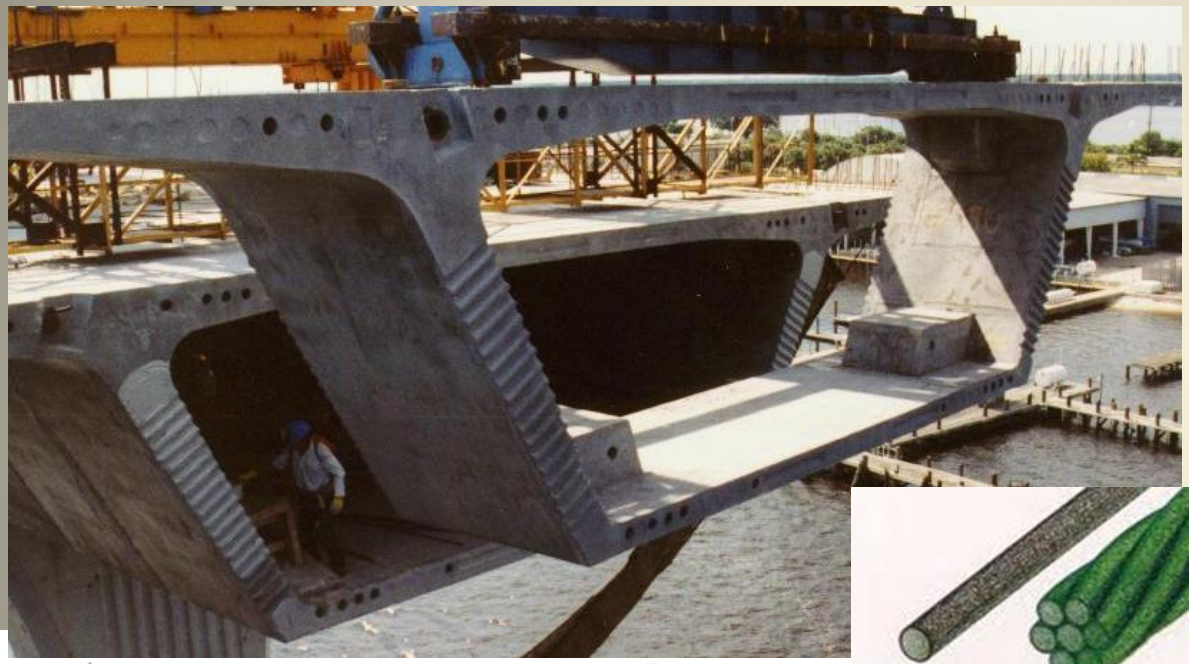
Wind-Bridge-Vehicle Interaction Studies

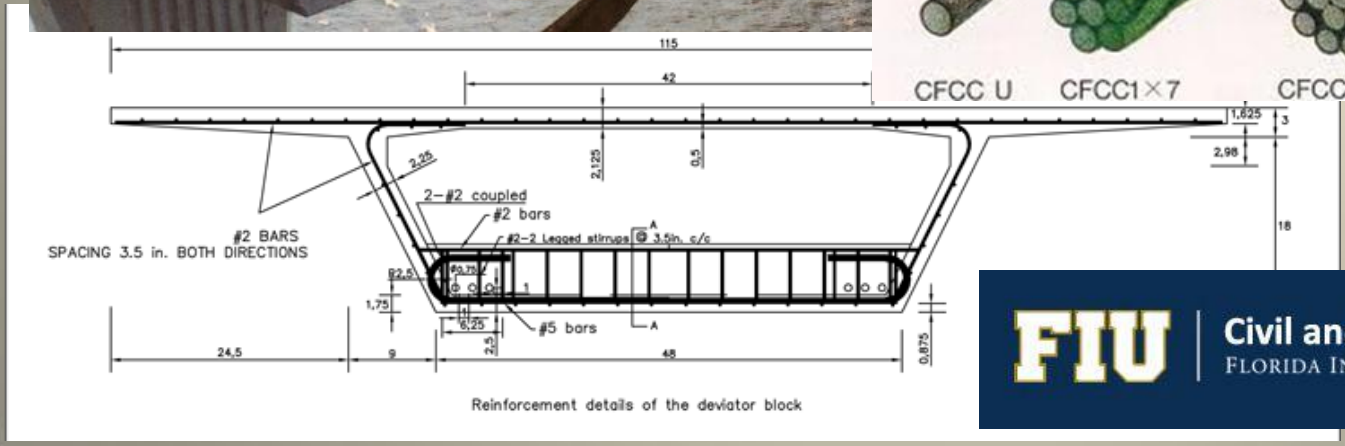
FIU | Civil and Environmental Engineering
Florida International University

Advanced Materials

FIU | Civil and Environmental Engineering
Florida International University

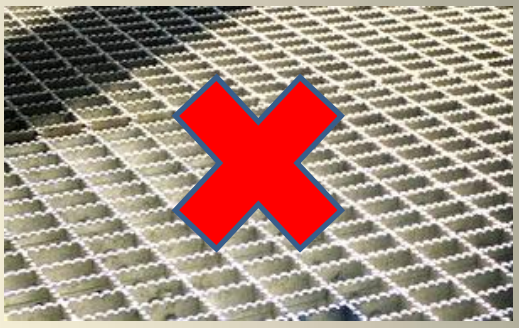
Segmental Bridges with CFCC Strands





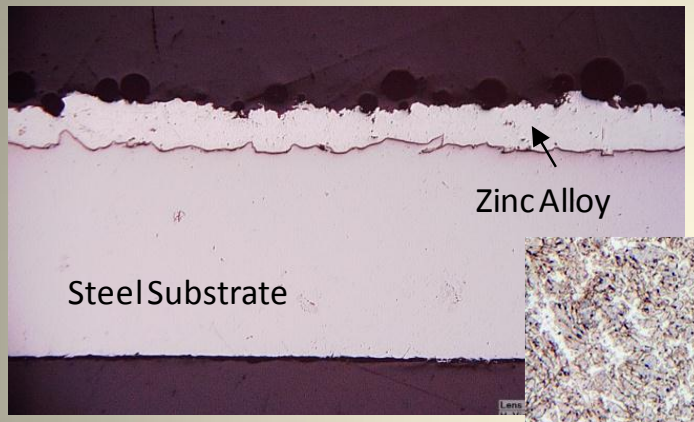
FIU | Civil and Environmental Engineering
Florida International University

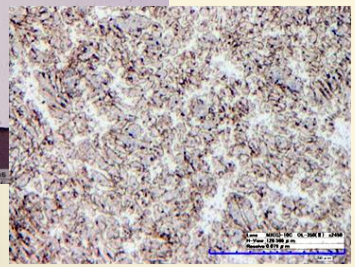
Movable Bridges with UHPC



FIU | Civil and Environmental Engineering
Florida International University

Corrosion and Infrastructure Materials Durability





Photos courtesy of FDOT

Photo courtesy of Parsons Brinckerhoff

Photo courtesy of K.Lau

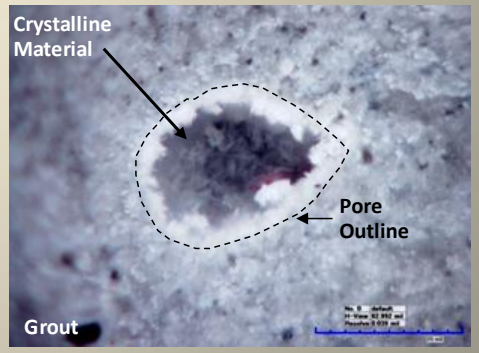


Photo courtesy of FDOT

FIU | Civil and Environmental Engineering
Florida International University

Non-Destructive Testing and Infrastructure Diagnostics

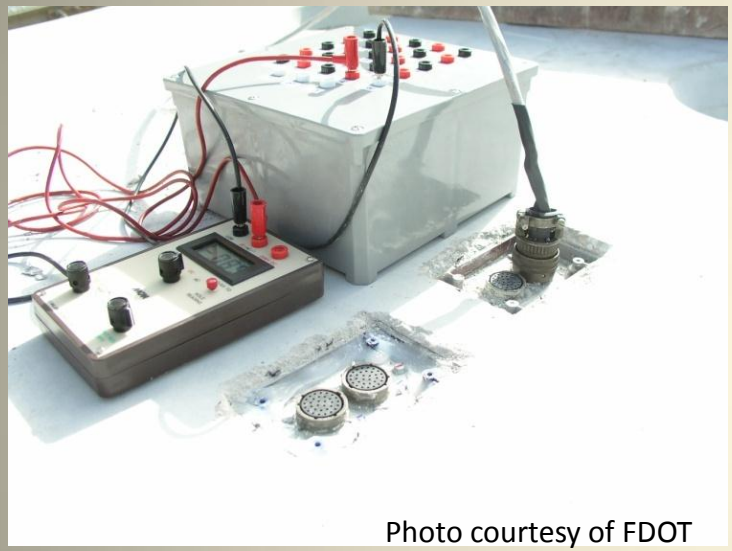
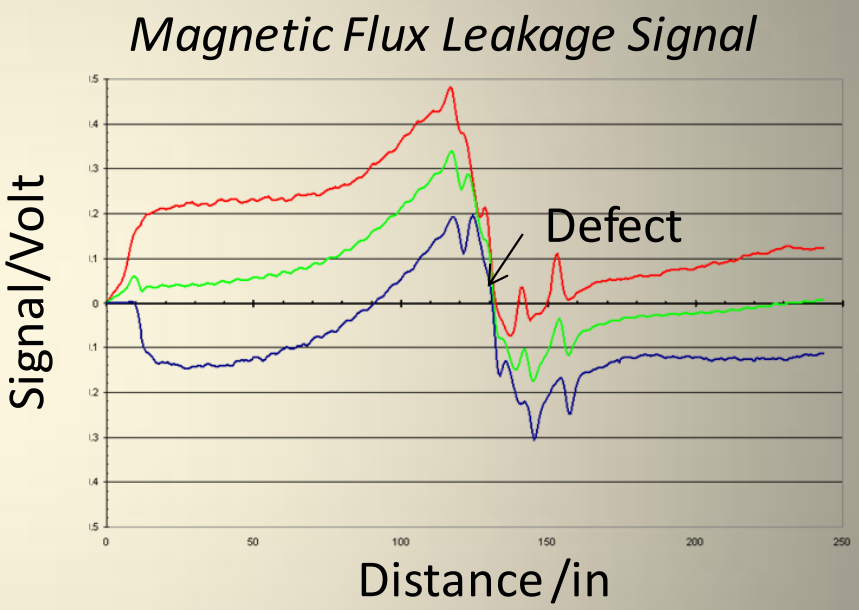
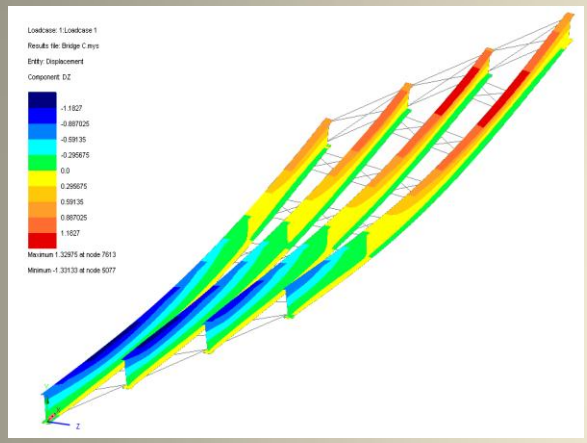
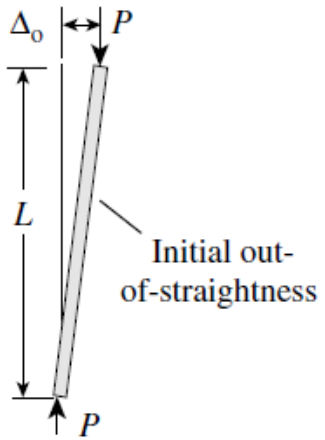


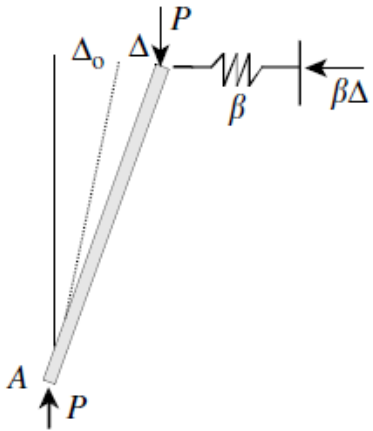
Photo courtesy of FDOT



Steel Bridge Research





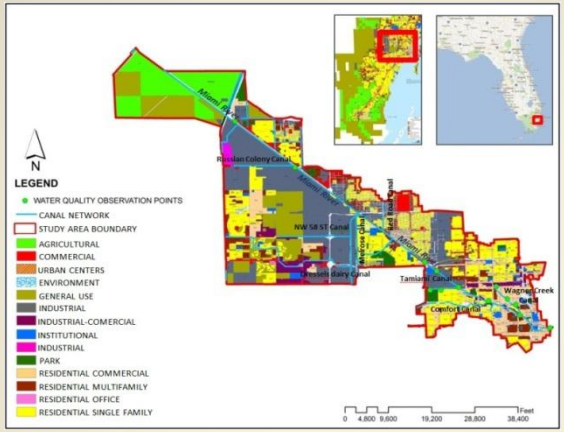


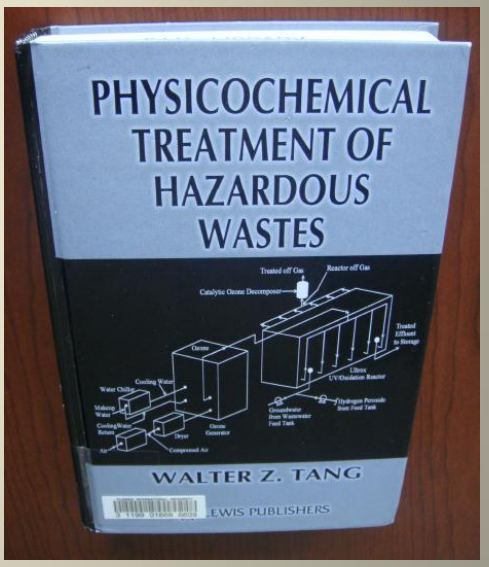
FIU | Civil and Environmental Engineering
Florida International University

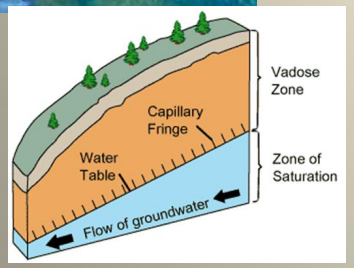
Environmental Engineering & Water Resources Engineering

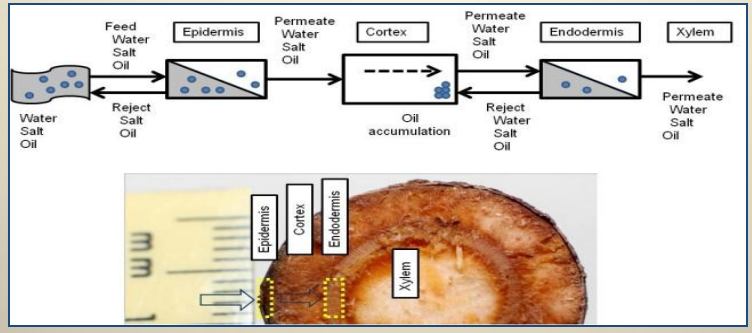
Florida International University

Civil & Environmental Engineering









FIU | Civil and Environmental Engineering
Florida International University

Environmental & Water Resources Engineering Faculty

- **Omar Abdul-Aziz, Ph.D.**
  Assistant Professor

- **Anna Bernardo-Bricker, Ph.D.**
  Instructor

- **Hector R. Fuentes, Ph.D., P.E.**
  Professor

- **Shonali Laha, Ph.D., P.E.**
  Associate Professor

FIU | Civil and Environmental Engineering
Florida International University

Environmental & Water Resources Engineering Faculty

- **Cora Martinez, Ph.D.**
  Instructor & Undergrad. Advisor

- **Walter Z. Tang, Ph.D., P.E.**
  Associate Professor

- **Berrin Tansel, Ph.D., P.E.**
  Professor

FIU | Civil and Environmental Engineering
Florida International University

Environmental & Water Resources Engineering Research Associates

Dr. Shrawan Singh

FIU | Civil and Environmental Engineering
Florida International University

Environmental & Water Resources Engineering Ph.D. Students

1- Sharon Surita - **Waste Decomposition and Fate**
2- Bahareh Inanloo - **Linear Infrastructure Systems**
3- Manuel Moncholi - **Sustainable Sludge Composting**
4- Claudia Cardona - **Kinetic Modeling of Fenton Treatment**
5- Khandker Ishtiaq - **Eco-environmental Robust Modeling**
6- Nantaporn Noosai - **Mercury Geochemical Modeling**
7- Luis G. Perez - **Satellite-Vadose Zone Coupled Modeling**
8- Yonas Habtemichael - **Aquifer Augmentation**
9- Carlos Tamayo - **Coastal Sustainable Adaptation**

FIU | Civil and Environmental Engineering
Florida International University

Environmental & Water Resources Engineering Faculty Research Interests

Omar Abdul-Aziz, Ph.D.

Ecological engineering, urban surface water quality dynamics, climate change, wetland and forest GHG emissions

Anna Bernardo-Bricker, Ph.D.

Method development and quality assurance of air quality monitoring data, molecular characterization of aerosol particles, indoor air quality

Hector R. Fuentes, Ph.D., P.E.

Water resources engineering, sustainable and green engineering solutions, experimental and modeling development

FIU | Civil and Environmental Engineering
Florida International University

Environmental & Water Resources Engineering Faculty Research Interests

Shonali Laha, Ph.D., P.E.

Physicochemical and microbial processes, fate of contaminants, hazardous waste treatment technologies

Walter Z. Tang, Ph.D., P.E.

Physicochemical treatment, advanced oxidation processes, quantitative structure and activity relationships, health risk assessment

Berrin Tansel, Ph.D., P.E.

Hazardous and industrial waste management, landfill processes and release mechanisms, sustainable sludge treatment and recovery

FIU | Civil and Environmental Engineering
Florida International University

Centers Associated with Environmental & Water Resources Engineering at FIU

ARC – Applied Research Center

FIU | Civil and Environmental Engineering
Florida International University

Environmental & Water Resources Engineering Sponsor Organizations

NASA
NSF
US Department of Energy
Hinckley Center for Solid & Hazardous Waste Management
University Transportation Center, University of Florida

FIU | Civil and Environmental Engineering
Florida International University

Environmental & Water Resources Laboratories and Testing Facilities

FIU | Civil and Environmental Engineering
Florida International University

Environmental Engineering Laboratory

FIU | Civil and Environmental Engineering
Florida International University

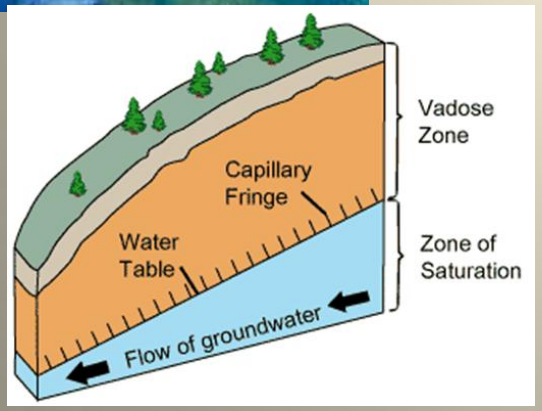
Water and Soil Quality Laboratory

FIU | Civil and Environmental Engineering
Florida International University

Next Few Slides Show Sample Projects in Environmental & Water Resources Engineering

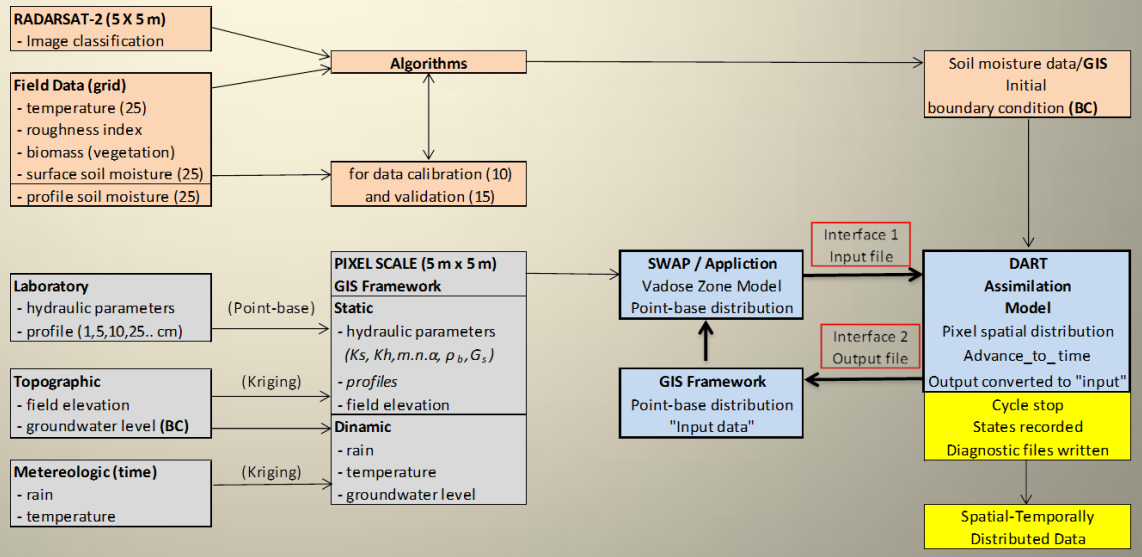
Linking Remote Sensing Measurements to Vadose Zone Modeling at Everglades National Park

THE CONCEPT

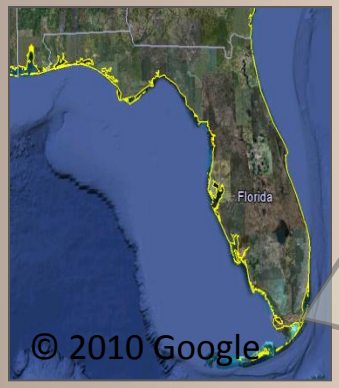


THE EXPERIMENTS

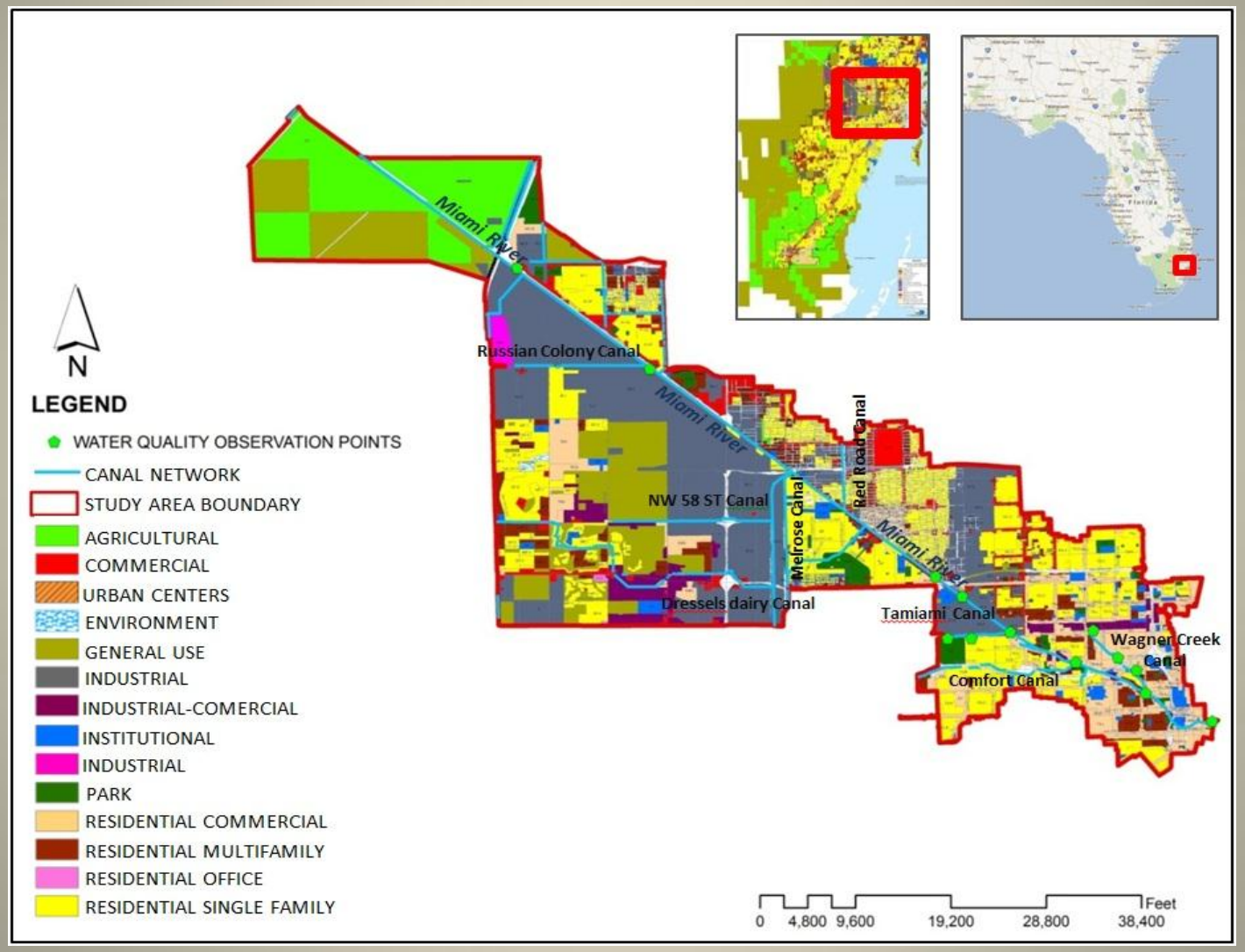
THE APPROACH



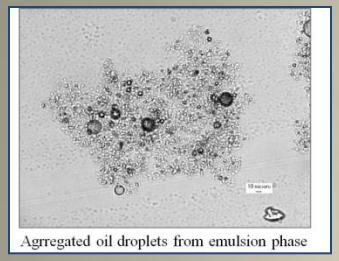
Assessment of the Effectiveness of Removal of Nutrients and Emerging Pollutants by the Miami-Dade County BBCWR Pilot Plant

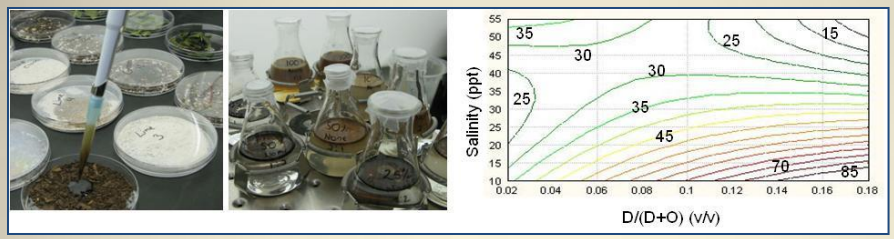


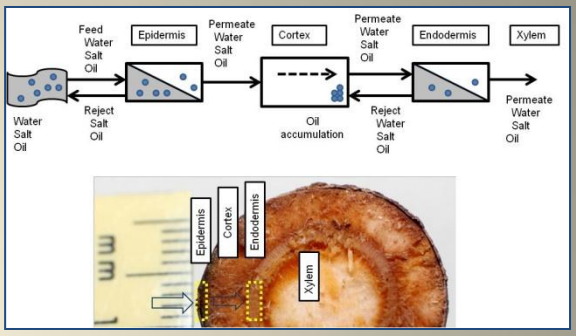
Stormwater Research on Miami River Basin, FL

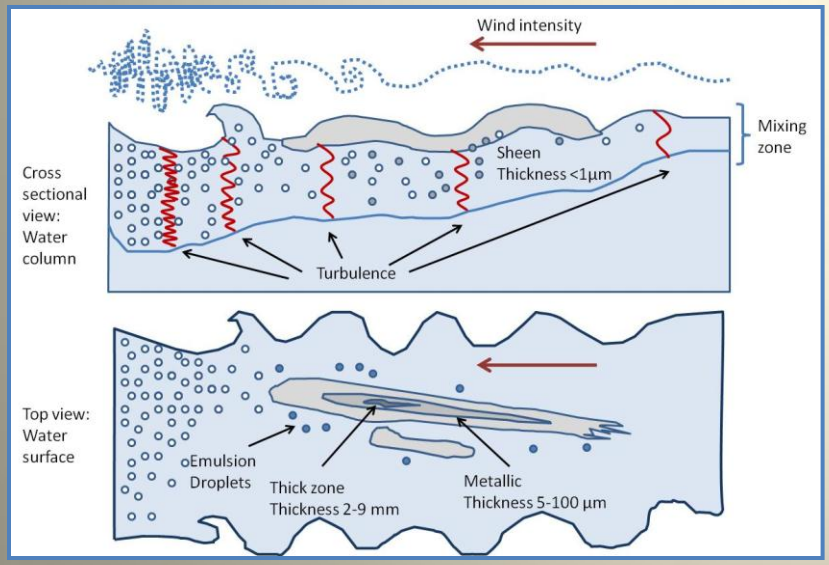


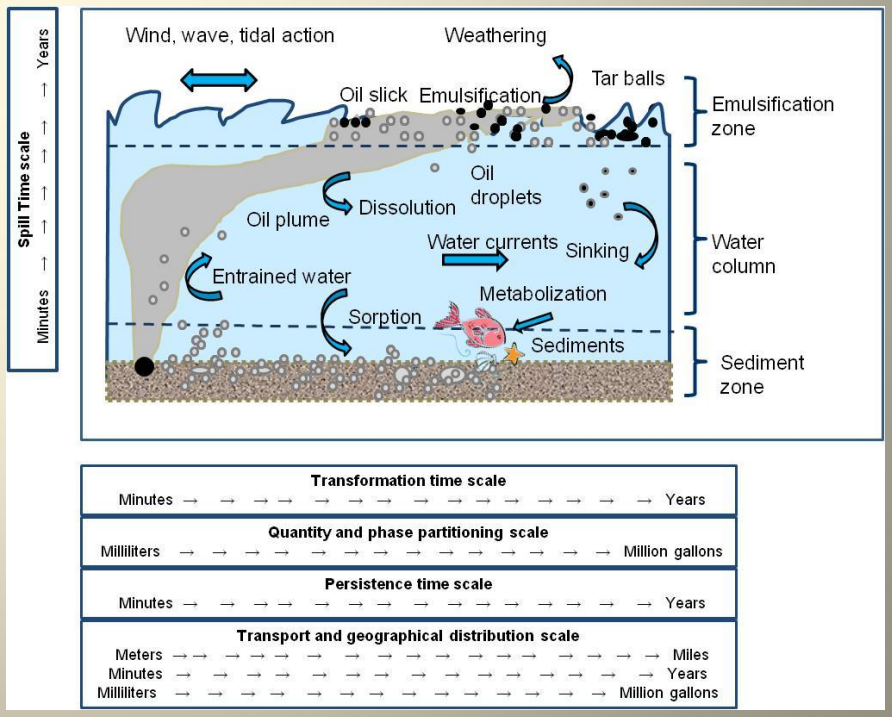
Transport Characteristics of Emulsified PHC Based Oils before and after Dispersant Application


Aggregated oil droplets from emulsion phase

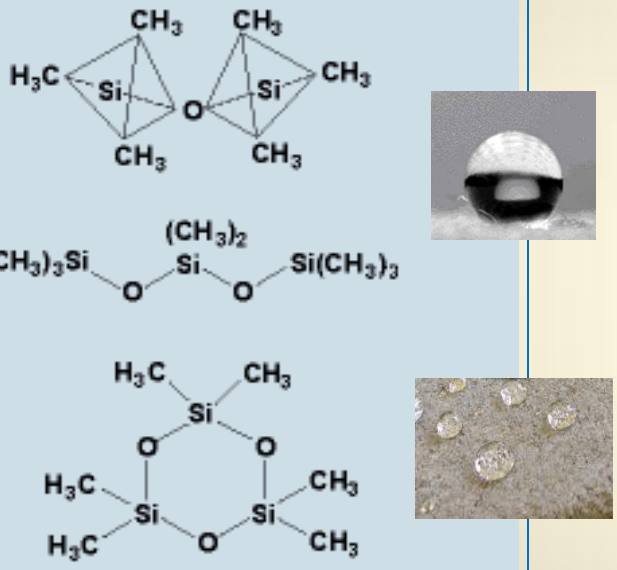




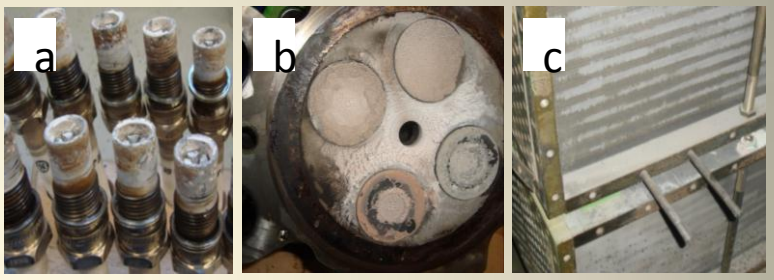




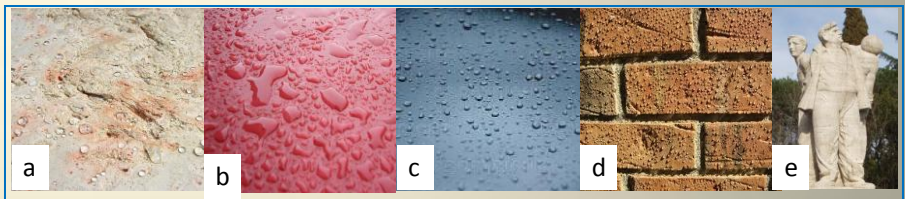
Siloxanes in MSW: Quantities in Waste Components, Release Mechanisms during Waste Decomposition and Fate in the Environment



Structural formulas representing three of the possible siloxane compounds (McGraw Hill, 2012)



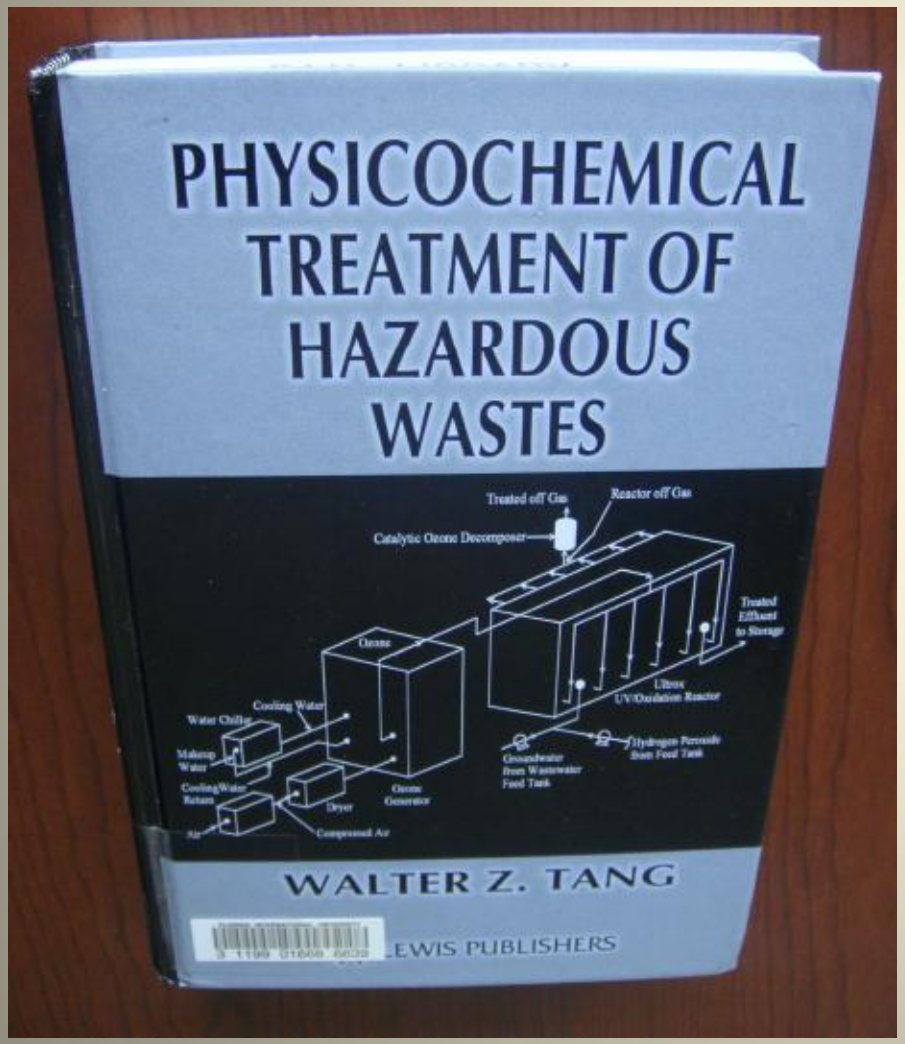
Deposits formed in landfill gas engines: a.spark plugs, b.engine head, c. intercooler radiator (Sevimoglu and Tansel, 2012).



Surface treated with silocone based polymers: a. exterior tiles, b and c. exterior metal surfaces, d.exterior bricks, e. plaster, concrete and marble surfaces.

Compound	Concentration in LFG (mg/m³)
Decamethyltetrasiloxane (L4)	< 0.5
Decamethylcyclopentasiloxane (D5)	2.9 ± 0.1
Dodecamethylcyclohexasiloxane (D6)	< 1.0
Hexamethyl disiloxane	1.6 ± 0.1
Hexamethyl-(cyclo)-trisiloxane (D3)	< 1.0
Octamethylcyclotetrasiloxane (D4)	5.0 ± 0.2
Octamethyl-trisiloxane (L3)	< 0.5
Total Siloxanes	9.5 ± 0.4

Advanced Oxidation Processes



Fundamental theory on AOPs

H_2O_2/UV, H_2O_2/Ultrasound, TiO_2/UV, Fenton process, high energy electron irradiation, H_2O_2/O_3/UV

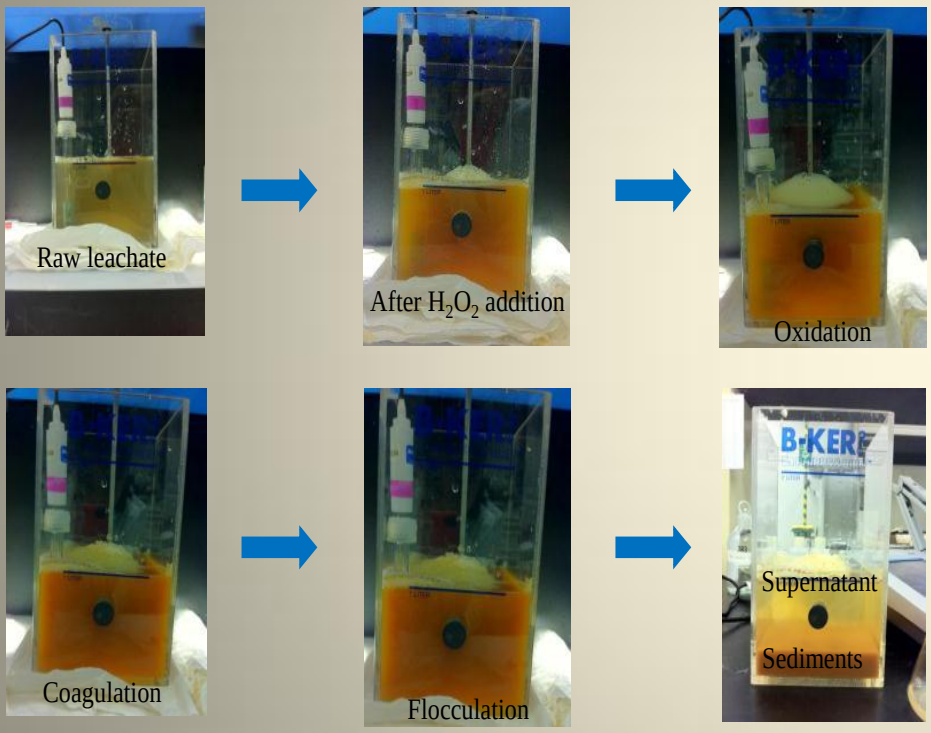
200 QSAR Models

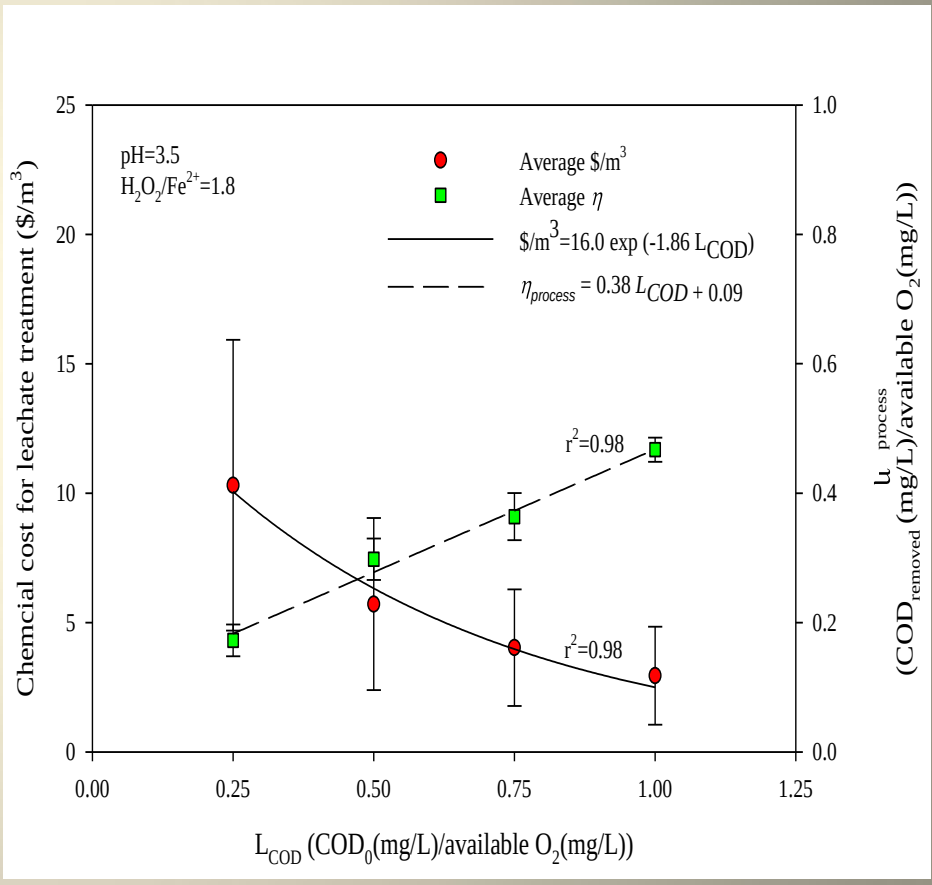
Kinetics and Mechanisms

E_{LUMO} and E_{HOMO} as molecular descriptors

FIU | Civil and Environmental Engineering
Florida International University

Fenton Treatment of Landfill Leachate





FIU | Civil and Environmental Engineering
Florida International University

FIU Resources for Further Information

University Graduate School
gradschool.fiu.edu

About FIU
fiu.edu/about-us

College of Engineering & Computing
cec.fiu.edu

Department of Civil & Environmental Engineering
cee.fiu.edu

Travel Grants for Ph.D. Students

Dear Ph.D. Student Applicant:

If you have applied and been admitted to our Ph.D. program, please consider applying for a travel grant to come to Miami, Florida to visit FIU, the Engineering College, and our department, and to meet FIU CEE faculty and students.

Visit cee.fiu.edu for more information.

Contact Person: Ms. Rachel Garcia
rgarci04@fiu.edu or (305) 348 6875

FIU | Civil and Environmental Engineering
Florida International University