Dear Prospective Graduate Student:

Thank you for your interest in the College of Engineering’s School of Civil and Construction Engineering (CCE) at Oregon State University. The school is a dedicated group of students, faculty, and staff who are solving some of the world’s toughest challenges and creating a better future.

These are exciting times at Oregon State. With research focused in safety, resilience, and infrastructure renewal, CCE has over $8.1 million in research expenditures. In the geomatics group, researchers employ state-of-the-art drones, laser scanning, and 3D visualization in their work. In the structural engineering group, researchers are making advances in wood construction with cross-laminated timber, an alternative, renewable building material that features considerable cost-savings compared to traditional materials. Researchers in the school are also developing new methods to strengthen aging infrastructure, prepare for potential hazards, identify liquefaction susceptibility, and enhance workplace safety. These are just a few examples of the exceptional work at CCE – a visit to our campus will provide many more.

Within CCE, there are nine focus areas of teaching and research. The school works in a collaborative approach – with other academic units, local and federal government, and industry – to positively influence the environment and to tackle local and global challenges. This cooperative approach has led to a major effort in developing a new resilience network. A specific example is the Cascadia Lifelines Program, a partnership between OSU, regional governments, and private industry aimed at improving critical infrastructure performance and transportation modeling during an anticipated major earthquake along the Cascadia Subduction Zone.

CCE offers a wide range of courses and research opportunities that allow students to choose from a variety of focus areas in which to specialize. Students are also encouraged to pursue an interdisciplinary approach to their research and many programs permit students to take up to 15 hours of courses in a minor area of their choice.

While at CCE, graduate students conduct their research in first-rate facilities. The O.H. Hinsdale Wave Research Laboratory is one of the world’s largest and most technically advanced laboratories for coastal research. The Driving and Bicycling Simulator is one of only a few where a driver and bicyclist can interact in the same virtual environment. Additionally, the school is in the process of launching a revolutionary new 40,000-square-foot research facility.

CCE students have the opportunity to connect with alumni and industry partners, many of whom visit campus frequently and are eager to support students. This network helps CCE graduates remain on the cutting edge of research and connects them to their future profession.

Thank you again for your interest and I hope you enjoy your visit to OSU. I look forward to your contributions and the impact you will have on Oregon – and beyond.

Go Beavs!

Sincerely,

Jason Weiss
Head of the School of Civil and Construction Engineering
The Miles Lowell and Margaret Watt Edwards Distinguished Chair in Engineering
Director of the Kiewit Center for Infrastructure and Transportation Research
GRADUATE STUDIES IN COASTAL AND OCEAN ENGINEERING

SCOPE AND OBJECTIVES

The graduate program in Coastal and Ocean Engineering at Oregon State University emphasizes the interdisciplinary nature of research and education on emerging themes related to natural coastal hazards such as tsunamis and hurricanes, as well the effects of climate change including sea level rise and increasing storminess. Additional themes include marine renewable energy, coastal ecology, and resilient and sustainable communities. Our program seeks to enable students to pursue research topics that cross the traditional boundaries of coastal engineering, and to prepare students for leadership positions in academia, private, and public sectors.

SAMPLING OF COASTAL AND OCEAN ENGINEERING COURSES

- CE 411/511 - Ocean Engineering
- CE 415/515 - Coastal Infrastructure
- CE 417/517 - Hydraulic Engineering Design
- CE 631 - Ocean Eng. Wave Mech. II
- CE 634 - Long Wave Mechanics
- CE 635 - Applied Modeling of Nearshore Processes
- CE 639 - Ocean Structure Dynamics
- CE 642 - Random Waves
- CE 643 - Coastal Engineering
- CE 645 - Wave Forces
- CE 647 - Ocean and Coastal Engineering Measurements
WHY OREGON STATE UNIVERSITY?
When I visited campus, I felt so genuinely welcomed by every person I came in contact with. I felt comfortable and respected when discussing my ideas and interests with faculty, many of whom are leading experts in the field. My professors and colleagues continue to impress, inspire, and challenge me.

HOW DID YOU BECOME INTERESTED IN COASTAL AND OCEAN ENGINEERING?
My path to coastal and ocean engineering was largely motivated by my interest in learning about natural hazards and their impact on coastal communities. I discovered this unique discipline while conducting undergraduate research, when I realized that the study of environmental processes could be applied to the design of safe and sustainable infrastructure. As a Gulf Coast native, this application greatly resonated with me, and it fueled my desire to pursue a graduate degree in coastal and ocean engineering.

DESCRIBE YOUR CURRENT RESEARCH.
My current research seeks to reduce the uncertainty of long-term projections of geomorphic and ecological change in coastal wetland environments. I use computational simulations to quantify the impact of single storm events on marsh topography and vegetation and statistical methods to estimate the aggregate effect of storms over several decades. This has wide applications, such as deriving future projections of coastal marshes for use in probabilistic flood hazard analysis.

WHAT ARE YOUR PLANS FOLLOWING GRADUATION?
It is my hope that I can continue to contribute to the field of coastal and ocean engineering as a teaching and research professor. Concurrent with my CCE degree, I am enrolled in the Graduate Certificate in College and University Teaching, a rewarding program I highly recommend to those interested in teaching and education.

WHAT DO YOU LIKE ABOUT OREGON STATE UNIVERSITY?
Being a part of large research university has incredible advantages, from renowned research facilities to countless computing labs to top-notch recreational centers. Being a graduate student also offers an intimate atmosphere within the larger university. I’m thankful for the supportive network I’ve found through the graduate student community, both within CCE and across OSU.

WHAT ABOUT CORVALLIS AND THE SURROUNDING COMMUNITY?
I always thought I wanted to live in a big city until I visited Corvallis. It is incredibly accessible; I love being able to get anywhere in town in ten minutes or less, and often by bike! Corvallis is home to scenic hikes and quirky shops and restaurants that are perfect for weekend exploring, and the mountains, coast, Portland, and Eugene are all about an hour or two in any direction if you are looking for an out-of-town adventure!

BEST IN THE FIELD
Faculty within the OSU coastal and ocean group are widely considered to be leaders in the field, routinely receiving research funding from agencies like the National Science Foundation, the Office of Naval Research, Oregon Sea Grant, and the U.S. Army Corps of Engineers.
OSU is also home to the O.H. Hinsdale Wave Research Laboratory, one of the largest and technically advanced laboratories for coastal research in the world.

EMPLOYABLE GRADUATES
Graduates of the coastal and ocean engineering program at OSU are making an immediate and positive impact on our built environment. Alumni of the program have gone on to serve as leaders in government, industry, and academia.
Current employers include leading research institutions, engineering consultants, the U.S. Army Corps of Engineers, U.S. Navy Civil Engineering Corps, and the U.S. Coast Guard.

NAME YOUR ADVENTURE
Corvallis, Oregon is ideally located in the central Willamette Valley. Whether you want to head for the mountains, play at the ocean, or travel to Portland for a night in the big city, it is all within a 90-minute drive from the OSU campus.
CONSTRUCTION ENGINEERING MANAGEMENT

SCOPE AND OBJECTIVES
Construction Engineering Management (CEM) is the application of scientific and technical knowledge to the processes used to construct infrastructure projects. Graduate studies in CEM at Oregon State University emphasize construction engineering and management concepts and techniques and their broader application to the Architecture/Engineering/Construction (A/E/C) industry.

The instructional program is highly interdisciplinary and aims at developing strong abilities to conduct construction engineering and management work involving basic concepts and principles, technical analysis, planning, design, and management, and the development of knowledge that positively impacts the A/E/C industry. The program provides students with skills in planning, designing, and implementing construction processes and systems. The course offerings provide a broad awareness of construction concepts and an understanding of scientific and technical knowledge to address construction problems.

SAMPLING OF CONSTRUCTION ENGINEERING COURSES
CE 507 - CCE Grad Seminar
CE 520 - Engineering Planning
CE 524 - Contracts and Specifications
CE 527 - Temporary Construction Structures
CCE 520 - Advanced Concrete Construction
CCE 525 - Construction Site Systems Engineering
CCE 526 - Design for Safety in CCE
CCE 529 - Lean Construction
CEM 541 - Heavy Civil Construction Management
CEM 543 - Project Management for Construction
CEM 550 - Contemporary Topics
CEM 551 - Project Controls
CEM 552 - Risk Management
CEM 553 - Construction Business Management
WHY OREGON STATE UNIVERSITY?
I decided to apply to Oregon State because of its reputation of having a competitive and outstanding engineering program. Additionally, the professors, students, and staff were so helpful and kind when I had a lot of questions and concerns before making my final decision of attending graduate school at OSU. Dr. John Gamabtese and his student Chuma Nnaji helped me throughout the decision process and I am grateful for them both. I also love the Pacific Northwest because it reminds me of my home in Honolulu, Hawaii.

HOW DID YOU BECOME INTERESTED IN CONSTRUCTION ENGINEERING?
Throughout my high school and undergraduate studies, I was always interested in improving the community through hands-on projects such as stream restorations, tutoring, and highway improvements. I love being outside, seeing the project in each phase, and interacting with people, so after many discussions with my mentors and parents, I decided construction engineering would be the best fit for my personality and what I want to achieve in life.

DESCRIBE YOUR CURRENT RESEARCH.
My research is based on bridging the gap between telematics, sensors, and general technology with safety relationships present on construction sites. My awesome and dedicated adviser, Dr. Louis, and I are working with implementing a sensor tool to potentially improve the safety relationship between workers-on-foot and heavy equipment operators on construction sites by using real-time tracking of worker field of view and proximity to hazards. This research will hopefully reduce the rate of injury and fatalities that occur on construction sites and/or work zones due to struck-by incidents typically caused by heavy equipment by focusing on improving worker line-of-sight.

WHAT ARE YOUR PLANS FOLLOWING GRADUATION?
I love the Pacific Northwest so I will stay in Portland. I accepted a job offer with JE Dunn as a project engineer and before that I will do some traveling to Japan, Korea, and Kauai.

HOW HAS OREGON STATE HELPED YOU PREPARE FOR YOUR FUTURE CAREER?
Oregon State has helped prepare me for the future in many ways. First, the university has connected me with professors and companies that can help answer questions and provide me with different opportunities that I can participate in throughout my career. Second, the university has provided me with an array of courses to take that have helped me to solidify the roles of construction I want to be a part of and identify where improvements need to be made to advance construction projects. Finally, the university has provided a lot of opportunities to meet with companies and various contractors, which has allowed me to make a fitting career decision.

WHAT HAVE YOU LIKED ABOUT OREGON STATE UNIVERSITY AND CORVALLIS?
Everything about Oregon State is great. I love the activities and opportunities, the facilities, and the sense of community. The best thing about Oregon State is the faculty and staff. The CEM faculty have helped me grow as a student and future engineer. They focus on different aspects of construction engineering and they are always available to talk to you if you have questions. They have a lot of passion for their work and it shows through their classes and research. Also, the staff are always ready to answer questions and guide you back on the right track throughout your studies.
ENGINEERING EDUCATION

GRADUATE STUDIES IN ENGINEERING EDUCATION

SCOPE AND OBJECTIVES
Graduate study in Civil and Construction Engineering Education at Oregon State University integrates fundamentals of civil and construction engineering with the learning sciences. Students will develop expertise in contemporary theories and practices on how people learn in academic and professional settings. Our program seeks to enable students to be leaders in academia and industry as experts in both civil and construction engineering technical content and how people learn, adapt, develop, and succeed in these fields.

SAMPLING OF ENGINEERING EDUCATION COURSES
At least two thirds of civil and construction engineering education graduate student’s coursework will consist of civil and construction engineering courses. A sample of the learning science and educational research courses available for selection are listed below.

CE 590 – Engineering Teaching and Learning
SED 621 – Survey of Research on Learning
SED 623 – Curriculum Theory
SED 611 – Survey of Research on Teaching
SED 612 – Quantitative Research Design and Critical Analysis
SED 613 – Learning Theory
ChE 599 – Engineering Education Foundations
STUDENT SPOTLIGHT • KEISHA VILLANUEVA

WHY OREGON STATE UNIVERSITY?
I decided to study Civil Engineering at Oregon State University because OSU is known for having one of the best engineering programs in the country. Also, I enjoy Oregon a lot and after living in a few different states, I’ve decided that I want to stay in the state after I complete my studies.

HOW DID YOU BECOME INTERESTED IN ENGINEERING EDUCATION?
I started working on my research related to engineering education in the summer of 2015. Engineering education is a new field for me and I like learning new concepts. It is interesting and quite different than other civil engineering sub-disciplines.

DESCRIBE YOUR CURRENT RESEARCH.
My research is about teaching evaluation practices. Teaching evaluation is a critical aspect of higher education and the purpose of my research is to identify current practices used to evaluate and assess teaching in engineering programs across the country. My research will describe evaluation practices within three types of institutions which include teaching-focused universities, research intensive universities, and community colleges. This study is important to have a better understanding and assessment of the current state of practice employed in engineering departments in a variety of institutions.

WHAT ARE YOUR PLANS FOLLOWING GRADUATION?
My plans change all the time. However, I do hope to find an engineering job that I love and enjoy. I would also take a break and spend time with my loved ones and go on a vacation. School has been fun yet it’s hard work.

WHAT DO YOU ENJOY ABOUT OREGON STATE UNIVERSITY?
There is so much to enjoy about OSU. Other than the football games and cultural events, I love that I got to work with and know amazing people, especially in my research group.

WHAT ABOUT CORVALLIS AND THE SURROUNDING COMMUNITY?
I have always liked living in a small community such as Corvallis. The people in this community are always friendly. Also, there are so many places to go to that are close to home such as the coast and Portland. I also enjoy the weather here, especially compared to where I used to live in Alaska where it’s winter most of the year.
GRADUATE STUDIES IN GEOMATICS ENGINEERING

SCOPE AND OBJECTIVES
Graduate study in Geomatics Engineering at Oregon State University integrates fundamental spatial data and boundary law theoretical knowledge with practical applications. Students gain exposure to the latest in geomatics technologies and boundary theory. The M.S. and M.Eng. Programs prepare students for careers in civil engineering geomatics design, consulting, development, regulation, or construction. Additionally, the M.S. program provides the background for students more interested in teaching, research, or specialization to pursue the Ph.D. degree.

Students pursuing graduate school who have a BS degree in Civil Engineering (ABET\EAC) or Construction Engineering Management (ACCE) who take 16 credit hours of approved civil engineering geomatics courses are eligible to sit for the Fundamentals of Surveying Examination in addition to the Fundamentals of Engineering Examination in the State of Oregon. Interdisciplinary studies are encouraged for geomatics students. Up to 15 hours can be spent to focus in a minor area (within CCE; e.g. geotechnical, transportation, ocean, etc.) and outside (e.g. geosciences, computer science, etc.) or other, if desired, and related to research or future goals.

SAMPLING OF GEOMATICS ENGINEERING COURSES (CREDIT HOURS)
CE 507 – SEM/Geomatics Seminar (1)
CE 513 – GIS in Water Resources (3)
CE 560 – ST/GNSS & Geometric Geodesy (4)
CE 560 – ST/Advanced Geospatial Info (4)
CE 560 – ST/Fundamentals of Geodesy (4)
CE 560 – ST/Hydrographic Surveying (4)
CE 561 – Photogrammetry (3)
CE 562 – Digital Terrain Modeling (4)
CE 563 – Control Surveying (4)
CE 565 – Oregon Land Survey Law (3)
CE 566 – 3D Laser Scanning and Imaging (4)
CE 567 – Coastal Remote Sensing (4)
CE 568 – Least Squares Adjustments (3)
CE 569 – Property Surveys (3)
CE 661 – Kinematic Positioning & Navigation (3)
WHY OREGON STATE UNIVERSITY?
I originally came to Oregon State University to complete my B.S. in Civil Engineering because of its prestigious reputation as one of the top engineering programs in the country and its location in the beautiful Pacific Northwest. I stayed here to complete my master’s degree because of the fantastic faculty and the numerous advanced technologies and resources the school provides.

HOW DID YOU BECOME INTERESTED IN GEOMATICS ENGINEERING?
What sparked my interest were internships where I did a lot of surveying using traditional technologies, like total stations, and GPS. Then, during my undergraduate studies here at OSU I became more interested in the field of geomatics and was introduced to our geomatics faculty and their research using terrestrial/mobile lidar scanners and UAVs. It’s a very interesting time to be in this field as the technology is evolving quickly.

DESCRIBE YOUR CURRENT RESEARCH.
Most of my research is focused on using Unmanned Aircraft Systems (UAS) as a data-acquisition platform for civil engineering applications. The main project I have been working on lately is integrating a small scanning laser and a GNSS-aided inertial navigation system onto a large octocopter for monitoring and detection of special features in transportation networks. The information could then be utilized to aid decisions concerning emergency response, clearance, congestion, parking, etc.

WHAT ARE YOUR PLANS FOLLOWING GRADUATION?
My hopes are to find a job located in the PNW that is progressive with the new and evolving technologies within this field. As I mentioned earlier, it is truly an incredible time to be in this field, and I would like to work for a company that wants to find innovative methods to apply these emerging technologies.

WHAT DO YOU LIKE ABOUT OREGON STATE UNIVERSITY?
There are many things I like about OSU, including its gorgeous campus. The things I feel stand out the most would be the location, phenomenal faculty, and well-equipped laboratories.

WHAT ABOUT CORVALLIS AND THE SURROUNDING COMMUNITY?
Corvallis is a wonderful college town that offers a welcoming feel. With the city being located between the Cascade mountain range and the coast, there are lots of outdoor sports and activities year round.
GEOTECHNICAL ENGINEERING

SCOPE AND OBJECTIVES

Graduate study in geotechnical engineering at Oregon State University emphasizes the integration of the science of soil mechanics and the art of foundation and earth structure engineering. Theory is prominent, but it is constantly and critically re-evaluated with respect to its limitations and applicability to the practice of effective geotechnical engineering. Logic, science, and algorithmic thinking are emphasized to equip students with a robust toolbox of problem solving techniques applicable to a wide range of engineering problems, in geotechnical engineering and the broader sciences. The M.S. and M.Eng. programs prepare students for careers in consulting, design, development, regulation, or construction. Additionally, the M.S. program provides the necessary background to pursue the Ph.D. degree for students more interested in research, teaching, or specialization. The Ph.D. program is research intensive and prepares students to be leaders in consulting firms, government agencies, and academic institutions.

The most interesting problems to be faced by the next generation of civil engineers will not be narrowly defined within a single subdiscipline. To that end, the geotechnical engineering program is broadly multidisciplinary in terms of research and education. Geotechnical faculty regularly collaborate with others in the School of Civil and Construction Engineering – structural, water resources, geomatics, and coastal engineers – and also with faculty from a broad range of other disciplines, including mathematics, physics, materials science, biomedical engineering, oceanoigraphy, seismology, forestry, and agricultural economics. This multidisciplinary collaborative spirit extends into the classroom, where professors share their diverse experiences and students are encouraged to take classes from across the school, college, and university.

SAMPLING OF GEOTECHNICAL ENGINEERING COURSES (CREDIT HOURS)

CE 514 – Groundwater Hydraulics (3)
CE 518 – Groundwater Modeling (4)
CE 570 – Environmental Geotechnics (3)
CE 571 – Advanced Foundation Engineering (4)
CE 572 – Advanced Laboratory Testing of Soils (4)
CE 575 – Earth Retention and Support (4)
CE 576 – Ground Improvement (3)
CE 577 – Static and Dynamic Soil Behavior (4)
CE 578 – Geotechnical Earthquake Engineering (4)
CE 579 – Slope Stability and Embankment Design (4)
CE 570 – Unsaturated Soil Mechanics (3)
CE 570 – Theoretical Geomechanics (3)
CE 588 – Probability-Based Analysis and Design (4)
CE 592 – Pavement Structures (3)
WHY OREGON STATE UNIVERSITY?
I was drawn to OSU by the research that was occurring at the university. Prior to applying for a Ph.D. position, I saw an interview with Dean Scott Ashford at the O.H. Hinsdale Wave Lab where he discussed the potential Cascadia Subduction Zone earthquake and subsequent tsunamis and liquefaction phenomenon. I was already interested in earthquake engineering and this exciting interview inspired me to apply to the school. When I visited CCE, I met graduate students who spoke highly of their advisers and were enthusiastic about their research. The combination of the students, faculty, and exceptional facilities – such as the wave lab – influenced my decision to attend OSU.

HOW DID YOU BECOME INTERESTED IN GEOTECHNICAL ENGINEERING?
I became interested in geotechnical engineering during an undergraduate workshop in Switzerland where I had a hands-on tunneling experience. I remember vividly how we visited a tunnel under construction (it was dark, dusty, and loud – I loved it). Immediately, I was fascinated by the excitement and adventure of the field. After completing my general bachelors and masters in structural engineering in Germany, I worked as an underground structures and tunnel engineer in Switzerland.

DESCRIBE YOUR CURRENT RESEARCH.
My research combines the field of tunneling with the field of earthquakes. Together with an industry partner, I am looking into the challenging aspect of crossing an active fault zone with a tunnel. Specifically, I’m examining the issues that arise during and after seismic activity, and identifying the most appropriate ecological and economical solutions so the existing tunnel maintains its life goal of 100 years or more.

WHAT ARE YOUR PLANS FOLLOWING GRADUATION?
Most likely, I will stay in the region, where earthquakes are unavoidable and there is a lot of work to be done to create a more resilient community and built environment. Additionally, I will try to obtain my Professional Engineering License and will most likely continue research in an academic setting.

WHAT DO YOU ENJOY ABOUT OREGON STATE UNIVERSITY?
OSU faculty have been open and supportive. They’re awesome. During classes, I enjoy the discussions between students and faculty. I’ve grown fond of this interactive learning! The classroom culture combined with the awe-inspiring campus - especially in spring - is just the right place for me.

WHAT ABOUT CORVALLIS AND THE SURROUNDING COMMUNITY?
I like downtown Corvallis with its small stores, coffee shops, nightlife, theater, and cinemas. Coming from Europe, the small town has its charm. During the summer, I especially enjoy the Saturday Farmer’s Market and floating in the Willamette River. I also like that Portland, Seattle, the Cascades, and the ocean are nearby. A 45-minute ride to the coast on a sunny afternoon is priceless!
INFRASTRUCTURE MATERIALS

GRADUATE STUDIES IN INFRASTRUCTURE MATERIALS

SCOPE AND OBJECTIVES

Graduate study in the Infrastructure Materials focus area at Oregon State University emphasizes fundamental multi-scale understanding of material properties using experimental and computational methods. Our investigations span time scales from early-age properties to long-term performance. Principles of green construction and materials selection, rehabilitation, assessment and repair of infrastructure are also emphasized. Coursework provides fundamental theory as well as application to real-world engineering challenges.

Research opportunities abound and are supported in the suite of world-class Infrastructure Materials Laboratories. The M.S. and M.Eng. Programs prepare students for careers in consulting, design, development, regulation, or construction in the private and public sectors. Additionally, the M.S. program provides the background for students wishing to further their career in academic or industrial research, teaching, or further specialization to pursue the Ph.D. degree.

SAMPLING OF INFRASTRUCTURE MATERIAL COURSES (CREDIT HOURS)

CCE 520 – Experimental Methods in Cement Chemistry (4)
CCE 520 - Corrosion and Its Control (4)
CCE 520 - Condition Assessment, Repair, Rehabilitation of RC Structures (4)
CCE 520 - ST/Pavement Materials
CCE 520 – Selected Topics in Infrastructure Materials
CCE 520 - ST/Advanced Concrete Construction
CCE 520 - ST/Asphalt and Asphalt Mixture
CCE 520 - ST/Pavement Design and Sustainability
CCE 522 - Green Building Materials (3)
CCE 523 - Concrete Durability (3)
CE 532 - Finite Element Analysis (4)
MATS 555 - Experimental Techniques in Material Science (4)
MATS 570 - Structure Property Relationships (4)
MATS 584 - Advanced Fracture and Fatigue of Materials (4)
CE 592 - Pavement Structures
CE 596 - Pavement Evaluation and Management
WSE 571 - Renewable Materials in Building Construction (3)
ST 515 – Design and Analysis of Planned Experiments (3)
STUDENT SPOTLIGHT • MARISOL TSUI CHANG

HOW DID YOU CHOOSE TO ATTEND OREGON STATE UNIVERSITY?
As a graduate student, I wanted to attend a university that was involved in cutting edge, high impact research in the area of civil engineering. The research facilities at OSU are incredibly unique and well equipped with state-of-the-art technologies. Specifically, in the area of infrastructure materials, the quality and quantity of research produced for both the private and public sector of infrastructure development is what attracted me the most.

HOW DID YOU BECOME INTERESTED IN INFRASTRUCTURE MATERIALS?
I became interested in infrastructure materials from a combination of reasons. The first reason was the state of the infrastructure in the United States. Reinforced concrete deterioration can cost billions to trillions of dollars every year in repairs, which is an issue that is sometimes overlooked by the public. I also became interested in this area since I worked as an undergraduate research assistant in the civil engineering materials department for two years. Therefore, before I started researching graduate school programs, I already knew I wanted to become more involved in this area in civil engineering.

DESCRIBE YOUR CURRENT RESEARCH.
My research focuses on concrete durability. I’m involved in a project that is responsible for developing standard operating procedures that can be implemented in federal research facilities to assess the durability of a concrete structure. My specific role was to develop a method to assess the chemistries in concrete using a device called X-ray fluorescence. From the nature of my research and my research group, I was also involved in projects like the use of superabsorbent polymers for internal curing of concrete and deicing salt and freeze-thaw damage on concrete pavements.

WHAT ARE YOUR PLANS FOLLOWING GRADUATION?
After graduation, I am hoping to obtain a full-time position in a civil engineering company that focuses on the condition assessment, repair and rehabilitation of existing structures. Since this is a growing and ever-changing niche-type industry, I am hoping to further develop my education by attending professional and technical conferences such as the American Concrete Institute, where the leading experts in concrete present new research findings and discuss the latest innovations.

WHAT DO YOU LIKE ABOUT OREGON STATE UNIVERSITY?
I love the welcoming and collaborative environment at OSU. In the College of Engineering, I see a lot of collaboration between different departments, which reflects on OSU’s thirst to grow as a multidisciplinary research institution. I also like the open-minded environment that OSU has as a university. The community at OSU is very inclusive and you will always find a friendly face anywhere you go. Corvallis is a beautiful quaint little college town with a unique life of its own. Saturday morning farmers markets and beer (or cider or wine or mead) tasting are some of the many quirky activities that this town offers. Corvallis is also surrounded by many breathtaking natural wonders. If you’re not into hiking, you will be after living in Oregon. While at OSU, I gained open water scuba diving certification; hiked one of the tallest mountains in the west coast; camped in rainy forests, and walked miles and miles on the Oregon coast. I have even taken a yoga class with goats! There is always something fun, new, and exciting to do here.

A RESEARCH LEADER
Oregon State has earned a worldwide reputation for excellence in teaching and research. This includes the Carnegie Foundation’s highest designation — the classification reserved for universities with “very high research activity.”

A CITY FOR TWO WHEELS
Nearly all of the city’s main roads have designated bike lanes and about 25,000 meters of biking trails run throughout the city limits.

The city of Corvallis is ranked third highest among U.S. cities for bicycle commuters, behind Key West, Florida, and Davis, California.
GRADUATE STUDIES IN STRUCTURAL ENGINEERING

SCOPE AND OBJECTIVES
Graduate study in the Structural Engineering focus area at Oregon State University emphasizes the design of safe and economical structures that meet society’s needs and that can also resist extreme hazards. Oregon State researchers develop modeling tools and investigate the behavior of a number of structural systems: reinforced concrete bridges, cross-laminated timber buildings, steel buildings, and wood residential structures. Examining the effects of a large magnitude, Cascadia Subduction Zone earthquake and the resulting tsunami on Pacific Northwest structures is a growing focus. Several structural engineering students are enrolled in a dual-major program with the Department of Wood Science and Engineering, where structural applications of renewable materials are emphasized.

SAMPLING OF STRUCTURAL ENGINEERING COURSES
CE 527 – Design of Temporary Structures
CE 531 – Structural Mechanics
CE 532 – Finite Element Analysis
CE 533 – Structural Stability
CE 534 – Structural Dynamics
CE 536 – Matrix Methods of Structural Analysis
CE 537 – Nonlinear Structural Analysis
CE 580 – ST / Advanced Steel Design
CE 580 – ST / Advanced Reinforced Concrete Design
CE 580 – ST / Performance-Based Seismic Design
CE 580 – ST / Seismic Design of Steel Buildings
CE 581 – Reinforced Concrete I
CE 582 – Masonry Design
CE 583 – Bridge Design
CE 584 – Wood Design
CE 586 – Prestressed Concrete
CE 588 – Probability-Based Analysis and Design
CE 589 – Seismic Design
WHY OREGON STATE UNIVERSITY?
Oregon State University attracted me for several reasons. I grew up on Long Island, just East of New York City, and attended Cornell University for my undergrad. When applying for grad school, I decided I wanted to see more of the country. For a two-year MS program, why not try living in a different part of the country? The Pacific Northwest attracted me as an outdoorsy, green, mountainous region. I pictured myself exploring the great outdoors through hikes and rock climbing expeditions, and knew it would be an ideal environment for me to dive deeper into my passions both in academia and adventuring. I was drawn to the MS program for the diverse course material and the opportunity to take on a research project and write a thesis. OSU offered me the chance to experience and explore a new and enticing environment both as a student, and an evolving, curious, and adventurous individual.

HOW DID YOU BECOME INTERESTED IN STRUCTURAL ENGINEERING?
When I was a fifth grader, I had a math teacher who liked to apply mathematical concepts to real life applications. He had us virtually buy houses and pay mortgages, invest our money in stocks, and design houses for families with different handicap requirements. Designing a house in that class set me on a path that eventually led me to structural engineering. After that project, I spent hours laying on my living room floor designing my future houses and my family’s vacation house in Cape Cod. I was probably the easiest child to keep entertained at that point, and I’m sure my parents appreciated it while my three siblings kept them busy! Eventually I found myself a senior in high school deciding between architecture and civil engineering. I grew up loving art, math, and science, so it seemed feasible. When I applied to college, I applied to both civil engineering and architecture programs. I had an interview for Cornell and the interviewer actually crossed architecture off of my application, saying I’d be better suited as an engineer! Funny as it is, he was right. I fell in love with the structural program at Cornell, was a dedicated member of the steel bridge project team, and confirmed I was on the right path when I interned in the structural department at McLaren Engineering Group in NYC.

DESCRIBE YOUR CURRENT RESEARCH.
I will be working on cathodic protection of steel rebar in existing concrete bridge structures as a continuation of the work done with titanium rebar under Dr. Higgins. The goal is to utilize the additional titanium reinforcement that has been added to resist lateral forces, to also help prevent corrosion of the existing steel rebar. I will be working to reverse the natural direction of the corrosion reaction by forcing the corrosion on the titanium, so we can prevent steel from corroding. Titanium is much more resistant to corrosion and is likely to corrode at a much slower rate than steel, so we hope to maintain the structural integrity of the rebar for as long as possible.
GRADUATE STUDIES IN TRANSPORTATION ENGINEERING

SCOPE AND OBJECTIVES

Transportation serves society’s basic needs for personal travel and transfer of goods. Transportation engineering applies scientific and technical knowledge to provide economical and efficient transportation service that meets societal needs while maintaining compatibility with environmental, energy, and safety goals.

Oregon State University offers a graduate concentration in transportation engineering leading to the degrees of Master of Engineering, Master of Science, and Doctor of Philosophy. The program promotes collaborative research and provides a state-of-the-art curriculum to help prepare students to be leaders in the industry, providing skills in planning, design, operation, construction, and maintenance of transportation systems and facilities. To meet student goals, the department utilizes interactive classrooms to prioritize student learning outcomes, implements learning environments where students engage in authentic engineering problems, and leverages hands-on learning from field data collection, to software applications, to analytical methods.

The course offerings provide both a broad awareness of transportation concepts and a depth of scientific and technical knowledge to address transportation problems. Required classes for graduate work include traffic operations, facilities design, transportation planning, and statistics. Additional classes on a variety of topics including but not limited to railroads, airports, traffic signals, traffic simulation, highway safety, demand modeling, and pavements are offered as electives through the school. Students are also encouraged to take elective course throughout other departments and colleges on campus to aid in their professional and research endeavors, including: human factors, public policy, geographic information systems, and applied psychology.

SAMPLING OF TRANSPORTATION COURSES

CE 552 – Isolated Signalized Intersections
CE 554 - Driving Simulation
CE 590 - Transportation Safety Analysis I
CE 590 - Network Flow Analysis and Optimization
CE 591 - Transportation Systems Analysis and Planning
CE 592 - Pavement Structures
CE 593 - Railroad Engineering
CE 593 - Traffic Flow Analysis and Control
CE 595 - Traffic Operations and Design
CE 597 - Public Transportation
CE 598 - Airport Planning and Design
CE 599 - Intelligent Transportation Systems
WHY DID YOU CHOOSE TO ATTEND OREGON STATE UNIVERSITY?
After I finished my undergrad on the East Coast, I wanted to use my graduate study to explore a new part of the country. After visiting Oregon State, I knew that this was the place for me where I could work on innovative research and get a quality education.

HOW DID YOU BECOME INTERESTED IN TRANSPORTATION ENGINEERING?
In undergrad, I interned for the Virginia Department of Transportation and was given the flexibility to rotate through all the emphases in civil engineering from structures to construction to traffic. The traffic rotation was my favorite and I got to spend time out in the field working on projects. This experience fueled my curiosity and led me to take more classes in transportation and eventually decide to pursue graduate school with this focus.

DESCRIBE YOUR CURRENT RESEARCH.
My current research project is working on studying human behavior in transportation by using a full-scale driving simulator. My most recent project in this facility was analyzing how drivers are distracted by drones operating near roadway facilities. This project is aimed at informing policy makers to ensure that roads are safe as new technologies emerge.

WHAT ARE YOUR PLANS FOLLOWING GRADUATION?
After graduation I hope to find a job working at a state transportation research office. I like the practical and problem-solving nature of this type of research.

WHAT DO YOU LIKE ABOUT OREGON STATE UNIVERSITY?
My favorite parts about Oregon State University are the on-campus clubs that I am a member of, including the railroad engineering club (AREMA) and Christian Graduate Fellowship. These organizations have developed my professional and personal relationships both academically and spiritually.

WHAT ABOUT CORVALLIS AND THE SURROUNDING COMMUNITY?
One of my hobbies is trail running, and Corvallis is the perfect spot for it. MacDonald Forest, which is owned by OSU, has miles of trails just a few minutes from campus. This convenience makes it easy to take a quick break and experience the beautiful nature of the Pacific Northwest.

ANY ADVICE FOR INCOMING GRADUATE STUDENTS?
Don’t hesitate to ask as many questions as you want! The faculty and students engaged and willing to take the time to answer your questions and help you succeed.

OSU has always been a place with a purpose — making a positive difference in quality of life, natural resources, and economic prosperity in Oregon and beyond. Through discovery, innovation, and application, we are meeting challenges, solving problems and turning ideas into reality.

Research within the transportation group centers around state and national priorities. Spanning the spectrum from theoretical to applied, the team of transportation engineers at OSU is well-known for using research to improve the transportation experience for all.

If you want to have the ultimate weekend, Corvallis is the place to be. Start the weekend out by conquering the slopes of Mt. Bachelor (120 miles east), bike the numerous trails in Corvallis the next day, and finish it off by riding the waves at Otter Rock (located just 60 miles away).
GRADUATE STUDIES IN WATER RESOURCES ENGINEERING

SCOPE AND OBJECTIVES

The graduate program in Water Resources Engineering at Oregon State University emphasizes interdisciplinary research and education on emerging themes related to environmental extreme events and hazards (e.g., floods, explosive air-water geyser flows, etc.), groundwater hydrology, watershed hydrology, green urban water infrastructure, hydroinformatics, water resources systems analysis, and adaptation to climate change. The instructional program aims at developing strong abilities to conduct engineering work involving basic concepts and principles, technical analysis, planning, design and management. Our program seeks to enable students to pursue research topics that cross the traditional boundaries of water resources engineering, and to prepare students for leadership positions in academia, private, and public sectors.

PROGRAM OF STUDY

Students develop their study programs from a variety of courses in civil engineering and other departments and programs across OSU. Civil Engineering departmental courses typically form the major field of study. Supporting course work from other departments and programs is encouraged because of the breadth of the water resources engineering field and to take advantage of strong supporting programs in many natural resources departments on campus.

The major field usually consists of a core of course work in surface and groundwater hydrology, hydraulic engineering, water quality, stormwater management, river engineering, and water resources systems analysis. This is complemented by studies in a selected field such as environmental engineering, geotechnical engineering, bioresource engineering, forest hydrology, stream ecology, geomorphology and geology, and resource economics, as well as many other possibilities. Students consult with their advisor to develop study programs that fit their academic and professional goals.

SAMPLING OF WATER RESOURCES COURSES

CE 512 - Hydrology
CE 513 - GIS in Water Resources
CE 514 - Groundwater Hydraulics
CE 517 - Hydraulic Engineering Design
CE 525/CE 540 - Stochastic Hydrology
CE 540 - Selected Topics: Stormwater Management and Modeling
CE 540 - Selected Topics: Optimization in Water Resources Engineering
CE 544 - Open Channel Flow
CE 547 - Water Resources Engineering I: Principles of Fluid Mechanics
WHY OREGON STATE UNIVERSITY?
I attended Oregon State University for the entirety of my undergraduate career, and that was more than enough to sell me on applying to the graduate program here. Not only because of the innovative research happening here, but also the great professors, students, and staff within the School of Civil and Construction Engineering.

HOW DID YOU BECOME INTERESTED IN WATER RESOURCES ENGINEERING?
Water is a vital resource, which is becoming increasingly scarce. I became interested in the field as I learned about the complex issues surrounding water, and the benefits effective water management can provide.

DESCRIBE YOUR CURRENT RESEARCH.
My research is focused on developing various surface and groundwater models surrounding Hermiston, Oregon, and integrating the models into a decision support system. My work is part of a large interdisciplinary team, with the goal of providing the region with a tool to aide in resiliency and adaptation planning. This tool aims to show the impacts of various decisions and the resulting interdependencies between different individuals, to ultimately promote collaborative problem solving between within the basin.

WHAT ARE YOUR PLANS FOLLOWING GRADUATION?
I have not decided between teaching and entering the private/public sectors. However, whichever path I choose, it is important to me that I am able to approach my work in a research-based, problem-solving style of work.

WHAT DO YOU LIKE ABOUT OREGON STATE UNIVERSITY?
Oregon State University is located in a great community and state. The resources on campus combined with the overall atmosphere make me glad I chose Oregon State.
RESEARCH AND FACILITIES

COASTAL AND OCEAN ENGINEERING

The Coastal & Ocean Engineering program at OSU is a leading center for research and education in coastal engineering and nearshore science, in which world-class faculty and staff specialize in physical/numerical modeling of coastal dynamics and field observations. A short list of focus areas includes: nearshore hydrodynamics, tsunami propagation and storm surge, remote sensing of nearshore waves and currents, turbulent sediment suspension and transport, and wave-structure interaction.

The Coastal & Ocean Engineering Program is also the home of the O.H. Hinsdale Wave Research Laboratory (HWRL) and the Edwards Nonlinear Wave Lab. The HWRL is one of the largest and technically most advanced laboratories for coastal research in the world and contains the Directional Wave Basin and the Large Wave Flume. Through a National Science Foundation (NSF) award in 2015, two main resources at the HWRL become part of a distributed, national program – the Natural Hazards Engineering Research Infrastructure – that provides the natural hazards engineering community with access to various research infrastructure, as well as educational and community outreach activities.

The ties between Coastal & Ocean Engineering and the HWRL ensure students will have access to state-of-the art facilities for research in coastal and ocean processes. In addition, since complex coastal problems require multidisciplinary solutions, Coastal & Ocean Engineering has ties to programs in Geosciences, Marine Geology, Physical Oceanography, Mathematics, and Computer Science.

DIRECTIONAL WAVE BASIN

The Directional Wave Basin is designed as a shared-use facility to understand the fundamental nature of tsunami and hurricane wave/surge hazards, including inundation to improve our numerical tools for coastal hazard mitigation, overland flow through the built and natural environment, fluid-soil-structure loading and response, debris impact, erosion and scour, natural and nature-based mitigation, and harbor resonance.

In addition to coastal hazards research, the facility is used for general testing of coastal infrastructure, for nearshore processes research, and for testing marine renewable energy devices.

LARGE WAVE FLUME

The Large Wave Flume is the largest of its kind in North America. Because of its size and ability to operate in high Reynolds regimes, the flume is ideally suited for: scaled shallow water hurricane and storm wave conditions, long wave and tsunami generation, active wave absorption for large reflected waves, and minimizing tank searching for long duration studies.

EDWARDS NONLINEAR WAVE LAB

With the aid of the NSF support, a new water tank was completed in 2006. This apparatus was designed and constructed specifically for precision experiments for water-wave-mechanics with optical instruments. This tank enables us to measure wave and velocity fields from every angle using various optical techniques for flow visualization, as well as laser-Doppler anemometer (LDA) and particle-imagery velocimetry (PIV) systems.

CONSTRUCTION ENGINEERING

Construction Engineering research at OSU focuses on alternative contracting techniques, risk management, construction safety, sustainability, accelerated and durable construction, construction materials, and enterprise management. Over the past several years, CEM faculty have led or participated in research sponsored by the Construction Industry Institute (CII), National Cooperative Highway Research Program, the Oregon Department of Transportation (ODOT), The Center for Construction Research and Training, ELECTRI International, Pacific NW Transportation Consortium, and the National Institute for Occupational Safety and Health.

CONSTRUCTION SAFETY RESEARCH LABS

Construction safety research is conducted both in on-campus laboratories and on construction sites. For work zone safety research, the OSU Driving Simulator Lab provides an opportunity to model construction work zones within an interactive environment. The simulator allows for studying the interaction between passing traffic (driver behavior) and construction operations to examine worker exposures to safety hazards and safety performance of traffic control measures. For research on construction safety related to temporary and permanent structures, the Civil and Construction Engineering (CCE) structures lab, and the Wood Science and Engineering (WSE) structures lab, are available for use. Given the complex, large-scale, and unique nature of construction projects, safety research is also conducted on construction sites and in architecture/engineering/construction offices located throughout Oregon and the Pacific Northwest to monitor and record work practices, worksite conditions, and worker behavior in actual, real-world settings.
RESEARCH AND FACILITIES

CONSTRUCTION ENGINEERING RESEARCH LABS
Multiple labs across the OSU campus provide the opportunity to conduct high-level and full-scale construction engineering research related to structures and materials. Civil and Construction Engineering and Wood Science and Engineering have multiple structures and materials labs available for use. For construction issues related to structures, the CCE and WSE structures labs provide the ability to model and test structures constructed of concrete, steel, wood, and other materials. Laboratories for materials testing include the Concrete Performance Lab, Kiewit Materials Performance Lab, and Green Building Materials Lab. Each lab is equipped with state-of-the-art technologies capable of conducting a wide range of research on the performance and impacts of materials used for construction. Additionally, construction sites located throughout Oregon and the Pacific Northwest are utilized to study construction operations, temporary structures, and construction materials in use.

FIELD DATA COLLECTION RESOURCES
In addition to the equipment available in the labs, our research capabilities are supported by a wide variety of equipment for field research. The equipment is selected to allow for the collection and analysis of multiple types of data associated with construction research.

GEOMATICS
The Civil Engineering Geomatics program at OSU is a leading center for research and education in geomatics applied to civil engineering and other fields. Our students also collaborate with researchers in a wide variety of disciplines. A short list of focus areas includes: 3D laser scanning/lidar, Geographic Information Systems, Geospatial Hazard Analysis, GPS/GNSS positioning, Atmospheric monitoring with GNSS, Cadastral Surveys, UAVs, UAV remote sensing, geospatial data management, and geomatics computation and programming.

GEOMATICS LABORATORY
OSU has access to a large amount of state-of-the-art equipment and software thanks to a memorandum of understanding between OSU, Leica Geosystems, and David Evans and Associates, Inc. This provides students with access to high-end, modern, Leica Geosystems Survey equipment. Students will be trained on the latest equipment available in industry practice. Leica has provided powerful software packages (Leica Geo-Office and Cyclone), which are used in OSU’s courses for survey and scan data processing. Maptek I-Site also provides licenses to OSU for I-Site Studio. QCoherent LP360 is also available for lidar data processing and analysis.

3D LASER SCANNING
OSU owns and operates Two Leica ScanStation2 laser scanners, a Riegl VZ-400 terrestrial laser scanner, and a NextEngine Micron resolution structured light system. In addition, OSU partners with Leica Geosystems and David Evans and Associates to use state-of-the-art Leica scanners, as needed. OSU has access to a variety of software to work with 3D point clouds including Leica Cyclone, Maptek I-Site, the Terrasolid suite, and LP260. We also write a substantial amount of custom code for efficient and reliable point cloud processing.

SURVEY EQUIPMENT
Thanks to Leica and DEA, OSU has ten Leica Viva Series TS15 P Robotic Total Stations, five of which have smart station capabilities with GNSS. In addition, there are several Leica DNA-03 and DNA-10 digital levels along with both sectioned fiberglass and single piece invar rods allowing for 1st, 2nd, or 3rd order work to be carried out.

UNMANNED AIRCRAFT SYSTEMS
The geomatics group has two DJI multicopters for performing remote sensing. These systems are capable of flying up to 18 minutes on a single battery, provide first-person view video, and can be programmed to follow photogrammetric flight paths. OSU also has Agisoft Photoscan for generating 3D models and point clouds from the images. Recently, OSU purchased the Sensefly eXom, a professional UAS designed for inspecting structures.

GPS/GNSS
OSU has 5 Leica GNSS receivers, a Trimble R8 GNSS receiver with a wifi hotspot to connect to Oregon’s RTK network as well as equipment to setup a GPS base station for differential and RTK GPS.

COMPUTING LABS
In addition to the computing labs offered by CCE, OSU Civil Engineering Geomatics has two dedicated computing labs. A graduate lab contains 10 high power graphics workstations (Quad Core processors, 24+ GB RAM, 1GB+ dedicated video RAM)
RESEARCH AND FACILITIES

with dual monitors for processing lidar data. These computers are equipped with the latest in lidar, GIS, and other geomatics software. The Photogrammetry Lab contains several computers with ERDAS Imagine software.

GEOTECHNICAL

Geotechnical engineers help design structures that are either composed of soil or rock or are in contact with it -- that is, they engineer the interface between the natural and built environments. Their research provides insight into the performance of structures in contact with earth, such as bearing failures, settlement damage, and failures due to emergent processes such as landslides and liquefaction. Scott Ashford, Matt Evans (Group Coordinator), Ben Leshchinsky (Forest Engineering, CE-FE liaison), Ben Mason, and Armin Stuedlein form the core of the geotechnical engineering research program in the School of Civil and Construction Engineering at OSU. Affiliated faculty include Dan Gillins (geomatics), Michael Olsen (geomatics), Marv Pyles (Forest Engineering, Emeritus), Lee Schroeder (Emeritus), and Ted Vinson (Emeritus).

GEOTECHNICAL FIELD RESEARCH SITE

The Geotechnical Engineering Field Research Site at OSU provides researchers, engineering practitioners, and contractors with a well-characterized site for research and product testing. The site was established in 1997 with the first round of extensive geotechnical and geophysical investigations.

The site is flat, open, and free of overhead obstructions. The working area available for field testing or fabrication of models is approximately 180 m × 120 m. The site has easy access for testing and construction equipment, adjacent city water supply, and nearby power and wireless network access. The soils are predominantly overconsolidated fine-grained materials with a depth to bedrock of about 30 m; groundwater fluctuates between 1.5 m and 2.5 m below ground surface.

Representative examples of full-scale testing at the test site include the evaluation of:

- construction and quality assurance testing of drilled shaft foundations;
- static and cyclic response of helical anchors;
- effect of mechanically-stabilized earth (MSE) wall reinforcement strip spacing on pullout resistance;
- torsional load transfer of drilled shafts;
- effect of seasonal groundwater fluctuation on performance of spread footings resting on aggregate piers;
- effect of proximity of piles to slopes on lateral capacity; and
- geophysical methods for measuring the shear wave velocity of soils.

GEOTECHNICAL RESEARCH LAB

The Geotechnical Research and Teaching Laboratories were completely renovated in 2013. These labs are well-equipped for the complete characterization of the engineering properties of soils, including index properties, compaction characteristics, hydraulic conductivity, compressibility, rate of consolidation, quasi-static shear strength, cyclic shear strength, and thermal properties (conductivity and specific heat capacity).

Element-scale testing capabilities range from fundamental to sophisticated for both teaching and research. Of note is the infrastructure for characterization of liquefiable soils, including cyclic triaxial and cyclic simple shear devices. Large load frames and triaxial cells facilitate the measurement of stress-strain-strength properties of crushed rock and coarse aggregate. Studies of complex soil behavior are facilitated by advanced electronics and innovative laboratory techniques, including optical microscopy, propagation of elastic waves, acoustic emissions monitoring, and thermal properties characterization.

GEOTECHNICAL COMPUTING RESOURCES

The Geotechnical Engineering Group maintains a large library of software for simulation of a variety of complex multiphysics problems with geotechnical applications. There is active research in discrete element method modeling (PFC, LAMMPS), finite element method modeling (ABAQUS, ANSYS, Comsol, Plaxis, GeoStudio), finite difference modeling (FLAC), and limit analysis (LimitState:GEO, Optum:G2) in the group. The software is installed on modern multicore workstations, high throughput servers, and computer clusters for access by students and faculty either on their desktops or through the cloud.

INFRASTRUCTURE MATERIALS

Infrastructure Materials Research in CCE at OSU focuses on cement-based materials, alternative cements, asphalt, metals and innovative materials and systems. Our research spans multiple scales from nano to macro and time horizons from early-age to long-term properties. We combine fundamental scientific and engineering investigations with computational modeling and predictive tools to provide real-world solutions. We are funded
RESEARCH AND FACILITIES
by a wide range of sources including NSF, DOD, Departments of Transportation, University Transportation Centers and wide-ranging Industry collaborations. Research is done across a suite of unmatched facilities in North America. We operate in four different laboratories including the Concrete and Asphalt Performance Lab, the Kiewit Materials Performance Lab, the O.H. Hinsdale Wave Research Laboratory and the Green Building Materials Lab. We also have an extensive outdoor exposure site for bench-marking accelerated laboratory investigations to real environmental exposure. Work is accomplished by a team of Professors and Post-Doctoral Researchers as well as outstanding graduate and undergraduate Research Assistants. Professors Bell, Coleri, Ideker, Isgor, Trejo, and Weiss lead these efforts.

CONCRETE PERFORMANCE LAB
Research at the Concrete Performance Lab focuses on the prediction of long-term durability and characterization of early-age volume change of cement-based materials. Our multi-scale approach results in translational research that combines fundamental scientific understanding with the improvement and development of test methods and specifications that enhance concrete performance. We are recognized experts in concrete durability, namely alkali-silica reaction, early-age properties of calcium aluminate cements and prediction of cracking risk in high performance concrete. Concrete is the most used building material in the world. While new materials may show promise, they are often made from natural resources that are not found in quantities to compete or even replace concrete. It is for this reason that concrete is the most advantageous for further development. Enhancements to concrete achieve superior performance may be a central path forward to ensure both long-term durability and sustainability. These avenues are central to our research at OSU.

KIEWIT MATERIALS PERFORMANCE LAB
Kiewit Materials Performance Lab was designed to carry out sensitive bench-scale experiments to characterize various types of materials and investigate their deterioration mechanisms. Materials of interest involve cement/concrete, metals, alloys, polymers, coatings, asphalt and wood. The laboratory is equipped with grounded bench-top space, two high-performance fume hoods, an environmental test chamber, cyclic corrosion test chamber, isometric calorimeter, thermogravimetric analyzer (TGA), and electrical and electrochemical testing equipment (including potentiostats/galvanostats and FRAs for AC Impedance analysis). Among many other capabilities, the laboratory is also fully equipped to conduct sensitive electrochemical investigations to study corrosion phenomena in metals/alloys and to study performance and durability of coatings and composite materials.

GREEN BUILDING MATERIALS LAB
The Oregon BEST Green Building Materials Laboratory includes research activities from the Schools of Chemical, Biological and Environmental Engineering and Civil and Construction Engineering and the Department of Wood Science and Engineering. Equipment housed in this Oregon BEST Signature Laboratory will allow OSU researchers to characterize, develop and test high performance sustainable materials for a wide variety of applications including buildings and transportation infrastructure. It also enables OSU to continue to recruit top faculty, researchers and students to the OSU campus.

PAVEMENT STRUCTURES AND MATERIALS LABORATORY
The Pavement Structures and Materials Laboratory is equipped to conduct modeling and testing in several areas of pavement technology including asphalt binder and mixture characterization, aggregate characterization, asphalt mix and structural design, concrete materials testing, and concrete pavement design. Research conducted at the Pavement Structures and Materials Lab encourages the use of more sustainable pavement materials, such as permeable pavements, rubber asphalt, warm-mix asphalt technologies, recycled asphalt pavements, recycled concrete, and alternative cement binders. The lab is also equipped with computational modeling tools to investigate possible applications of pavement design strategies that can have a considerable impact on fuel consumption, vehicle maintenance costs, greenhouse gas (GHG) emissions, and lifecycle costs. The laboratory enables researchers to develop research programs to study pavement materials at both the applied and basic research levels.

STRUCTURAL
While all members of the OSU structural engineering faculty have an interest in structural analysis and seismic related issues, Dr. Higgins and Dr. Miller specialize in design and experimental studies; Dr. Liu explores resilient steel structures, with a focus on seismic and disproportionate collapse resistance; Dr. Scott and Dr. Yim emphasize structural mechanics, analysis, and dynamics, as well as numerical modeling of fluid-structure interaction; Dr. Barbosa specializes in laboratory testing and probabilistic methods of risk and reliability applied to engineering problems; and Dr. Fischer seeks innovative approaches to improve community resilience and the robustness of infrastructure affected by earthquakes and fires. In recent years, structural engineering research projects have been supported by the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST), the United States Department of Agriculture (USDA), the Office of Naval Research (ONR), the Oregon Department of Transportation (ODOT), the California Department of Transportation (Caltrans), and the Pacific Earthquake Engineering Research Center (PEER). Collaborative work has been conducted with researchers at Lehigh University, Cornell University, Tufts University, the Transportation Ministry (Japan), the Tokyo Institute of Technology, the University of Rome (La Sapienza), and several other universities in Europe and Asia.

STRUCTURAL ENGINEERING LABORATORY
Many structural engineering research projects utilize OSU’s large scale strong floor and 160-foot high strong wall located in the O.H. Hinsdale Wave Research Laboratory. The strong floor is the second largest in the Western U.S. and allows researchers to simulate forces of up to one million pounds on frames up to two stories high. Additionally, the laboratory has a large scale environmental chamber and a 4-by-4-foot shake table.

The facility has recently been used for studies of bridge cracking that have been undertaken on behalf of the Oregon Department of Transportation. Of the state’s 1800 bridges constructed in the 1950s, 500 have been identified as cracked. Replacement and repair costs could cost several billion dollars; however, a testing program at OSU led to economical repair prioritization strategies. In addition, the facility has been used on projects related to high strength steel materials for use in bridges and buildings, testing of full-scale bridge gusset plates, as well as building structural
RESEARCH AND FACILITIES

Components, such as URM walls. OSU researchers are developing modeling tools and databases to forecast how the built infrastructure will perform over time, assess structural reliability, and identify cost-effective repair options for our aging infrastructure.

WOOD STRUCTURES LAB
Most of the experimental research related to wood structures is conducted at the Gene D. Knudson Wood Engineering Laboratory in the OSU Department of Wood Science and Engineering (WSE). The 3,000-square-foot high-bay facility has a 12-foot high L-shaped reaction wall and a 60-by-40-foot reaction floor to accommodate dynamic testing of large wood components and structural systems. Many graduate students are involved in dual-major Master of Science or Doctor of Philosophy degree programs in CE and WSE.

TRANSPORTATION
Transportation research at OSU can be divided into two broad interest areas: 1) traditional transportation engineering (e.g., transportation planning, design, operations, and safety) and, 2) pavement design and pavement materials.

Significant funding comes from various state, regional, and federal sources such as the Federal Railroad Administration, National Cooperative Highway Research Program, National Institute of Disability and Rehabilitation Research, National Science Foundation, Oregon Department of Transportation, US Department of Education, the Pacific Northwest Transportation Consortium (PacTrans), Sea Grant, and the Transit Cooperative Research Program as well as private industry.

DRIVING AND BICYCLING RESEARCH LAB
Researchers affiliated with the laboratory are concerned with studying transportation operations and safety issues from a multi-modal perspective. Due to the complexity of transportation problems, research conducted in the laboratory is interdisciplinary and requires expertise in transportation engineering, human factors, cognitive psychology, and statistics, among others. The laboratory is an experimental tool which can help uncover the explanatory mechanisms of transportation user behavior, leading to improvements in the safety and operations of transportation systems.

The high fidelity driving and bicycling simulators allow researchers to evaluate many more scenarios than would be practically possible in the field or on an instrumented test track while at the same time controlling for extraneous variables. As a result, drivers and bicyclists can be exposed to risky scenarios that would be either very difficult or impossible to evaluate in the real world or on a test track. The bicycling simulator is one of only a few in the world, and can operate simultaneously with the driving simulator in the same virtual environment. Mobile eye tracking is used in conjunction with both simulators and in the field to evaluate the visual attention of transportation users.

CENTER FOR ACCESSIBLE TRANSPORTATION
At OSU, the Center for Accessible Transportation (CAT) conducts research and development projects that concentrate on accessibility and cost-effective improvements in transportation technologies, with the goal of making transportation safer and more dignified for all. The projects focus on accessible air, rail and urban transportation. The CAT laboratory is fully accessible and is used for research, development and testing of new technologies and equipment. The laboratory is equipped with a range of wheeled mobility devices, and is also the permanent home of the test dummy family. CAT has 50th and 90th percentile male test dummies, and a 50th percentile female that are used for the biomechanics research.

COGNITION AND LEARNING LABORATORY
This lab is used for the identification and categorization of student misconceptions and knowledge of practicing engineers and for the development, implementation and testing of educational interventions to both overcome misconceptions and prepare students for the engineering workforce. The lab is outfitted with state of the art video and audio recording and teaching and learning.

WATER RESOURCES
The faculty in the Water Resources Engineering program is actively involved in a wide range of research activities dealing with problems in groundwater hydrology and contamination, river hydraulics, multi-phase computational hydraulics, real-time control of multi-objective reservoir systems, watershed hydrology, storm water management, coastal flooding, water resources systems analysis, and hydroinformatics. These research areas are led by Professors Jack Istok, Arturo Leon, and Meghna Babbar-Sebens. Their work is augmented by emeritus faculty members Wayne Huber, Peter Klingeman, and David Bella, and instructor Tracy Arras.
RESEARCH AND FACILITIES

CCE WRE faculty have traditionally been heavily allied with other water-oriented faculty around the OSU campus, including engineers and scientists in Biological and Ecological Engineering, Forest Engineering, Geosciences, Crop and Soil Science, and elsewhere. The university is widely recognized for its integrative and interdisciplinary activities in water resources.

GREEN STORMWATER INFRASTRUCTURE RESEARCH FACILITY

OSU-Benton County Green Stormwater Infrastructure Research (OGSIR) Facility is a three-celled stormwater research facility for field-scale experiments and testing on green stormwater infrastructure. The cells provide the ability to test various stormwater treatment technologies and treatment of various stormwater contaminants. These cells are also instrumented with multiple sensors to enable better data collection and modeling.

Pollutants captured at the this facility include tractor leaks, fuel tank spills, raw asphalt, road fill sediment, parking lot sediments and chemicals, and road paint spills. In addition to stormwater treatment, this facility supports long term research on stormwater quality to inform current and future projects for treating stormwater using ‘low impact development’ technology.

The lab is a partnership project to enhance water quality, provide long-term research and support stormwater and water quality education and outreach. Partners in the project include Benton County, OSU, Oregon BEST, State of Oregon Water Resources Department, and the Pacific Northwest Transportation Consortium.

GROUNDWATER RESEARCH LAB

The Groundwater Research Laboratory, located in the Oak Creek Building on the OSU campus, is involved in groundwater testing and research with an emphasis on clean-up of sites contaminated by radionuclides and chlorinated solvents. The lab, which features sophisticated equipment to detect a wide variety of contaminants in groundwater, concentrates on in situ aquifer characterization technologies, including the novel single-well “push-pull” method.

MULTIPURPOSE RIVER HYDRAULICS RESEARCH FACILITY

The MRHRF features a recirculating system with the ability to test two simultaneous and independent experiments with flows of up to 35 cubic feet per second. The facility is ideal for the construction and testing of river and low head pressurized hydraulic structures, and it can also be used for a wide range of research projects, including flood control, reservoir sedimentation, density currents, erosion and scour, aquatic habitat, stream restoration, fish passage and dam removal. The $600,000 facility consists of a re-circulating system with a 20-m x 8-m concrete slab (platform for experiments), two independent head tanks, a sediment catchment, a clean water sump, pumps, and impulsion and return pipe lines. Partners for the lab include the United States Environmental Protection Agency, Oregon BEST, OSU, and Northwest Research Associates.

INSTITUTE FOR WATER AND WATERSHEDS

At OSU, over 125 faculty teach and conduct research in areas related to fresh water supply and quality. These faculty members are spread among six colleges and represents many different academic disciplines – including engineering, ecology, geosciences, social sciences, economics and arts. OSU also hosts a vibrant Water Resource Graduate Program where students can earn specialized degrees in water resources engineering, science, and policy and management.

The IWW is the hub for this diverse water research community. It seeks to solve complex water issues by facilitating integrative water research.
OREGON STATE UNIVERSITY - GRADUATE STUDIES
SCHOOL OF CIVIL AND CONSTRUCTION ENGINEERING

CIVIL AND CONSTRUCTION ENGINEERING FACULTY

SCOTT ASHFORD
Dean, College of Engineering
Kearney Professor of Engineering
Geotechnical
RESEARCH: Dr. Ashford’s research focus is enhancing public safety and reducing potential economic loss worldwide from earthquake and coastal hazards. He performs trans-disciplinary work in earthquake and coastal engineering, focusing on full-scale modeling of soil-foundation-structure interaction, seismic site response, coastal erosion, and slope stability. His latest efforts are targeted at improving the resilience of the lifeline systems in the Pacific Northwest to better withstand earthquakes and tsunamis created by the Cascadia Subduction Zone.

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INGRID AROCHO
Assistant Professor
Construction
RESEARCH: Dr. Arocho’s research interests include construction equipment fleet management, pollution production during construction activities, and construction methods improvement to reduce environmental impact. Her previous research included the estimation and forecasting of pollution emissions from construction equipment fleets.

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MEGHNA BABBAR-SEBENS
Associate Professor
Water Resources
RESEARCH: Dr. Babbar-Sebens’ research interests lie in the area of Hydroinformatics, which employs simulation modeling, and information and communication technologies to help solve problems in hydraulics, hydrology and environmental engineering for better management of water-based systems. Examples of specific research applications include: Monitoring and modeling of urban green infrastructure for stormwater management; Web-based participatory design of conservation practices in watersheds; Advanced optimization algorithms and approaches for adaptation planning in presence of uncertainty, multiple objectives, and multiple stakeholders.; Data assimilation in water quality models using multiple sensors (e.g., in-situ instruments, satellites, and unmanned aerial systems (UASs), etc.)

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TRACY ARRAS
Senior Lecturer/Lower Division Coordinator
Geomatics
RESEARCH: Dr. Arras’ technical interests are principally in the area of geographical information systems and the integration of geomatic technologies (remote sensing, image processing, and GPS) for engineering applications. Technical interests also include the development of new innovative and effective pedagogic approaches (e.g., use of information technology and connectivity) to engage freshman and sophomore students. Her teaching interests include introductory GIS, GIS and Water Resources, and introductory freshman and sophomore courses that utilize information technology.

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CIVIL AND CONSTRUCTION ENGINEERING FACULTY

ANDRE BARBOSA
Assistant Professor
Structural

RESEARCH: Dr. Barbosa’s research focuses on the development of experimental testing programs and numerical tools and techniques geared towards improving structural performance and resilience of the built environment to multiple hazards. Studied within the group are earthquakes, fire, and tsunami hazards. Structural materials which are addressed are reinforced concrete, timber, and steel.

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SHANE BROWN
Associate Professor
Transportation, Engineering Education

RESEARCH: Dr. Brown’s research interests are in cognition and learning, with a particular emphasis on conceptual change and situated cognition. His conceptual change research examines why concepts are harder to learn than others and how to develop environments that facilitate understanding. His situated cognition research explores differences in ways of knowing and how core concepts are used in engineering practice.

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ERDEM COLERI
Assistant Professor
Infrastructure Materials, Transportation

RESEARCH: Dr. Coleri’s research interests are in the areas of sustainable pavement materials and structures, energy efficient pavement design strategies, and infrastructure health monitoring using wireless sensor networks. The major objective of his research group is to develop methods and technologies to construct pavement structures that are more cost effective, socially beneficial, and does less damage to the environment. Main current research projects include i) modeling and measuring excess vehicle fuel use due to pavement structural response; ii) asphalt pavement layer adhesion through tack coats; iii) adjusting asphalt mixes for increased durability; iv) improving performance of recycled asphalt pavement mixes.

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DANIEL COX
Professor
Coastal and Ocean, Engineering Education

RESEARCH: Dr. Cox’s research focuses on coastal engineering, including mitigation of coastal hazards stemming from hurricanes and tsunamis. His research includes wave/surge interaction with the built and natural environment; tsunami evacuation planning; wave impact forces on coastal structures; wave attenuation by vegetation; and coastal sediment transport.

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T. Matthew Evans
Associate Professor
Geotechnical, Engineering Education

RESEARCH: Dr. Evans' research interests include granular mechanics, soil behavior, image analysis, numerical methods, and unsaturated soil mechanics, with applications to renewable energy, multiphysics problems, waste isolation, and sustainable infrastructure. His work is broadly multidisciplinary and has relevance to fields such as materials handling, pharmaceuticals, biomechanical engineering, physics, and geology.

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John Gambatese
Professor
OEG Faculty Fellow
Construction

RESEARCH: Dr. Gambatese's technical and research interests include: construction safety, constructibility, sustainability, design-construction interface, lifecycle properties of constructed facilities, temporary construction structures, and construction engineering. He has conducted research on a variety of topics including: construction safety and health, designing for safety, constructibility, innovation in the construction industry, construction automation, alternative contracting methods, and sustainability.

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Erica Fischer
Assistant Professor
Structural

RESEARCH: Dr. Fischer’s research interests revolve around innovative approaches to improve the resilience of communities and robustness of structural systems and lifeline infrastructure affected by earthquakes and fires. This includes researching performance-based design approaches of structural systems to promote more sustainable designs. These research interests are implemented through both large-scale experimental testing and numerical modeling approaches.

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Merrick Haller
Associate Head of Graduate Affairs
Professor
Coastal and Ocean

RESEARCH: Dr. Haller’s teaching interests include hydraulics, wave mechanics, coastal engineering, and graduate writing. Much of his present research interest is related to the remote sensing of wave transformation processes, especially those processes that lead to hazardous wave conditions, wave breaking, and rip currents. Other efforts are related to interaction between waves and wave energy converters and quantifying the physical effects of wave energy arrays.

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Joe Fradella
Senior Instructor
Hoffman Instructor
Construction

RESEARCH: Prior to OSU, Mr. Fradella worked as a construction project manager where projects included historic building restoration and conservation, retaining walls and hardscape work. During his career, he has worked for several engineering and construction firms, primarily focusing on mechanical and electrical systems. His research interests include energy efficiency and construction safety.

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Salvador Hernandez
Assistant Professor
Transportation

RESEARCH: Dr. Hernandez is recognized nationally and internationally in the area of transportation safety and transportation network modeling. His current areas of research interest are: Transportation safety modeling of all modes encompassing crash countermeasures, crash and safety analysis, and statistical modeling; Use of large scale disaggregate data sets for developing strategic, tactical, and operational models and solution methods for problems that arise in the multidisciplinary and interdisciplinary areas of transportation systems. Dr. Hernandez is also interested in behavioral issues in natural disasters such as in earthquakes, travel demand modeling, freight supply & demand modeling, and supply chain logistics modeling.

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CIVIL AND CONSTRUCTION ENGINEERING FACULTY

CHRISTOPHER HIGGINS
Professor
Cecil and Sally Drinkward Professor
Structural

RESEARCH: Dr. Higgins’ research expertise is in experimental mechanics and he has extensive experience testing and evaluating structures subjected to a wide range of loading conditions including: seismic, wind, ocean waves, static, fatigue, and dynamic loads. He has conducted research on steel, concrete, composite, hybrid, and polymer structural materials. For his efforts, he has received numerous teaching and research awards throughout his career.

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KATHARINE HUNTER-ZAWORSKI
Associate Professor
Transportation

RESEARCH: Dr. Hunter-Zaworski’s research experience integrates biomechanics and ergonomics with rehabilitation and transportation engineering. She is passionate about developing safe, seamless and dignified accessible transportation systems for people with disabilities. She focuses on rail, aviation and public transportation.

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DAVID HILL
Professor
Coastal and Ocean

RESEARCH: Dr. Hill’s research portfolio includes numerous topics related to nearshore waters. Some recent examples include the linkages between tidal evolution and sea-level rise, the relationships between nearshore oceanographic conditions and biological and ecological processes, the role of coastal freshwater discharge in nearshore processes, and optical measurements of complex flow fields.

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DAVID HURWITZ
Associate Professor
Transportation, Engineering Education

RESEARCH: Dr. Hurwitz conducts research in the areas of transportation operations and safety. In particular Dr. Hurwitz is interested in the consideration of user behavior in the design and innovation of transportation systems. His current research portfolio includes projects dealing with intersection safety (vehicle-bicycle and vehicle-pedestrian crashes), transportation user behavior (driver response to traffic control devices and teenage distracted driving), and transportation engineering education (conceptual assessment of student learning and the dissemination of evidence base instructional practices).

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CIVIL AND CONSTRUCTION ENGINEERING FACULTY

JASON IDEKER
Associate Professor
Infrastructure Materials

RESEARCH: Dr. Ideker’s research group focuses on the prediction of long-term durability and characterization of early-age volume change of cement-based materials. Our multi-scale approach results in translational research that combines fundamental scientific understanding with the improvement and development of test methods and specifications that enhance concrete performance. We are recognized experts in concrete durability, namely alkali-silica reaction, early-age properties of calcium aluminate cements and characterization and prediction of drying shrinkage in high performance concrete.

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BURKAN ISGOR
Professor
John and Jean Loosley Faculty Fellow
Infrastructure Materials

RESEARCH: The main focus of Dr. Isgor’s research is bridging the gap between nano-scale and macro-scale scientific and engineering problems using applied mathematics, computational materials science (continuum modeling, molecular dynamics and first principles calculations) and advanced analytical, spectroscopic, electrochemical techniques. These techniques allow Dr. Isgor to study interdisciplinary problems in materials science and engineering using both bottom-up (nano-to-macro) and top-down (macro-to-nano) approaches. Dr. Isgor’s research has applications in surface and Interface science, corrosion science, electrochemistry, thin films & oxides, durability of materials, transport in porous media, cement & concrete research, inverse modeling and non-destructive testing and evaluation.

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JACK ISTOK
Associate Head of Undergraduate Affairs
Professor
Water Resources

RESEARCH: Dr. Istok’s research interests include: groundwater hydrology, groundwater quality and remediation, and subsurface fate and transport processes. He designed the large-scale physical aquifer models in the Groundwater Research Laboratory and has developed several novel methods for in situ aquifer characterization. Much of his research focuses on the single-well “push-pull” method, which consists of the controlled injection of a prepared test solution into a single well followed by the extraction of the test solution/groundwater mixture from the same well. The test is being applied at a variety of contaminated sites to study and quantify in situ microbial metabolic processes, sorption and ion exchange reactions, NAPL dissolution and mobilization, and heavy metals solubilization and mobilization.

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JUDY LIU
Professor
Structural, Engineering Education

RESEARCH: In her research, Dr. Liu explores resilient steel structures, with focus on seismic and disproportionate collapse resistance. She has interests in behavior and design of structural steel connections and innovative systems for lateral resistance. She was awarded an AISC Milek Fellowship for research on steel slit panels for lateral resistance. Dr. Liu is a member of a number of committees, including the ASCE/SEI Disproportionate Collapse Mitigation Standard Committee, NCSEA Basic Education Committee, and AISC Partners in Education Committee.

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CIVIL AND CONSTRUCTION ENGINEERING FACULTY

PEDRO LOMÓNACO
Director, O.H. Hinsdale Wave Research Lab
Coastal and Ocean

RESEARCH: Dr. Lomonaco joined OSU from the Environmental Hydraulics Institute, University of Cantabria, in Spain, where he was the Head of the Hydraulics, Coasts and Offshore Laboratory from 2007-2014. Previously, Dr. Lomonaco was a Research Officer of the National Research Council's Canadian Hydraulics Centre, in Ottawa, where he designed and executed physical model testing of hydraulic, coastal and ocean structures.

Besides managing and coordinating the activities at the Hinsdale Wave Research Lab, his scientific activity primarily deals with studies of physical and numerical modeling of wave generation and propagation, wave-structure interaction, stability of coastal and submarine structures, behavior of floating structures, hydrodynamics, and non-linear behavior of long-waves in shallow waters.

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KENNY MARTIN
Senior Instructor
Structural

TEACHING: Mr. Martin's areas of interest include structural design and analysis, design of wood structures, timber mechanics, and the properties & behavior of wood. He teaches undergraduate and graduate courses in engineering mechanics and structural engineering. Courses include ENGR 213 Statics, CE 484/584 Wood Design, and CE 427/527 Temporary Structures.

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BEN MASON
Associate Professor
Geotechnical

RESEARCH: Dr. Mason's research interests include soil-fluid-structure interaction, residual and momentary soil liquefaction, cyclic mobility of intermediate soils, seismic resiliency on a city-scale, cumulative damage caused by successive hazards, and the seismic response of Willamette Valley silt. He focuses on megathrust earthquakes created by the Cascadia Subduction Zone. Dr. Mason leads the group's Soil Dynamics laboratory, which contains cyclic triaxial and cyclic simple shear devices.

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THOMAS MILLER
Associate Professor
Structural, Engineering Education

RESEARCH: Dr. Miller's structural engineering and structural mechanics current research interests include earthquake engineering, timber structures and cold-formed steel structures. Recent research projects involve modeling, behavior and seismic response of residential timber structures, effects of perforations in wood I-joists, environmental impacts of various construction materials in structures, directionality of oriented strand board in resisting shear and cross-laminated timber diaphragms.

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JOSEPH LOUIS
Assistant Professor
Construction

TEACHING: Dr. Louis teaches undergraduate and graduate classes in heavy civil operations and equipment, and analytical tools for construction. His research interest lies at the intersection of simulation, visualization, and automation within the context of construction operations. He draws upon concepts in these areas to provide construction managers with better means of planning, monitoring, and controlling their operations to improve safety, maximize productivities, and minimize equipment idle times.

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CIVIL AND CONSTRUCTION ENGINEERING FACULTY

MICHAEL OLSEN
Associate Professor
Geomatics

RESEARCH: Dr. Olsen’s current areas of research include the application of terrestrial laser scanning, remote sensing, GIS, geohazard analysis, computer programming, and 3D visualization to various problems within civil engineering. He has developed new, groundbreaking courses in 3D laser scanning and Digital Terrain Modeling. Recent projects he has been involved with include a diverse range of applications including: development of mobile laser scanning guidelines for DOTs, earthquake and tsunami reconnaissance (following recent events in American Samoa, Chile, New Zealand, and Japan), landslide and slope stability analysis, seafloor erosion mapping using LiDAR, liquefaction hazard mapping for Utah, and modeling and studying historical buildings such as the Palazzo Medici and Palazzo Vecchio in Florence, Italy.

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TUBA OZKAN-HALLER
Professor
Coastal and Ocean

RESEARCH: Dr. Ozkan-Haller’s interests include numerical, field and analytical investigations of water motions in the nearshore zone, defined by water depth at the order of 10-meters or less. Of special interest is the application of numerical models to predict nearshore circulation as well as the modeling of bathymetric change due to this circulation field. Verification of the results is carried out using field and laboratory data.

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JIHYE PARK
Assistant Professor
Geomatics

RESEARCH: Dr. Park’s research interests include GNSS positioning/navigation and GNSS remote sensing. She focuses on advanced algorithms in order to improve positioning and navigation performance in harsh environments and detecting geophysical events such as natural hazards or artificial explosions by monitoring ionospheric disturbances via GNSS remote sensing.

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CHRISS PARRISH
Associate Professor
Eric H.I. and Janice Hoffman Faculty Scholar
Geomatics

RESEARCH: Dr. Parrish’s research focuses on full-waveform LiDAR, topographic-bathymetric LiDAR, hyperspectral imagery, uncertainty modeling, and UAVs for coastal applications. Parrish is the Director of the American Society for Photogrammetry and Remote Sensing (ASPRS) Lidar Division and associate editor of the journal Marine Geodesy. Prior to joining OSU, he served as lead physical scientist in the Remote Sensing Division of NOAA’s National Geodetic Survey and affiliate professor in the Center for Coastal and Ocean Mapping – Joint Hydrographic Center at University of New Hampshire.

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CATARINA PESTANA
Instructor
Construction

RESEARCH: Dr. Pestana’s research interest lie the area of project management, including lean management and risk management and the integration of human factors with virtual design and simulation. Her research interests focuses on the enhancement of the performance of production systems and products in different stages of their life-cycle and supply chain in the AEC industry. The main methods used are based on lean thinking and lean management, as well as on risk-based optimization and management techniques. Current research address multi-criteria risk-based decision methodologies to identify and validate improvements to processes and on-site operations in the AEC industry.

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ROBERT SCHULTZ
Professor
Geomatics

RESEARCH: Professor Schultz’s interests include surveying and mapping; geodesy; photogrammetry; and boundary law. Subject matter of interest includes all surveying and mapping topics. These include: Plane and Geodetic surveying, Photogrammetry and Remote Sensing, Survey Law and Property Surveying, and Highway Location and Design. A professor at OSU since 1962, Schultz has won numerous institutional and national honors for his dedication to students and the field of geomatics.

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ARMIN STUEDELEIN
Associate Professor
Geotechnical

RESEARCH: Dr. Stuedlein’s primary research interests center on the behavior, performance, and reliability of geotechnical structures, including deep and shallow foundations, improved ground, and mechanically stabilized earth walls. Dr. Stuedlein recently completed research for the Oregon DOT on the behavior of pipes and culverts installed by ramming, including the development of a comprehensive framework for the evaluation of pipe drivability. His approach combines the evaluation of instrumented geotechnical structures with lab-based soil characterization, numerical modeling, random field theory and geostatistics, and reliability theory to better understand and predict geotechnical performance.

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YELDA TURKAN
Assistant Professor
Construction

TEACHING: Dr. Turkan teaches construction contracts and virtual design and construction courses at undergraduate and graduate level. In 2015, she was awarded with ASCE ExCEEd Fellowship for completing the ExCEEd teaching workshop organized and supported by ASCE. In her research, Dr. Turkan investigates how lidar and virtual design and construction technologies can help improve project controls. Her research interests are centered on the areas of sensing, automation, and information technology for construction engineering and management, infrastructure asset management, and transportation.

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CIVIL AND CONSTRUCTION ENGINEERING FACULTY

HAIZHONG WANG
Assistant Professor
Transportation
RESEARCH: Dr. Wang conducts research in the areas of multi-scale traffic modeling and simulation for transportation operation and system management; stochastic agent-based modeling and simulation for emergency evacuation and disaster response; traffic control and network optimization; and critical infrastructure system planning and travel behavior analysis; mobility, safety, energy and environmental analysis of connected and autonomous vehicle; road user charge economic analysis; and bicycle safety analysis.

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SOLOMON YIM
Professor
The Glenn Willis Holcomb Professor in Structural Engineering
Coastal and Ocean, Structural
RESEARCH: Dr. Yim’s research focuses on fluid and structural mechanics in the marine environment using high-performance computing based multi-physics, multi-scale and multi-domain systems methods. His recent research topics include hydroelasticity, free-surface flow and fluid contact/impact on deformable marine structures; waves, tsunami, storm surge and earthquake loads modeling and simulation in field and laboratory environments; and mechanics of wave-energy conversion systems.

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JASON WEISS
School Head, Professor
The Miles Lowell and Margaret Watt Edwards Distinguished Chair in Engineering
Director of the Kiewit Center for Infrastructure and Transportation Research
Infrastructure Materials
RESEARCH: Dr. Weiss is a leading researcher in the development of more durable and sustainable concrete. At CCE, Weiss directs the Kiewit Center for Infrastructure and Transportation Research and holds the Miles Lowell and Margaret Watt Edwards Distinguished Chair in Engineering. Weiss is internationally recognized for his work in concrete pavement, building and bridges. Specifically, he has focused on minimizing cracking, improving durability, and making concrete more sustainable. As head of CCE, Weiss is leading efforts to improve the resilience of the aging infrastructure.

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YUÉ ZHANG
Associate Professor (Sr. Res.)
RESEARCH: Dr. Zhang’s research interests include modeling and simulation of biological and physical problems as well as mathematical optimization. Her past and current work include modeling with partial differential equations on size-structured population models and mechanical devices; simulating coupled thermal-mechanical and acoustic-structural with finite element methods for polymer and smart materials; information visualization of social networks and biological gene data; and scientific visualization of tensors to improve material modeling in continuum mechanics.

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