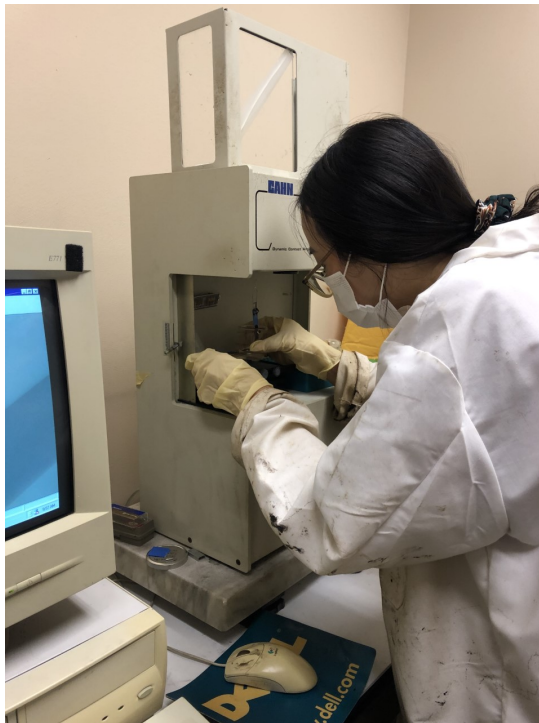


SOUTHERN PLAINS TRANSPORTATION CENTER

SPTC Quarterly Newsletter

Summer 2021

Intern Spotlight



Each summer, the Southern Plains Transportation Center helps to facilitate internships for undergraduate and graduate students. These internships are meant to give students practical research and work experience that will elevate their knowledge and their career opportunities. These internships are not confined to one organization or academic institution. In 2021, the participating internship sponsors included the Arkansas Department of Transportation, CEC, EST Inc., the Local Technical Assistance Program at Oklahoma State University, Olsson, Poe and Associates, and Standard Testing and Engineering. For the

first issue of the SPTC newsletter, we decided to take a closer look at a few of this summer's interns at the University of Oklahoma to highlight their hard work and areas of research.

Bryce Goetz is a chemical engineering senior at the University of Oklahoma. This summer, Bryce interned as an Undergraduate Research Assistant in the Asphalt Binders Lab on OU's campus. Bryce's primary project this summer was to determine how well specific types of materials, like plastic and waste oil, work to rejuvenate asphalt. According to Bryce, this internship has given him valuable learning and career experience with his field of interest. "As an undergraduate, I have always been interested in the field of material science, which is what this project tackles... So in regards to that, I've learned a lot when it comes to working with specific materials. Especially now with asphalt and petroleum based materials."

Jamie Bowen is a chemical engineering junior at the University of Oklahoma. Like Bryce, Jamie spent her summer internship as an Undergraduate Research Assistant working in the Asphalt Binders Lab on OU's campus. Similarly to Bryce, Jamie's lab work this summer was related to recycling specific materials and testing how they performed with rejuvenated asphalt. More specifically, Jamie's special project was to determine "surface free energy and how they were changed by rejuvenating reclaimed asphalt with waste cooking oil." According to Jamie, having the opportunity to develop and perform her own tests in the lab was an excellent learning experience. "I really liked being able to work in a lab... it felt like I was doing a lot of my own work."

Tha Lang Len is a graduate student studying civil (structural) engineering at the University of Oklahoma. Within the Summer Internship Program, Len worked as a Graduate Research Assistant. As an intern, Len performed soil tests to learn the various characteristics of soil and to learn how soil testing can be used in the pavement design process. In addition, she felt that this internship helped develop her learning and career goals by giving her the opportunity to put what she has learned in class to work in a lab. "This internship was an eye-opening experience as a student. I took soil mechanics a few semesters ago and this internship helped me connect theories and concepts I learned in that class to how they are used in roadways/ pavements improvement or designing. Overall, it helped me to become a well-rounded civil engineer.

Summer Recap

AASHTOWare Workshop: August 4-6



In August, the SPTC and ODOT co-hosted a three-day workshop about AASHTOWare Pavement ME Design. This workshop was co-taught by the staff from Geocal, a Colorado-based firm, and the SPTC. The learning goals for this workshop were for participants to “understand AASHTOWare Pavement ME Design procedures, understand how this methodology differs from previous pavement design methodologies, recognize the importance of accurate design input, bring awareness to the versatility of the ME design in both new construction and rehabilitation pavement design projects, and give participants hands-on experience in using the software.”

Geocal President and University of Oklahoma alum Dr. Nur Hossain facilitated the activities during this workshop, along with assistance from OU Post-Doctorate Fellow and Research Associate Dr. Syed Ashik Ali and OU doctoral student Sagar Ghos. The workshop was well attended, with 17 participants from various facets of the transportation industry, over all 3 days.

Day 1 of the workshop was focused on introducing participants to Geocal and to the ME Design Software by learning the design philosophies of the software, learning the three input types, viewing examples of design outputs, and by working on hands-on design examples. Day 2 of the workshop involved continuing hands-on exercises, giving participants the opportunity to gain experience designing concrete pavements with the software. On the 3rd and final day of the workshop, participants and facilitators discussed what they learned from using the ME Design Software, how the agency will need to assist designers using the software, and how to increase usage of the software.

Summer Webinars and Short Courses

This summer, the Southern Plains Transportation Center hosted three learning events, both online and in-person. These events covered current topics and issues important to the transportation industry.

Visualizing Concurrent Construction Schedule Delays: COVID and Other Concurrencies: On May 25, the SPTC, ODOT, and ABC UTC hosted an online seminar by Douglas Gransberg, President of Gransberg and Associates in Norman, Oklahoma. This seminar reviewed the construction claims doctrine of concurrent delays and exhibited the Linear Scheduling Method (LSM) in practice as both a data processing and visualization tool for decision makers.

Structural Monitoring of PC Beams in the SH 4 Bridge over N. Canadian R., and Recommendations for Improving Designs in PC Bridges: On July 8, the SPTC, ODOT, and ABC UTC hosted a virtual talk by Prof. Bruce Russell from Oklahoma State University on how he and his team monitored the SH 4 Bridge in Canadian County, OK. Participants in this seminar learned how remote and continuous monitoring of bridge performance can be implemented in the field using instrumentation to track concrete temperature and strain.



Risk Management and Analysis for Infrastructure Projects: Lastly, on July 28, the SPTC, ODOT, and ABC UTC hosted a one-day, in person short course facilitated by Douglas Gransberg and Nils Gransberg, both from Gransberg and Associates in Norman. During this short course, participants learned about the scope and costs of risk management during construction and how industry professionals can mitigate risks through Qualitative and Quantitative Risk Analysis.

The short course was divided into eight modules. Module 1 involved introduction to risk management, which covered design and construction risk context, risk management theory, and decision theory. Modules 2 through 4 covered design; scope; cost; schedule; construction; how to use risk rankings like pairwise comparisons and importance index; and how to develop bid tab data for risk analysis input for use in risk identification, evaluation, and quantification. Also, Module 4 focused on qualitative risk analysis using risk registers, exposure milestones, response plans, and monitoring and control plans.

Module 5 focused on quantitative risk analysis using a hybrid 3-point input process, risk response decisions, and risk-based line-item contingencies. Module 6 was focused on stochastic risk analysis which covered the FHWA major project cost estimate risk analysis, rational contingency development,

Monte Carlo simulations, and how to interpret simulation output. Module 7 covered qualitative risk evaluation PE and developing a qualitative risk register for a typical ODOT project including both design and construction risks. The final module presented a summary of the risk management and risk mitigation planning.

Upcoming Event: Oklahoma Transportation Research Day



The poster for the Oklahoma Transportation Research Day (OTRD) features a blue and yellow color scheme. At the top left is a logo for OTRD, which includes the Oklahoma Department of Transportation and Southern Plains Transportation Center logos. The text 'Register Now!' is prominently displayed in white on a blue background. Below this, the date 'October 19, 2021' and time '8:00 am - 5:00pm' are listed. A QR code is located in the top right corner. The registration link is provided as <https://www.eventbrite.com/e/2021-oklahoma-transportation-research-day-tickets-158786758469>. The main title 'Oklahoma Transportation Research Day' is centered in a large, bold font. Below the title, the introduction and keynote speakers are listed with their titles. The venue information, including the National Cowboy & Western Heritage Museum address and the availability of 5 PDHs, is provided at the bottom. A photograph of a modern, illuminated tower structure is shown on the left side of the poster.

Register Now!
October 19, 2021
8:00 am - 5:00pm

Register at: <https://www.eventbrite.com/e/2021-oklahoma-transportation-research-day-tickets-158786758469>

Oklahoma Transportation Research Day

Introduction by:
Tim Gatz
Oklahoma Secretary of Transportation

Keynote Presentations by:
Christopher Hedges
Director of National Cooperative Highway Research Program
Marci Greenberger
Project Manager at Airport Cooperative Research Program

National Cowboy & Western Heritage Museum
1700 NE 63rd St
Oklahoma City, OK 73111
5 PDHs will be available to attendees

Oklahoma Transportation Research Day (OTRD) is an annual event co-hosted by the Southern Plains Transportation Center and the Oklahoma Department of Transportation. This year, the 1-day conference will be held on Oct. 19 at the National Cowboy & Western Heritage Museum in Oklahoma City from 7:30 a.m. to 4:00 p.m.

This year's OTRD will feature several exciting activities for the participants, including presentations from key members of the transportation community, networking and demo viewing, technical sessions, and poster presentations with an awards ceremony.

Registration for this event is free and can be found at:

<https://www.eventbrite.com/e/2021-oklahoma-transportation-research-day-tickets-158786758469>

Our mailing address is:

202 W Boyd St, Room 213A, Norman, OK 73019

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