Transportation Intern Program Summer 2015 Summary

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The Center for Local Government Technology's (CLGT) Transportation Intern Program (TIP) finished its sixth summer of operation in August 2015 with six students completing internships with several public and private transportation entities. Donations to the College of Engineering Architecture and Technology (CEAT) and CLGT's Local Technical Assistance Program (LTAP) funds TIP with matching funds provided by the Southern Plains Transportation Center. Below the students describe their experiences this past summer:

Amanda Yamaguchi

This summer I was fortunate enough to be one of the recipients of Oklahoma State University's Center for Local Government Technology internships. This was a unique opportunity that opened a whole new area of possibilities for future careers. I am currently a graduate student at the University of Oklahoma studying Architectural Urban Design. Before this internship, a career in local government had never occurred to me. Prior starting the Urban Design program I graduate from OU with my Masters in Library and Information Studies. Working for a city government now seems a natural fit for my experience and interest. I was placed with INCOG (Indian Nations Council of Governments) in Tulsa and learned a lot about how city governments function and the role that planners and designers play. The experience exposed me to the multiple functions of each office and the amazing amount of research and data collection that goes into each project and decision. I especially became interested in learning more about geographical information systems and have now started making an extra effort to become proficient in these programs. I see myself working at an agency similar to INCOG as a GIS specialist and researcher.

During my time at INCOG as the transportation intern, I worked on many small projects and two major research projects. The first was the Tulsa Trails bicycle and pedestrian count. In 2010, INCOG began the bi-annual process of collecting trail count data. 2015 was the third year for collecting data. The previous years counts had been done without a specific protocol and were therefore done very differently, which makes data difficult to compare. I created a specific methodology to be used every year the counts are done. After completing the methodology, I went to each of the trails in Tulsa and counted the number of people using the trail. A final report of my research was turned in to the principle transportation planner at INCOG and my supervisors from OSU.

The second major project I completed was an evaluation of Tulsa Transit ridership. As with the trail project I developed a research plan and implemented it. The study was a bus stop level data collection effort to understand transit usage in specified areas, determine the ridership of sections of the route that deviated from the main route and to develop a prioritized list of locations for new sheltered bus stops. I collected data manually throughout the months of June and July. The final report and presentation with Tulsa Transit directors summarized the results of the data collection and made recommendations for solutions to the stated problems. These research projects were an excellent way for me to use my existing skill set as well as develop new skills. I applaud OSU for their commitment to exposing students to local government work. Without their guidance and support I would not have considered this field as a career opportunity. It is my sincerest hope that this program can continue so that others may have the same great experience.

Brandon Everhart

I am Brandon Everhart, and I recently completed a summer internship under the Transportation Intern Program. I am age 21 and just starting my senior year in the Civil Engineering curriculum at Oklahoma State University in Stillwater, OK. I am pretty far along the degree track, and thus I have most of the fundamental engineering classes completed. Subject that are on my belt range from statics to R/C

design, thermodynamics to fluids, surveying to geotechnical engineering, algebra to differential equation, and so on with my overall GPA sitting at around 3.2. With my three years of classes, I knew a little about a lot that went into my chosen field. Meanwhile at college when I am not studying, I like to be involved with my social fraternity Theta Chi, and the clubs of the Concrete canoe and AISC student chapters. I chose civil engineering as my major because construction, massive works projects, and scientific application have always been a special curiosity of mine. This was my first internship, so I was especially excited to finally get to work as an engineering intern after three years of straight classwork.

My summer program had me working with the Circuit Engineering District 8 in Enid, OK. I initially accepted the position because I was told it was the "jack of all trades" spot out of all the available internships. I quickly found out that claim to definitely be the case. On one day, I could be auditing a completed project in which I got to explore every little item that went into constructing a road or bridge structure. The next day, I could be shadowing one of the inspectors or engineers to an active work site where I could get a first-hand look at objects being materialized from drawings to reality. On another day, I could assist in the design of a project by drafting on AutoCAD. In the same week, I could be witnessing a meeting with the county commissioners, local homeowners, contract bidders, and local distributors. The list goes on, what the CED 8 offered is just too much to list. I was given a task every day that linked with the Civil Engineering discipline, sometimes with something new thing for me to experience every other day. In addition to job activities, I was given the responsibility I was yearning for in a professional setting. I was allowed to drive company vehicles, choose daily which employee I could assist, take on as many projects as I could handle, work on flexible schedules, and more. In fact, I was able to facilitate as an inspector to an active work site for the last several weeks of my internship. This job had it all for a transportation internship.

My recently completed summer internship under the Transportation Intern Program has to be the pinnacle of my thus far collegiate career. The reason why I acclaim this position so strongly is because as the 12-week cycle, this internship

definitely proved true claim of being a broad, exciting, and IDEAL internship. When I was exploring internship options, I was specifically searching for the opportunity to enhance my engineering knowledge and to finally materialize my skills in the real world. This internship fulfilled that and more. I met lots of professional acquaintances, while making closer relationships with a few particular. I got an entire summer of experience that directly ties with construction management, and transportation, geotechnical, and environmental engineering. Most of all, my efforts are immortalized with a road in Enid, finally giving me something worthy to say I helped engineered. For fellow civil engineer undergrads from now on, I will not hesitate to direct them to the TIP from CLGT knowing that they will be offered a fantastic, maturing experience.

Mohammed Moursey

I am currently a student, studying civil engineering at Oklahoma State University. I am in my junior year of school and am taking the Materials CIVE course and the Steel Design CIVE course. I am also taking Fluid Mechanics, Statistics, and Engineering Economics courses. During my sophomore year at OSU, I took Structural Analysis, Soil Mechanics, and Surveying, among other engineering courses.

I had the privilege to participate in the Transportation Internship Program during the summer of 2015. I completed a sixteen-week internship, working with the City of Miami's engineering department. During my internship, I completed various tasks. These tasks allowed me to gain experience in Microsoft office software and geographic information system (GIS) software. My summer internship allowed me to improve my skills with Microsoft Excel, and to get hands-on with Quantum GIS, the geographic information system that we used at Miami.

The first task I worked on for my internship was a costing project. Due to the water flow coming downstream from northern areas and the low elevations throughout Miami, the city is susceptible to flooding during heavy rainfall. The city manager is seeking federal funding to help address this issue. The city manager requested cost

estimation from the city engineer for some projects that could relieve the impact to the community during the flooding events. Working with the city engineer, I was able to generate the cost estimate that the city manager could present in his meeting. To generate this cost, the city engineer and I met with local contractors, contacted nearby engineering firms, and utilized the Excel software. The project that we needed to generate a cost estimate for was a road elevation. To prevent inoperable roads during a flood event, the city is considering elevating roads that are currently below the flood zone elevation. Many aspects need to be considered in a road elevation project; including preliminary engineering costs, property buyout costs, and construction costs.

During my internship this summer, I also worked with the public works department at the City of Miami. The public works department requested maps that would graphically display the road projects that had been completed, and the road projects that have been proposed for future construction. The maps would be presented in the city meeting, and would be available for the public via the city website. GIS software allows users to input data and information about items in a map. This information can then be easily retrieved by other users. To complete the GIS mapping project, I was taught how to use software called Quantum GIS. With QGIS, I was able to plot out the road projects that had been completed and the road projects that have been proposed. In the software, one can select whether the maps display the completed roads, the proposed roads, or both. By selecting another option in the legend, the user may be able to see displayed the type of construction that was completed, or the type of material used for the road surface. These characteristics were made distinguishable using a color-coding that was designated in an accompanying legend.

Yun Zhao

I am currently pursuing a Ph.D. degree in the Department of Geography in OSU. My areas of focus include transportation geography and Geographic Information System (GIS).

The internship I took this summer with CLGT is to assist the City of Stillwater to update the traffic sign inventory. The sign inventory the city currently using is still based on the 2005 sign collection. The transportation department has been collecting new traffic signs and updating the existing database. My job as an intern was to utilize my knowledge on the ESRI ArcGIS software package to build a database to manage the newly collected traffic signs. By the end of my internship, I was able to build a geo-database and incorporate all the collected/updated signs.

The internship provided me with invaluable real-world experience by offering me the opportunity to work with the transportation department in the City of Stillwater. I consider myself lucky that the people I met and worked with in the city's transportation department are all extremely friendly. Besides the traffic sign inventory project, they also involved me in some local construction work they were doing during the summer, such as the construction of the first roundabout at Main/ 10th in Stillwater, replacement of a malfunctioning culverts, etc. The involvement in the local construction work offered me great learning opportunities where I can observe how they deal with construction contractors and local business owners during the construction process. That is something I never learned in the classroom.

Overall, I highly enjoyed my work with the transportation department in the City and Stillwater and really appreciate the opportunity. Please keep the internship program going!

Ryan White

I'm a chemical engineering undergrad student at Oklahoma State University. I am also a Traditional Guardsman for the Oklahoma National Guard. I was prior active at Ft Bragg, North Carolina. I choose chemical engineering because I always had an interest in chemistry. Even when I joined active service, I choose Nuclear, Chemical, Biological specialist as my first job. When I accepted this internship, I was surprised. My Dad worked with Civil Engineers in the past and he called it government technology. So, I assumed it would be for mostly for Civil Engineers and Civil Engineer type jobs require an FE or PE for government practice. Doug Wright set me

up with an Internship with an Asphalt Testing Facility called Thunderhead Testing Facility. On my first day, I learnt that not only Civil Engineers work with asphalt but Chemists, Physicists, and several different engineering practices included my own. When developing an asphalt and aggregate design, it becomes arduous. Asphalt, for one, has intermolecular structure that is unique depending on which facility and time it was produced. Figuring its binder rating takes series of various strength and strain tests that are temperature dependent. While I was at the Thunderhead testing facility, my main tasks was to measure air voids and specific gravity of asphalt and aggregate mixture in order to figure a perfect design that can both repel water and be durable. I enjoyed working there every day, and I always learnt something new. I deeply Appreciate the opportunity in which was given to me, Thank you.

Allana Clark

I completed an internship with Guy Engineering Services through LTAP during the summer of 2015. Throughout my 12 weeks with Guy, I completed many tasks. The main categories that I can place aspects of my internship in are meetings and events, project initiations, bridge inspections, retro-reflectometer, and engineering assistance. I attended many meetings and events during my time with Guy. Some of these meetings included weekly Board of County Commissioner's meetings, monthly CED board meetings, utility field meetings, and plan-in-hands. I was also able to attend the Caston Creek and Brazil Creek ribbon cuttings and ended my internship at the ACCO conference in Norman.

A large part of my internship consisted of project initiation tasks. I went to project scopings where a rough idea of what the project would entail was decided. After completing these scopings, I took the information we gathered and compiled it into project initiation reports, which also included bridge inspections and photos, stream stats, aerial and USGS maps, FEMA Firmette and parcel maps. Then I created a programming resolution for each project, which included the project cost estimate.

Bridge inspections were one of the most adventurous parts of my summer. I spent two days out with the bridge inspection crew climbing down under bridges, wading through water, and looking at flaws each individual bridge had and learning about how significantly each flaw impacts the sufficiency of the bridge.

I was asked during my internship to learn how to use a retro-reflectometer. I spent a day in Rogers County learning how to use it and later went to Ottawa County to teach them how to use theirs.

Although all of the aspects of my internship contributed greatly to my time there, the most significant part of my internship was engineering assistance. I spent a good portion of my time at Guy helping with and learning about the project management aspect of engineering. Throughout the entire 12 weeks I was constantly updating 8-year plans due to the house bill that passed this summer. I also helped complete used beam inventory and bridge sizings. I participated in two site visits for the Bell School Road project and the Rocky Mountain School Road project, which are both tribal funded projects. My last two assignments before leaving Guy were to create a standard low water crossing slab and county road standards.

I learned many things during my internship that have already helped me in the six weeks I have been back at school. I am a civil engineering major at Oklahoma State University and will be graduating in May. I will then go on to pursue my Masters in civil engineering with an emphasis in structural engineering at OSU.