SUMMER 2018

MATC INTERNSHIP REPORT

Through the Mid-America Transportation Center (MATC) internship program, I interned with Midwest Roadside Safety Facility (MwRSF). MwRSF's mission is to improve the safety of public roadways through the design and testing of roadside hardware. People at MwRSF, from the director of the program to other interns, were very friendly and made me feel welcome. My supervisor was Dr. Jennifer Schmidt, a Research Assistant professor, and she was very helpful throughought the whole process. At MwRSF, I was assigned to work on a project called MASH testing of single U-Channel sign supports. The objective of this project was to evaluate the MASH (Manual for Assessing Safety Hardware) crashworthiness of single U-channel sign posts and identify the critical sign configurations based on various parameters such as mounting height, sign size, impact angle, and post splice.

There were two phases to this project. Phase one included a survey of currently utilized small sign configurations, a literature review of small sign support testing, and dynamic bogie testing to evaluate various small sign configurations. The goal of phase one was to identify the critical U-Channel sign support configuration(s) and recommendations for full-scale compliance testing to evaluate the selected sign supports to MASH TL-3 standards.

My first task on phase one of the project was looking at the MwRSF sponsoring states' standard plans (19) which helped us determine what questions needed to be included in the survey. Reading the standard plans helped me gain experience in reading and understanding engineering drawings. After looking at the states' standard plans, I started a literature review of 22 previous tests performed on single U-Channel posts. I read all the test reports on tests done in the past to identify the various failure

mechanisms, the sign configurations that were successful, and the design characteristics (e.g. sign size, post strength, and post splice, etc.) that lead to these various failure mechanisms.

During the literature review, I mainly looked at every report in detail, trying to get a good understanding of what happened, why it happened, and what caused it to act a certain way. I also had to record important data from the literature review, using Microsoft Word and Excel frequently. I watched videos and looked at pictures of the previous tests conducted on a single U-Channel sign, and then made a prediction whether it will pass the MASH test [3-60, 3-61, 3-62]. We are still waiting for all the survey responses from sponsoring states, and once all the data from the survey is collected, it will be combined with the knowledge obtained from the literature review to determine the critical various sign post configurations to be tested.

The next part of phase one is bogie testing the sign post configurations from the literature review. Phase two of the project will start once phase one is complete, and will consist of full scale crash testing of the selected sign-post configurations from phase one. I will not participate in phase two of the project. I also went to the test site and watched a few crash tests. Watching a crash live is far different from watching it on TV or movies because it happens so quickly and there are no replays. Working on this project has helped me better understand research methods and the careful planning that is involved in most projects.

To conclude, I learned a lot from this internship experience. I have gained the knowledge and experience that will be beneficial in future projects I work on. Some of the main things I learned is to be patient, careful, and take every step seriously. I'm very

grateful to MATC and MwRSF for giving me this internship opportunity. My internship experience has been incredible, and I gained a lot from it. MwRSF gave me freedom, help, and guidance I need to learn and grow as a future engineer. This experience is a big step for me to achieve my career goal of becoming one of the best mechanical engineers.