DRISI
Caltrans Division of Research, Innovation and System Information

Research Notes

Professional Capacity Building for Communication Systems Phase V: Intelligent Transportation Systems (ITS)

Develop appropriate courses to be taught by subject matter experts which update the students' skills for new and constant evolving technologies in ITS.

Rural

FEBRUARY 2023

Project Title:
Communication Technologies for Rural Intelligent Transportation Systems (ITS) Professionals

Task Number: 1749

Start Date: April 1, 2020

Completion Date: October 31, 2024

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WHAT IS THE NEED?

Rural communication engineering remains a mission critical skill that most engineers in the state have limited experience with. Lacking these skills, engineers and technicians have a difficult time designing and maintaining reliable and robust communication networks for rural Intelligent Transportation Systems (ITS) field equipment. As new technologies emerge, engineers and technicians will be required to understand the reality of what is possible to achieve from these technologies versus the unrealistic claims from a vendor. This is phase V of this project and is a continuation of phases I, II, III and IV to provide specific expert training to rural engineers and technicians to enable them to gain the skills necessary to design and maintain robust communication networks for rural ITS field equipment.

WHAT ARE WE DOING?

A panel composed of members from the California Department of Transportation (Caltrans) rural area districts and headquarters was formed in phase I of this project. The panel members identify and decide the skill areas that need to be updated or improved so that the contractor develops the appropriate courses to be taught by subject matter experts. These courses update the students' skills for new and constant evolving technologies in ITS.

WHAT IS OUR GOAL?

The outcome and end-product from this research will be delivery of courses to Caltrans rural engineers and technicians to train them in the skills they lack, which are necessary for them to design and maintain robust communication networks for rural ITS field equipment. This project will build the professional capacity of rural ITS engineers and technicians through an applied, hands-on educational experience that brings together the latest/most recent information into a comprehensive, one-stop shop for rural ITS communications.

WHAT IS THE BENEFIT?

The benefits of this research will be Caltrans engineers and technicians who will gain the capacity in ITS technologies to successfully design, implement, and maintain reliable and robust communication systems in rural and remote areas for rural ITS field equipment.

WHAT IS THE PROGRESS TO DATE?

- The research team has contracted with the Western Transportation Institute at Montana State University to update the PCB gap analysis, develop / deliver / evaluate new training content and to facilitate Caltrans meetings concerning PCB training.
- The research team has contracted with Pearson Technologies, Inc, to provide two - five-day training sessions on the design of fiber optic networks and the installation, maintenance and testing of installed networks. These courses were conducted in October / November 2021. 24 District staff members participated in the training in Rancho Cordova and Fontana.
- DRISI partnered with D12 Maintenance and provided two five-day training sessions from Pearson Technologies, Inc on the design of fiber optic networks and the installation, maintenance and testing of installed networks. One session was held on May 6-10, 2022, in D12 and the other was held on October 17-21, 2022, in D3. A total of 24 students attended.
- New training content developed by WTI and Caltrans - RF / Microwave Fundamentals training from Aviat Networks. This was a five-day, hands-on experience on October 24, 2022, at the District 3 TMC. 12 students attend.
- The research team has contracted with CellStream to provide three – five-day training sessions on hands-on TCP/IP and Ethernet fundamentals. The three training dates are scheduled throughout 2023 and are full with waiting lists. 48 students will attend this training.
- The research team has contracted with CellStream to provide three – two-day training sessions on hands-on advanced IP networks and protocols. The three training dates are scheduled throughout 2023 and are full with waiting lists. 48 students will attend this training.
- The research team is contracting with Pearson Technologies, Inc once again to provide two – five-day training sessions on the maintenance and troubleshooting of fiber optic networks, designed specifically for Caltrans maintenance electricians. Sessions are anticipated to be held in June, 2023. 24 Maintenance Electricians will attend this training.

LEARN MORE

An update about this project phase was prepared and posted on the PCB project pages on the Western States Rural Transportation Consortium website:

http://westernstates.org/Projects/PCB/Default.html

IMAGES

Image 1: Hands-On Fiber Optic Training – Fusion Splicing

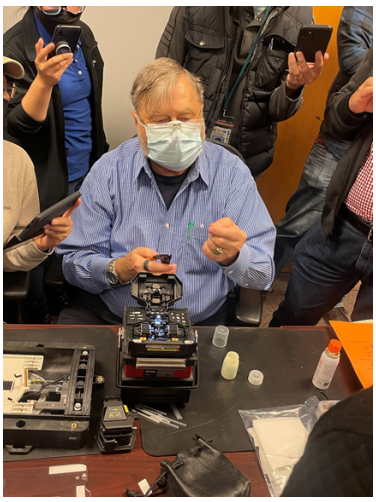

Image 2: Hands-On Fiber Optic Training – Fusion Splicing

Image 3: Hands-On Fiber Optic Training – Cable Preparation