DRISI
Caltrans Division of Research,
Innovation and System Information

Research Results

Professional Capacity Building for Communications Systems - Phase IV

Provide specific expert training to rural engineers and technicians to build their professional capacity in Intelligent Transportation Systems (ITS) field equipment.

Rural

JULY 2019

Project Title:
Communication Technologies for Rural ITS Professionals

Task Number: 1748

Completion Date: June 30, 2019

This project evaluated the effectiveness of portable traffic monitoring device technology to enhance the safety, security, and efficiency of highway work zone operations.

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WHAT WAS 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 are required to understand the reality of what is possible to achieve from these technologies versus the unrealistic claims from a vendor. This is phase IV of this project and is a continuation of phases I (Task 1655), II (Task 1746), and III (Task 1747)to provide specific needed 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 WAS OUR GOAL?

The goal was to 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 that provides the necessary skills they lack to design and maintain robust communication networks for rural ITS field equipment.

WHAT DID WE DO?

A panel composed of members from Caltrans rural area districts and headquarters was formed in phase I of this project. In this phase (Phase IV) of the project, and through a needs assessment survey with rural district personnel, the panel members identified the skill areas that needed to be updated or improved so the contractor developed the appropriate courses to be taught by subject matter experts. Caltrans awarded a

contract to Western Transportation Institute (WTI) to develop and deliver a new course on Small Data Center Design, Structured Cabling, and Grounding. Caltrans, with the assistance of WTI, procured additional courses in ITS technologies directly from other vendors.

WHAT WAS THE OUTCOME?

The successful delivery of the following hands-on training courses in ITS to rural engineers and technicians:

- o Development and delivery of one (1) hands-on class on Small Data Center Design, Structured Cabling, and Grounding.
- o Three (3) hands-on classes on Transmission Control Protocol/Internet Protocol (TCP/IP) Fundamentals.
- o Four (4) hands-on classes on Telecom Wireless Fundamentals.
- o One (1) hands-on class on Advanced Internet Protocol(IP)/Networks.

These courses updated the student's skills for new and constant evolving technologies in ITS.

WHAT IS THE BENEFIT?

The benefit of this research is a well-trained Caltrans workforce of engineers and technicians in ITS technologies who have gained the capacity to successfully design, implement, and maintain reliable and robust communication systems in rural and remote areas of rural ITS field equipment.

LEARN MORE

Caltrans Final Report
https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/final-reports/ca19-1748-finalreport-a11y.pdf

Western States Rural Transportation Consortium
http://westernstates.org/Projects/PCB/

IMAGES

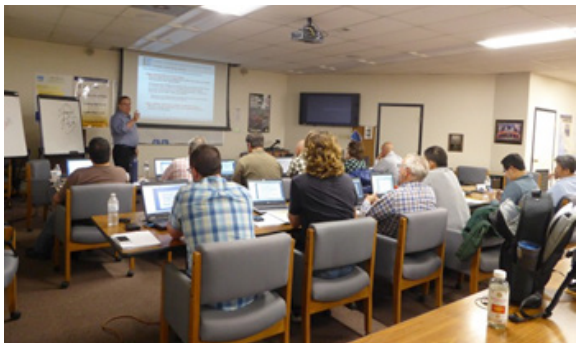

Image 1: Course instructor Phil Isaak explains a concept during the October 2018 Small Data Center, Structured Cabling, and Grounding class.

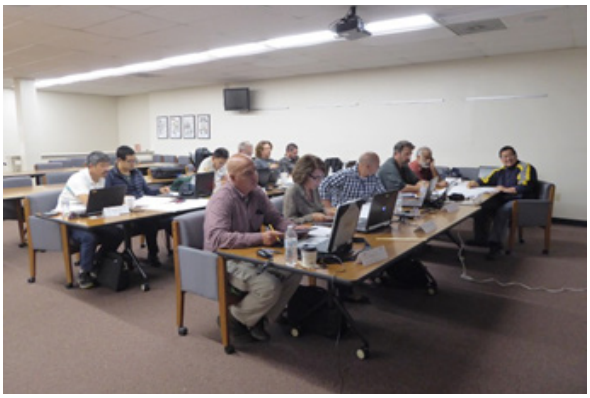

Image 2: Students listen to instructor Phil Isaak while following along in their course materials.

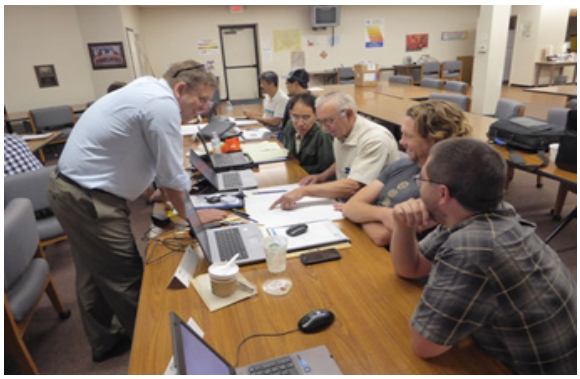

Image 3: Students from Caltrans Districts 2 and 5 review their lab work with instructor Phil Isaak. (Left to Right: Phil Isaak, Steven Gee, Mike Beyer, Lonnie Hobbs, Keith Koeppen)

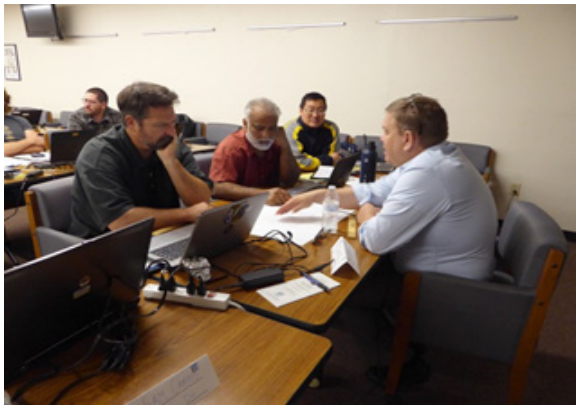

Image 4: Students from Caltrans District 3 discuss their lab work with the course instructor. (Left to Right: David Busler, Gurdeep Sidhu, Andrew Chang, Phil Isaak)

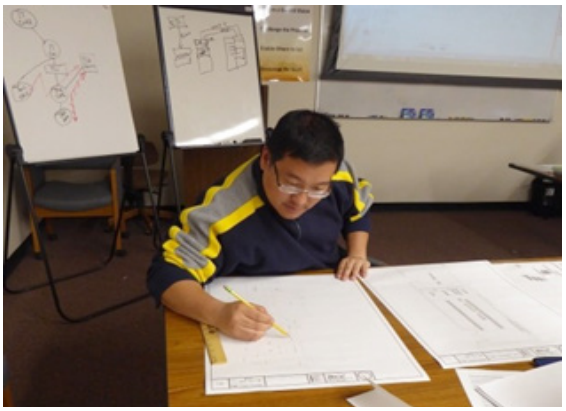

Image 5: Andrew Chang from Caltrans District 3 works through one of the lab exercises during the small data center design class.