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CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION

TRANSFORMING IDEAS INTO SOLUTIONS

Research Notes

I-10 Connected Corridor Coalition Truck Parking Availability System (I-10 TPAS)

Install and evaluate a number of truck parking availability systems at the Wildwood safety roadside rest area (SRRA) located in Caltrans District 8 along the I-10 in Riverside, California.

Advanced Research

MAY 2024

Project Title:
I-10 Connected Corridor Coalition

Task Number: 3743

Start Date: November 1, 2020

Completion Date: October 31, 2024

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WHAT IS THE NEED?

This project was envisioned by the state DOT directors of California, Arizona, New Mexico, and Texas in September 2014, who agreed to initiate a project to demonstrate key technologies for (freight) mobility along the I-10 corridor running through their respective states.

The vision for this project is to provide a streamlined "end-to-end" and connected vehicle experience for safe freight carriers, reducing friction for economic development in the West. Transportation agencies must be prepared for the growing technology wave and demand for Intelligent Transportation Systems (ITS) to be deployed on the nation's highways. Expertise and preparedness for these new technologies and the associated policy choices must be developed among involved transportation agencies so they can make informed choices, form partnerships, and begin to understand ways to fund and deploy what will be a large, complex, and cost-intensive process of technologically upgrading the transportation system infrastructure. The freight industry, as an already regulated, instrumented, and data-intensive segment, is an appropriate partner to engage through the process of developing strategies for technology deployment.

A multi-jurisdictional approach to implementation can lead to cost savings through economies of scale and avoidance of duplicative handling and administrative overhead. Testing and piloting of ITS is best conducted over the entire corridor where vehicles may potentially travel. Participating jurisdictions in the western United States will benefit from pilot projects that test issues such as interoperability policies for data exchange and remittance of revenues to the proper jurisdiction. As members of

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this partnership examine the technology systems and conduct demonstrations or systems tests, their discoveries and the lessons learned will be recorded and shared with other members as part of a community of practice. Value can be derived from multiple jurisdictions participating in this common research project.

WHAT ARE WE DOING?

The first action needed for this project is to use the System Engineering process to further develop the concept to set the stage for future actions. Since this effort is being pursued in addition to the regular duties of staff involved from each state, the most efficient way to accomplish the objectives is to retain the services of a qualified transportation consultant.

A project panel will be established, consisting of appropriate representatives from each of the participating states. This panel will draft the Scope of Work for the concept development and will competitively select the best consultant to perform the work. It will then guide and oversee the work of the consultant through the period of performance. Some of the expected deliverables will be User Needs, Concept of Operations, System Requirements, and high-level System Design.

When the concept of operations meets approval, the coalition will move forward to deploy the selected technologies on all or part of the Corridor.

WHAT IS OUR GOAL?

The portion of I-10 under consideration extends east from the vicinity of the ports of Los Angles and Long Beach in the Los Angeles region, through the cities of Phoenix and Tucson, across New Mexico, passes through El Paso and San Antonio, and ends in Houston, a total of about 1500 miles in length. The project objectives include the following: Truck parking and reservation systems will be in place at strategic locations, expandable as needed and as practical.

WHAT IS THE BENEFIT?

The I-10 Corridor is one of the key economic arteries in the United States, stretching approximately 1,700 miles through California, Arizona, New Mexico and Texas the four I-10 Corridor Coalition States. A National I-10 Freight Corridor Study examined Mexico, Texas, Louisiana, Mississippi, Alabama, and Florida. The report estimated that freight movement in the Corridor would grow by twice the rate of passenger traffic by 2025. Keeping these trucks moving is critical to support the $1.38 trillion in economic impact the Corridor generates. The 4 States in the I-10 Corridor Coalition greatly benefit from that economic activity, but it comes with a number of challenges.

One major challenge that California and the rest of the nation has is a shortage of public and private commercial vehicle parking space. That demand is forecasted to increase annually by 1.9 percent (Federal Highway Administration, 2002). As a result, the incidence of trucks parking illegally on highway shoulders and ramps is increasing, creating safety hazards due to obscured motorist sight distance and dangerous speed differentials when parked trucks re-enter highways. Another roadway safety hazard caused by the lack of commercial vehicle parking is truck driver fatigue, which is known to be a major causal factor in fatal truck collisions and crashes (National Transportation Safety Board, 1990). Moreover, the 2003 changes in the Hours of Service (HOS) regulations (the mandatory driver rest period increased to ten hours, and the driver on-duty period decreased to 14 hours), which were designed to reduce truck driver fatigue-related accidents, will further exacerbate the shortage of commercial vehicle parking. And the Electronic Data Logging mandate to automatically track truck driver driving hours will further impact the truck parking space shortage by effectively reducing driving time and productivity by close to an hour (almost 10 percent) because it forces drivers to start searching for truck parking much sooner than they had in the past to avoid getting cited because they don't know where to park. Illegal truck parking

contributes to negative impacts in other areas besides safety including: 1) air quality, where diesel emission contribute to poor outcomes in the areas of human health, social equity, and environmental justice, and; 2) damage to pavement on shoulders and local streets and roads which leads to higher costs for roadway maintenance and rehabilitation.

WHAT IS THE PROGRESS TO DATE?

Texas TPAS Update (April 2024)
Charles Koonce, HNTB, gave the state update for Texas with commentary from FengPin An.

- Design plans – 100% PS&E packages are complete for each of the six districts along I-10. The team responded to final comments from the districts and have sent on the packages to prepare for advertising for letting. Five of six are set for June letting, and the sixth will let in August.
- Integration – Integration team meeting scheduled for May 3 as a follow up to previous discussions regarding how the availability data from Osprey will be passed to TxDOT's Advanced Transportation Management System (ATMS -Lonestar) and Advanced Traveler Information System (ATIS - DriveTexas).
- Integration – FengPin An mentioned that at the upcoming integration meeting the team will work out how the integration of this project within the ATIS, and the result will be a diagram of integration architecture to use as a state resource.
- Next Steps – Targeted letting June/August 2024, integration team meeting set for May 3rd

New Mexico TPAS Update (April 2024)
Charles Remkes, New Mexico Department of Transportation (NMDOT), gave the state update for New Mexico.

- Construction complete – There were no incurred costs this quarter, but the final payments to the contractor will be completed next quarter and included in the next quarterly report.
- Operations – No operational issues since the sites went live.

Arizona TPAS Update (April 2024)

Adam McGuire provided the Arizona Department of Transportation (ADOT) update.

- Construction – The team received a value engineering proposal from the contractor to switch the detection technology from radar to video with analytics. ADOT will have a decision this week on whether this change in the approach will be approved. Following the decision, ADOT will also revise their project schedule.
- Management approval of software and hardware approach – See Construction update.

California TPAS Update (April 2024)

Joel Wilson, Caltrans, provided the California TPAS update.

- Detection technology testing – The team does not yet have a go-live date determined, as the project is currently suspended until May. Equipment is installed at this time.
- Integration – Integration efforts have been suspended until May. ATMS software replacement is ongoing.

LEARN MORE

Website: https://i10connects.com/

IMAGES

Image 1: I-10 Corridor Coalition Website Logo

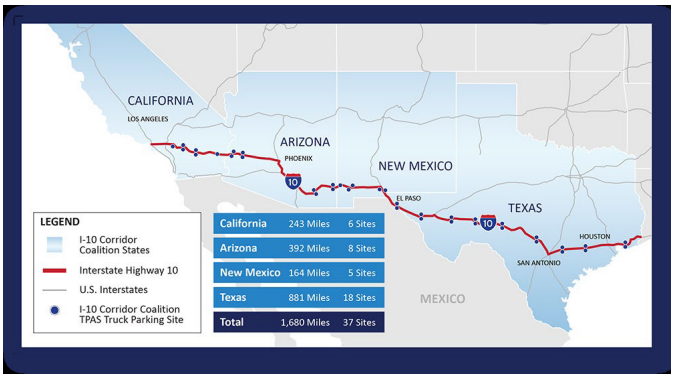

Image 2: I-10 Corridor Coalition Route/Coverage