

Overview

With continued growth and advancing technological needs of Central Texas communities, it is essential for roads and highways to be efficient and productive for the future. TxDOT is looking to design and implement “future-proofing” technologies that will increase safety, protect against extreme weather events, reduce life cycle costs, integrate connected and autonomous vehicles (CAV), optimize existing infrastructure and change the operations and capacity of infrastructure systems.

TxDOT engineers and traffic planners are taking a multi-pronged approach that includes roadway considerations and technology solutions to ensure TxDOT’s ability to maximize the resiliency and adaptability of our existing infrastructure.

Features/Systems

To be implemented:

- **Fiber backbone:** A dedicated, high-speed communications link between devices and a traffic management center.
- **Pavement Temperature Systems:** Pavement temperature systems that provide road and bridge condition assessments. These sensors offer updated information on cold weather events and enable TxDOT to better inform maintenance personnel and the public.
- **Wrong-way detection:** Flashing LEDs and/or detection cameras on roadway signs that detect wrong-way drivers, help prevent crashes and notify traffic operations personnel for crash response.
- **Smart Work Zone:** Queue detection, speed monitoring, construction vehicle entering, over-height vehicle warning and incident detection use ITS equipment to improve safety and operations around work zones.
- **Security:** Digital smart locks and other security measures at ITS hubs, cabinets and other facilities increase security of the communication network used for equipment.



To be further studied:

- **CAV:** Making accommodations for AV, and enhanced striping and signs to connect with CAV.

Benefits

- **Safety:** Advanced warning signs have helped reduce wrong-way crashes by nearly 40%.
- **Wireless communication:** Allows CAV systems to “talk” to traffic signals, work zones and school zones, and allows real time in-vehicle alerts of unexpected roadway conditions. Also communicates with first responders.
- **Roadway weather systems:** Up-to-date information used to inform the public of existing roadway conditions.
- **Travel time:** Consistent data collection in all weather conditions.
- **Future technology planning:** Using data management techniques to expand our existing communication and storage capabilities to allow us better management of future system’s needs.

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