

MY35 WACO CONSTRUCTION – WORK ZONE TSMO

By Texas Department of Transportation

IN THIS CASE STUDY YOU WILL LEARN:

- 1 How TxDOT implemented a multimedia information system for multiple audiences among the traveling public in the Waco community as a single-point information resource for I-35 construction information.
- 2 How the information system relays real-time conditions, current and future planned lane closures, incidents, delay across the corridor, streaming video, and an innovative pedestrian crossings diagram related to construction conditions.
- 3 How end-of-queue and comparative travel time information are displayed at strategic locations to keep travelers informed in real time.

BACKGROUND

The Texas Department of Transportation (TxDOT) is constructing improvements to I-35 through Waco. The purpose of the Waco 4B project is to improve safety and mobility, add capacity, and incorporate technology while modernizing the design of this section of I-35 to meet current TxDOT standards.

Improvements include:

- Installing a permanent advanced transportation operations system with traffic cameras, travel-time information, and dynamic message signs (DMS);
- Consolidating and updating entrance and exit ramps to meet current urban design standards;
- Enhancing bicycle and pedestrian access and other elements;
- Reconstructing bridges;
- Improving interchanges and frontage roads;
- Upgrading drainage; and
- Widening and reconstructing the aging Interstate from six to eight lanes.

During the estimated 4-year construction period, the Interstate will be narrowed to four lanes, thereby decreasing an already strained capacity. TxDOT proactively developed a work zone TSMO plan, taking into account the decreased capacity, a growing community, a neighboring university, impacts to pedestrians and businesses, a substantial growth in tourism, significant throughput traffic, and the fact that I-35 is the most heavily traveled freight corridor in Texas. TxDOT approached this project from a TSMO mindset, examining the overall impacts and needs from a systems perspective that considered all TSMO aspects including strategic planning, programmatic elements, and tactical projects, implementation. Numerous strategies were identified and implemented to address specific needs, and the program was integrated and coordinated to ensure the systems approach served the affected population of a major freeway reconstruction project. This comprehensive approach helps maximize safety and minimize travel disruption and delay for affected travelers and businesses.

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TSMO PLANNING, STRATEGIES AND DEPLOYMENT

During the planning and development phase, TxDOT recognized the importance of conveying real-time information to stakeholders through as many channels as possible. The strategy identified both existing channels and others to reach a broader audience. These channels were determined as part of the strategic planning process, which also identified goals and performance metrics. Additionally, a contractor was hired to perform advanced data analytics and modeling prior to the project to predict construction phase related delays. This guided TxDOT's overall traffic management plan for the construction project at a strategic level.

Expertise was assembled from multiple divisions within TxDOT as well as contractors, local agencies, and stakeholders. A defined working and reporting structure was created, identifying clear leadership roles, areas of responsibility, and communal reporting protocols. Together, TxDOT and its partners developed the outreach, communication, traveler information, and performance metric processes to support the project goals, which included minimizing the amount of dedicated staff where feasible. Finally, from the tactical viewpoint of TSMO implementation, the team developed detailed implementation plans for multiple aspects of the overall system, including stakeholder communications, data collection and field operations, traveler information, and reporting. Mobility coordination and advanced traveler information strategies were identified and used, including live streaming cameras, pedestrian pavement decals, and smart work zone elements (e.g., end-of-queue warning systems, comparative travel time signs). These components are integrated through cloud based, back-office processes to provide travelers comprehensive information regarding closures, travel times, current delays, predicted delays, incidents, alerts, and streaming video. Traveler information is distributed across multiple channels including a dedicated website, social media, email, and text notification.

COMMUNICATIONS PLANNING AND EXECUTION

The project developed the flagship resource as an online real-time traveler information map, available at www.waco4bmap.org. This resource is fed information via

technologies available within the work zones and through planned lane closure notices from the contractor. The system then relays real-time conditions, current and future planned lane closures, incidents, delay across the corridor, streaming video, and an innovative pedestrian crossings diagram showing active, inactive, and shifting I-35 crossings. The pedestrian crossings diagram changes dynamically when the underlying database is updated and is fully compliant for accessibility (e.g., machine readable for the visually impaired). The site also houses project press releases and associated information.

This resource is shared with the public through flyers, contact cards, in-person visits, and promotional materials at nearby businesses, Baylor University, and hotels. Also, banners are placed at corridor safety rest areas. Media releases about scheduled construction impacts and regular email updates about the project are also used. Additionally, all lane closure and incident emails, texts, and social media posts point back to the website for more information.



An innovative technique for sharing this information with pedestrians and bicyclists involved pavement decals applied to sidewalks at approximately 21 locations around and outside the construction zone. Placed strategically to attract the attention of pedestrians and bicyclists before they reach crossings, the decals are branded with artwork from the Be Safe Be Seen initiative and include a safety message and QR code linking directly to the dynamic pedestrian crossing diagram. The City of Waco also partnered with TxDOT's Waco District to include decals in locations outside the construction area.

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OUTCOME, LEARNINGS AND PUBLIC BENEFIT

Drivers were the initial focus of the project's strategic elements via sophisticated traveler information including travel times, delays, comparative information for alternative routes, and streaming video. Subsequent phases targeted additional messaging toward pedestrians and bicyclists. Given that the City of Waco is a growing community with a major university and a school district in close proximity to the project, the team quickly recognized the need to tailor traveler information to those audiences to enhance their safety while traveling through construction zones. This led the team to develop the pedestrian crossings map housed at www.waco4bmap.org. Multiple audiences among the traveling public and surrounding Waco community benefit from the project website, which is a highly sophisticated, single-point information resource. Travelers can use the website to pre-plan travel while simultaneously understanding the likely impact of construction activity along their route.

Throughout the project, the team has conducted surveys and held quarterly meetings with a steering committee comprised of local leadership, the metropolitan planning organization, Baylor University, school districts, local emergency management services, Waco transit, chambers of commerce, the trucking association, and other groups. This engagement ensures that public outreach is effective and regularly tailored to meet the needs of a diverse stakeholder group. The steering committee also shares information with their distribution groups and constituents, which helps further inform the local community, visitors, and through travelers about construction and impacts on I-35 through Waco.

End-of-queue and comparative travel-time information are displayed at strategic locations to keep travelers informed in real time. Special considerations for pedestrians and bicyclists recognize the diversity of the area's transportation environment. This holistic approach of providing comprehensive traveler information, partnered with the intense construction efforts ongoing in the area, ultimately benefits the city and surrounding community by keeping everyone better informed.

The project team tracks all aspects of information outreach — including in-person contacts with businesses and jurisdictions, schools, hospitals, fire, police, and emergency services — as a baseline for performance evaluation. Social media outreach is tracked along with website hits and text message delivery efficacy. Beyond the baselines, tracking also clearly indicates that target audiences continue to increase accessing information sources when notified of an unexpected condition (e.g., traffic crashes, inclement weather impacts). Finally, the live camera streaming views continues to increase as people learn of them and recognize their usefulness in observing real time traffic conditions.