

Introduction: 3D visualization is a valuable tool frequently used on major transportation projects to show the public what the finished roadways will look like before they are constructed. TxDOT and CTR have been utilizing 3D visualization in non traditional ways to support decision making in the planning and construction phases. Several examples and their benefits are discussed below.

- Local elected officials were concerned about the visual impact of an elevated bridge structure between a divided local street.
- A county courthouse building was located on that local street.
- TxDOT district planning officials wanted to utilize 3D visualization to explore what different bridge types would look like, how they would affect sign visualization and present all this information to local officials to help provide clarity and scale.



TX Girder bridge shown from county courthouse

- •TxDOT project staff were concerned new bridges along a corridor would interfere with the radio signal transmission of TxDOT traffic cameras.
- They were also concerned about the visibility of the corridor with the new bridges as well as the visibility on the new bridges.
- In a 3D model, the cameras were connected with a line and visually inspected if the bridges penetrated the line.
 - The bridges did not break the line of sight of the cameras along the corridor.

Conclusion: TxDOT is utilizing 3D visualization in non-traditional ways to improve decision making and communication with stakeholders. Benefits of 3D visualization range from being qualitative support to providing quantitative engineering analysis.

Important Building

What Does It Look Like From... **Non-traditional 3D Visualization Use Cases** Presenters: Cameron Schmeits, Nabeel Khwaja, P.E., Juan Loayza, Mengyu Fu, and Kristopher Pruner



Segmental bridge shown from county courthouse

*A 360 degree view from a car's perspective for both bridges is <u>HERE</u>.

TxDOT Traffic Camera



View from TxDOT camera (360 degree photo <u>HERE</u>.)

- Local TxDOT project staff were concerned about the weaving section in between two ramps on a frontage road
 - wanted to simulate driving through it as realistically as possible.
- CTR modeled the roadways, signs, markings, railings, as well as simulated traffic.
- Two videos were created showing a driver's perspective of traveling through the weaving section from both pathways



Driver's Perspective: Overhead Sign Visibility

- A bridge was potentially blocking the visibility of a guide sign.
- CTR created a rough, but dimensionally accurate 3D model.
- A view from eye level in a vehicle revealed the sign was only visible from 329 ft.
- Ultimately the designers moved the sign location due to the lack of visibility.



View of sign from 600 feet

Acknowledgement and Contact

The authors would like to thank **TxDOT** for their continue support. **Contact:** Cameron.schmeits@mail.utexas.edu



Driving In Vehicle with Traffic

- View along drive getting on entrance
 - ramp from frontage road
 - (click image to view video)



View along drive exiting highway to frontage road (click image to view video)

View of sign from 329 feet

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