UT Arlington civil engineering professor studying Texas high-speed rail plan

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A UT Arlington civil engineering associate professor is studying the feasibility of placing a high-speed rail line within the public right of way from North Texas to Houston and San Antonio.

The work is funded by the Texas Department of Transportation.

Stephen Mattingly, an associate professor of civil engineering, is assessing the performance constraints to safe operation and design, which affect a high-speed train's average speed and overall system cost as part of his research. The routes would roughly follow Interstate 45 between Dallas and Houston, Interstate 35 between Dallas and San Antonio, and State Highway 6 from Waco to Houston.

TxDOT recently faced a significant outcry against right-of-way acquisition when it began to plan for developing the Trans-Texas Corridor, Mattingly said. That negative experience, as well as the typical costs like environmental impacts and delays associated with construction on undeveloped land, led the agency to consider using its existing right-of-way resources to the greatest extent possible critical, he said.

"The primary purpose of this research is to determine if and how existing TxDOT right of way can potentially accommodate high-speed intercity passenger rail and/or dedicated freight transportation systems," Mattingly said.

Mattingly expects to deliver his findings this fall.

North Texas leaders have had recent discussions with Texas Central High Speed Railway, a private, for-profit company interested in bringing high-speed rail to the state. Mattingly's work is not directly related to those discussions but could provide meaningful insight to rail planners.

"We're conducting research to provide a range of information for TxDOT so that they have a starting point for negotiations with a possible system designer," Mattingly said. "We want to identify whether it's conceivable to even have high-speed rail in those corridors."

The University of Texas at Austin, the University of North Texas and Texas Southern University also are participating in the TxDOT study with The University of Texas at Arlington. UT Arlington's share of the TxDOT grant is $125,868.

Sia Ardekani, civil engineering professor, is co-principal investigator. Sunil Madanu, a doctoral candidate, is the primary graduate research assistant working on the project.

Faculty Research Associate Antonio Massidda's previous experience on a high-speed rail project in Italy enabled him to provide valuable research support and technical oversight. . Farhan Khan, a doctoral student, also provided support during the development of the corridor case studies.

Ali Abolmaali, chairman of UT Arlington's Civil Engineering Department, said Mattingly's work highlights the significant role research universities like UT Arlington can play in state and regional planning.

Mattingly joined UT Arlington in 2002 and has engaged in research supported by TxDOT, DART, the North Central Texas Council of Governments, the National Science Foundation, the Federal Aviation

Administration and DFW Airport.

"Dr. Mattingly is particularly knowledgeable about the important connections between such rail lines and major airports," Abolmaali said. "The UT Arlington College of Engineering is pleased to be playing a significant role in these critical conversations about our future transportation solutions."

Mattingly said the research will provide TxDOT a case study for each of the candidate corridors. For instance, Mattingly said determining how to handle obstacles such as overpasses and sharp curves within the right of way poses a significant challenge. The case studies identify where these obstructions are located and proposes solutions for overcoming them.

Another factor in project cost is where the end terminals will be placed for the high-speed rail line. Mattingly said locating a station at an airport or in an urban core probably makes the most sense.

But the cost of establishing a terminal at either of these sites will be much more expensive than the outskirts of a metropolitan area because land values in an urban core or at an airport tend to be more expensive and high-speed rail line costs increase significantly in urban areas because of the lack of right of way for an at-grade system.

Provided by University of Texas at Arlington