

Texas Central Railway: An Innovative Approach to Engineering and Environmental Design Coordination under NEPA

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The Texas Central Railway project will link Dallas/Fort Worth and Houston with a 205 mph high-speed rail dedicated system. Texas Central Partners (TCP) is a private, Texas-based company that will utilize Japanese bullet train technology for the first time in the US. Arup, with partner firm Freese and Nichols (FNI), is serving as TCP's Owner's Engineer (OE). As part of the OE's scope, Arup and FNI are undertaking the engineering design to a 5% design level for the Environmental Impact Statement under the National Environmental Policy Act (NEPA), and 404 permit applications under US Army Corps of Engineer requirements. This level of design is intended to provide a set of alternative alignments between Houston and Dallas that minimize the environmental impacts of this major transportation infrastructure. Herein we provide an overview of the innovative tools, processes, and technologies used to improve engineering and environmental design coordination.

The project team is dedicated to providing a state-of-the-art mode of transportation with the minimum impacts to the environment and the community. Coordination in early phases of the project is proving to be key to minimizing project impacts. The innovative tools, technologies, and processes focused on optimizing information sharing to provide early access of the design to the project team for effective decision making, and using a technology-driven design approach for faster turnaround times to speed up design iteration cycles.

A fast and automated process was developed that improved integration between engineering design software, GIS analysis tools, and a web based design viewer. This ensured the latest design information was communicated and readily available to all parties involved in the engineering, environmental, and client teams. The availability of the design, close coordination of activities, and excellent cooperation with federal agencies has allowed a fast turnaround time and achieved a time reduction for each design iteration cycle to meet a challenging schedule on time and on budget.