

Tomball Tollway (SH 249) North of Spring Cypress Road to North of FM 2920

Harris County Toll Road Authority

Completed
 \$100 Million
 (Total construction cost
 including toll infrastructure)

Project Description

Design services for four ramps and one mainlane Toll Collection infrastructure. The major components of construction include: concrete drilled shafts, gantry structure design, IT building design, and electronic toll collection system infrastructure design. The infrastructure design consists of pavement plan for the tolling zone, grading plans, loops, conduits, power communication, data, vendor required equipment locations, toll plaza and facilities layouts, structural and architectural design, heating, ventilation, and air conditioning. ISE coordinated its efforts with several other consultants, two subconsultants for Architectural and Electrical design, the Program Management Consultant, and HCTRA.



Scope of Services

ISE provided conceptual toll gantry alternatives, cost analysis, as well as the engineering and architectural services required for the preparation of plans, specifications and estimates (PS&E), bid letting, contract award assistance, and construction phase services for the Tomball Tollway. The plans for the toll collection system were coordinated with several other consultants and combined into three packages for letting. The toll collection system was designed in accordance with HCTRA and vendor specifications. Major components of work include special gantry structures, IT buildings, heating, ventilation and cooling systems, special paving for mainlanes and ramps, access and driveways and other incidentals related to electronic toll collection systems.

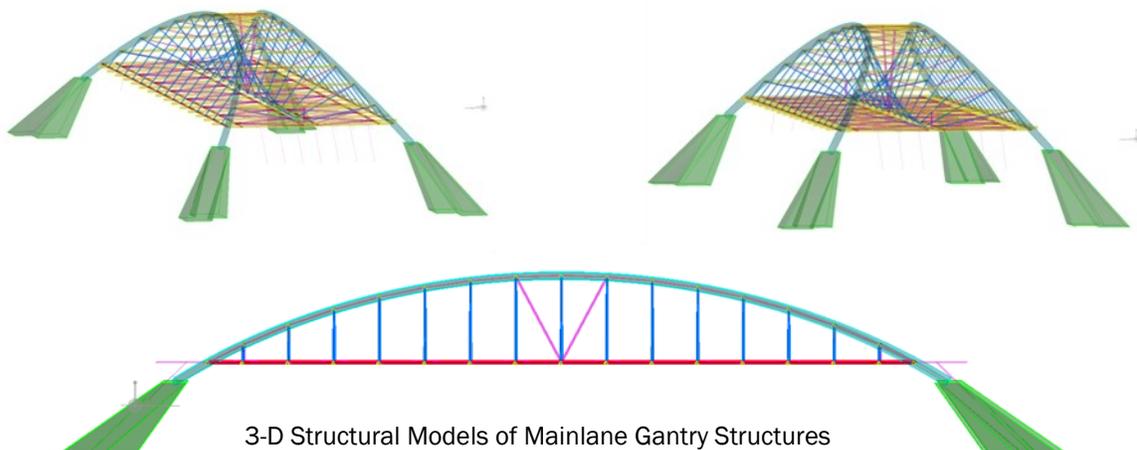
ISE prepared several Toll Gantry Alternatives with renderings and a matrix of cost and constructability for HCTRA's consideration. Working with the Architectural subconsultant, ISE prepared an arched shape gantry structure for the Tomball Tollway with a 204 ft span and very stringent design criteria for deflection and vibration.

The design was performed on a fast track schedule and delivered on time. ISE staff worked diligently with the System Vendor's on-going changes for the new toll system and implemented their requirements into the toll infrastructure design.



Structural design of the gantry structures consisted of 3-D models of the structures, general notes, superstructure and substructure design and details including complex column details, complex steel connection details for the arched gantry, and the design of the IT buildings.

The ETC Sub-System and gantry and building structures were coordinated with the System's Integrator for their design criteria and requirements, the roadway designers for tolling zone design, and with the Architectural and Electrical Subconsultants for aesthetics, architectural details, HVAC, power, and communication design.



3-D Structural Models of Mainlane Gantry Structures