The Horseshoe Project in Dallas, Texas

The Horseshoe Project, locally known as the “Mixmaster,” is one of the three parts that together make up Project Pegasus. Project Pegasus is intended to transform the two Interstate Highways that directly serve downtown Dallas, TX by totally redesigning I-30 and I-35E near downtown Dallas Central District. Horseshoe construction includes replacing bridges that cross Trinity River on I-30 and I-35E as well as the connecting roadways where they converge near Downtown Dallas.

The need for Project Pegasus is driven by a combination of:

- Physical deterioration - increasing maintenance and repair costs as well as rapid bridge deterioration.
- Large increase in the amount of commuters - since the original construction in 1960, the population of Dallas County has more than doubled in 40 years.
- Outdated geometric lane layout - forced lane changes, abrupt and unexpected merges, short weaves and quick exits compound the problems.

The project will be executed using a design build (DB) contractor given 30% schematic drawings. TxDOT is currently in the Request for Qualifications (RFQ) phase and has made a short list of teams they will ask to submit proposals. TxDOT is hoping to have a DB contract executed in the winter of 2012-2013.

3-D and 4-D Models

3-D and 4-D models are being developed to support multiple engineering, construction, and public relations objectives.

- 3-D model for proposed new construction based on 30% design submittals.
  - Pavement based on horizontal alignments, profiles and cross sections
  - Bridges based on horizontal boundaries and conceptual bent spacing
  - Terrain based on current LiDAR data, modified with new roadway.
- 3-D model for existing conditions
  - Pavement, bridges, surface based on:
    - LiDAR data, aerial photography and as-built plans.
  - City buildings added to enhance visualization and geographical context
- 4-D virtual construction model - UNDER DEVELOPMENT
  - Sequencing and durations will be estimated from Traffic Control Plans (TCP) to create a “rough” construction schedule.
  - New construction and existing 3-D models along with “rough” schedule will be used to create a 4-D virtual simulation for the demolition of existing facilities and reconstruction of the new project in Autodesk Navisworks.

Project Facts

- Total Project Costs: $818 million
- Downtown Dallas: I-30 and I-35E
- 350,000 vehicles per day through this intersection

Potential Applications

- Design
  - Visual feasibility analysis of proposed TCPs
- Construction
  - Constructability analysis for proposed alignments
  - Detection of lane closures and space conflicts for construction of proposed facilities
- Public Relations
  - Updating project stakeholders, elected public officials and local policy makers
  - Public information hearings

Project Timeline

- Late 2011 - Selection of Procurement Team
- Feb. 2012 - Receive Qualifications
- March 2012 - Short List
- July 2012 - Issue Final RFP
- Sept. 2012 - Receive Final Proposal/Selection
- Late 2013 - Construction Complete
- Jan. 2013 - Start Construction
- Mar. 2012 - Draft RFP
- May/June 2012 - One-on-One Meetings
- Aug. 2012 - Issue Final RFP
- Oct. 2012 - Conditional Award
- Late 2016 - Construction Complete
- Dec. 2011 - Issue RFQ
- Late 2011 - Issue RFP
- Late 2012 - Construction Complete
- Late 2013 - Construction Complete
- Late 2014 - Construction Complete
- Late 2015 - Construction Complete

Location Map

- Left: Overhead view of the project – Right: Top view of the 3-D model of proposed project.