The I-80 / I-380 Interchange Reconstruction
3D Visualization Project

Collaboration Team
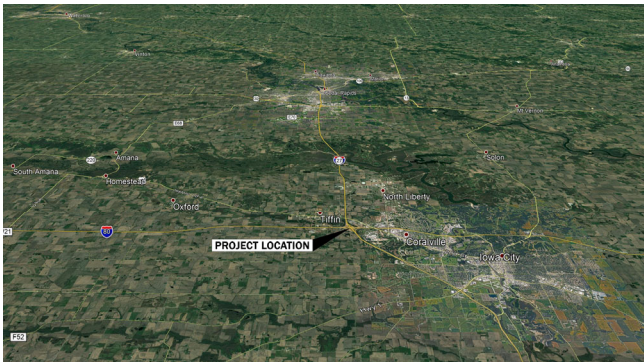
Visualization In Community Outreach

- Public Concerns
- Innovative Design
- Meaningful Questions

Visualization In Community Outreach

I80/I380 Visualization Project Overview

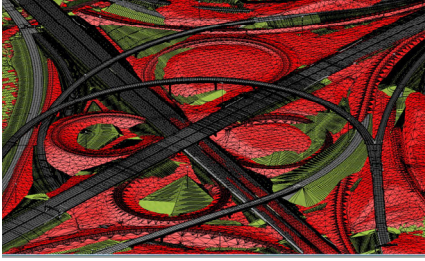Reconstruction of the Cloverleaf Interchange to a Turbine Interchange

I80/I380 Visualization Project Overview

Existing Cloverleaf Configuration

Design vs. 3D Visualization

- Advancements In Technology
- 2D & 3D Information
- Coordination & Prioritization

Design Models & Visualization Models

- Design Models
  - Plan Sheets
  - Cross Sections
- Visualization Models
  - Build On Design Models
  - Verticality to 2D information
  - Clarifying Public Imagination
- Developed in a Visualization Model
  - Bridge Berms
  - Traffic Signs
  - Bridge Piers
  - Guard Rails
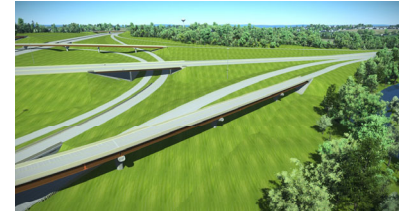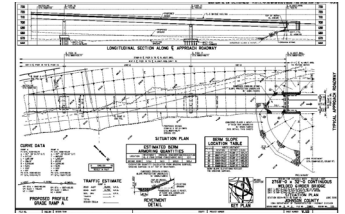
Visualization Software Workflow
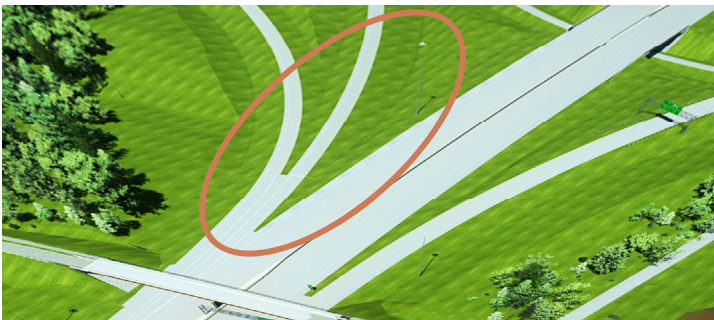
- No one size fits all
- Combination is key
  - Base Model
    - SketchUp
    - OpenRoads
  - 2D/3D Graphics
    - Photoshop
    - PremierePro
  - Rendering
    - LumenRT

■ Base Model ■ Rendering ■ 2D/3D Graphics
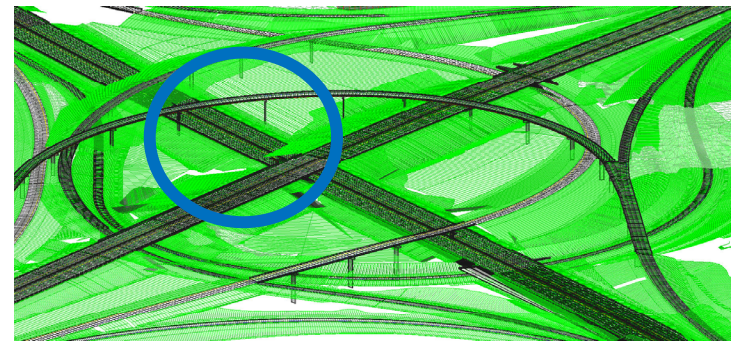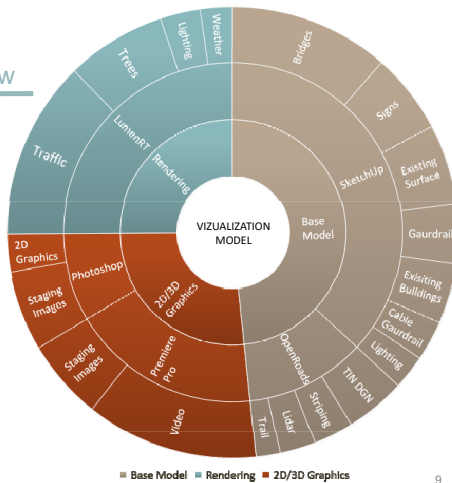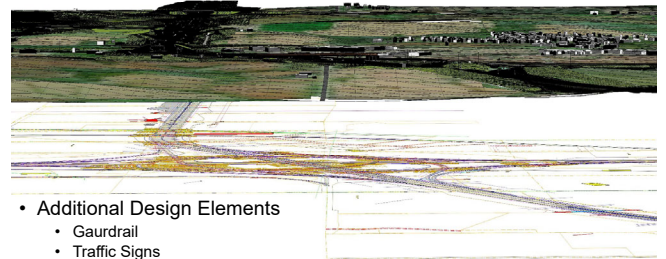
What Makes Up The Model

Overlapping TIN files
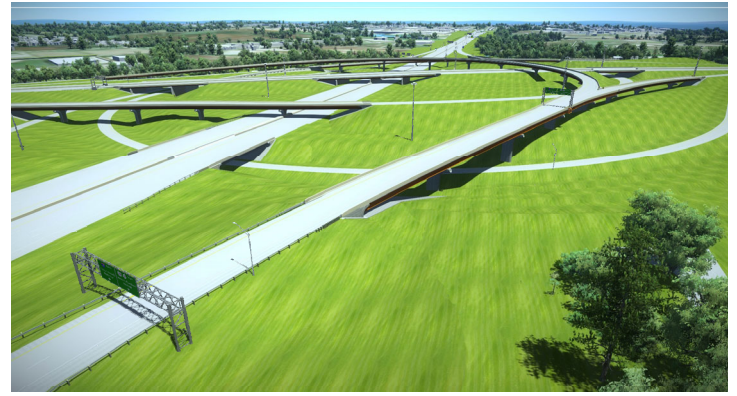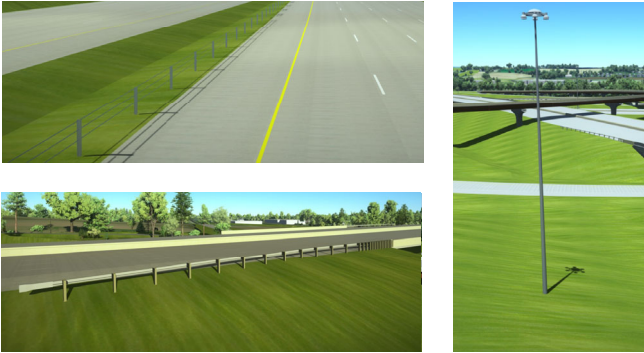Triangles

Blending The Models

Customizing The Model

- Additional Design Elements
  - Gaurdrail
  - Traffic Signs
  - Lighting
  - Surrounding Buildings
- Upgrading 2D information

Customizing The Model & Adding Context

Adding Details

- Bentley; TIN Files, OpenRoads, LumenRT
- SketchUp

Visualization Solutions
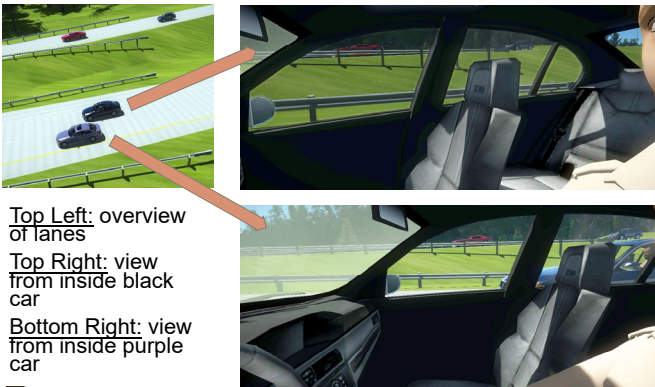
<u>Top Left:</u> overview of lanes

<u>Top Right:</u> view from inside black car

<u>Bottom Right:</u> view from inside purple car

Drive Through Animation

Des Moines To Cedar Rapids
Eastbound to Northbound

Common Oversized Vehicle

Common Oversized Vehicles

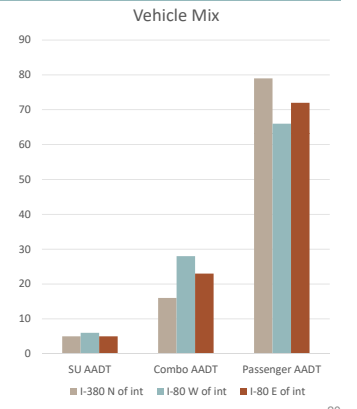Special Transport Vehicle
Northbound To Westbound

Creative Applications of Technology

What can we do with a 3D visualization model - before & after

Traffic Animation

- Simulation
- Vehicle type by volume
- VISSIM
- Transmodeler

Drive Through Video

Traffic Animation Model

Creative Applications of Technology

What can we do with a 3D visualization model - high level staging video

Creative Applications of Technology

What can we do with a 3D visualization model - virtual reality

Slide 25

Lessons Learned - What happens when the design changes?

- Preliminary to Final design

- Clear communication

- Updating the model
  - Grading
  - Pavement Markings
  - Signs & Lights

- Reprocessing the model

- Understanding the Software

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Moving Forward - Benefits of Visualization
Shared understanding of the project, always a more complete picture

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QUESTIONS?

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