Bridge Information Modeling (BrIM): Evolving into a Model Based Industry An Owners Perspective

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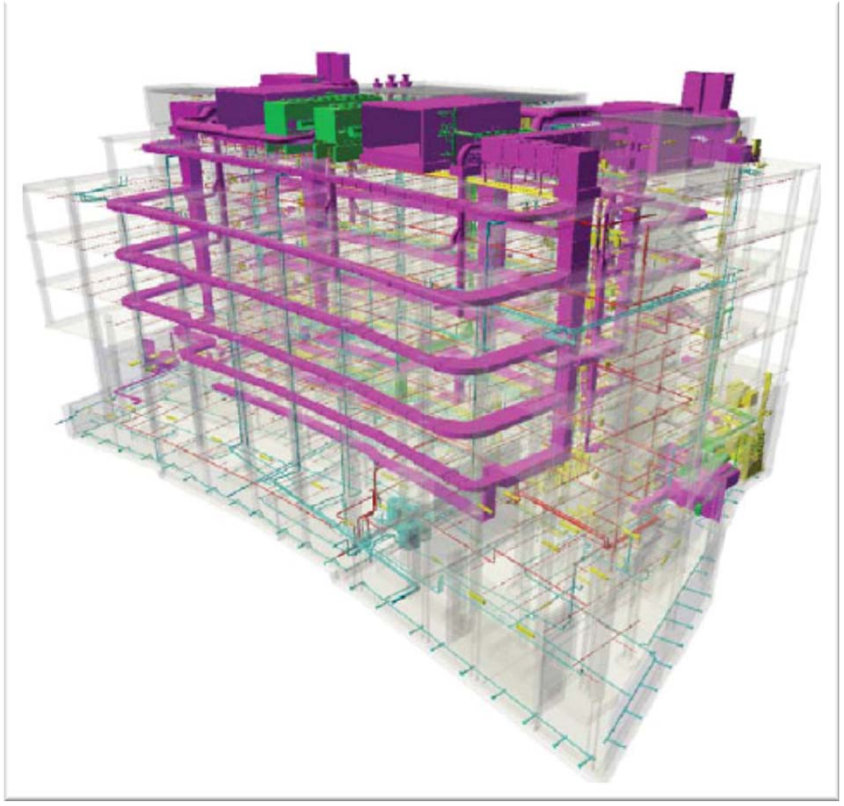
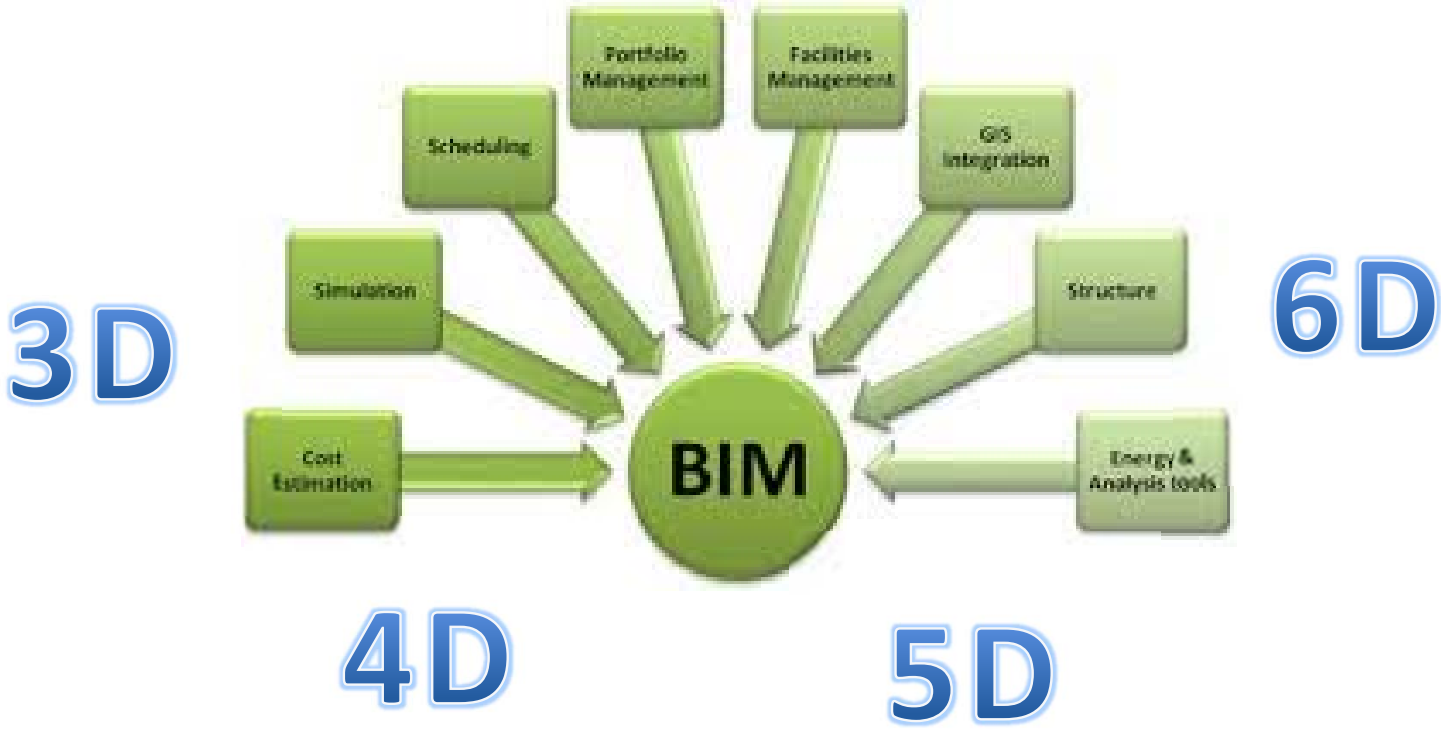
Presentation Outline

- The Vertical Industry / Oil Industry – Leading the Way
- Benefits of Bridge Information Modeling to AASHTO SCOBS
- Other Transportation Infrastructure Information Model Initiatives
- T-19 “Software and Technology” Efforts

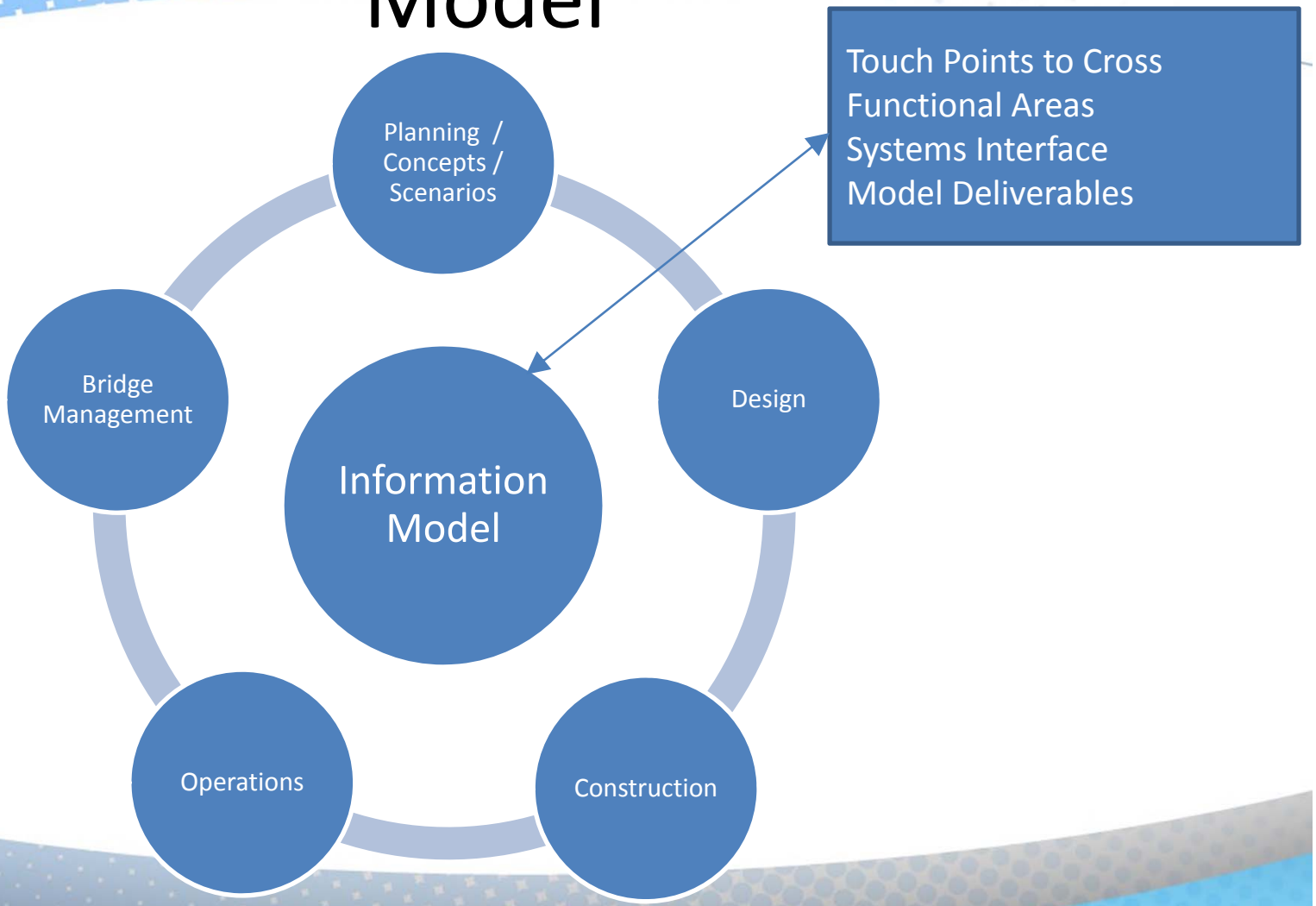
Information Modeling



BIM Terminology and Usage



Life Cycle of Structures Information Model



Planning / Scenarios

Planning / Concepts / Scenarios

- Visualizations
- Simulations – Rehab vs. replacement
- Bridge Management Scenarios
- Investment Strategies
- Model Creation

Visualizations

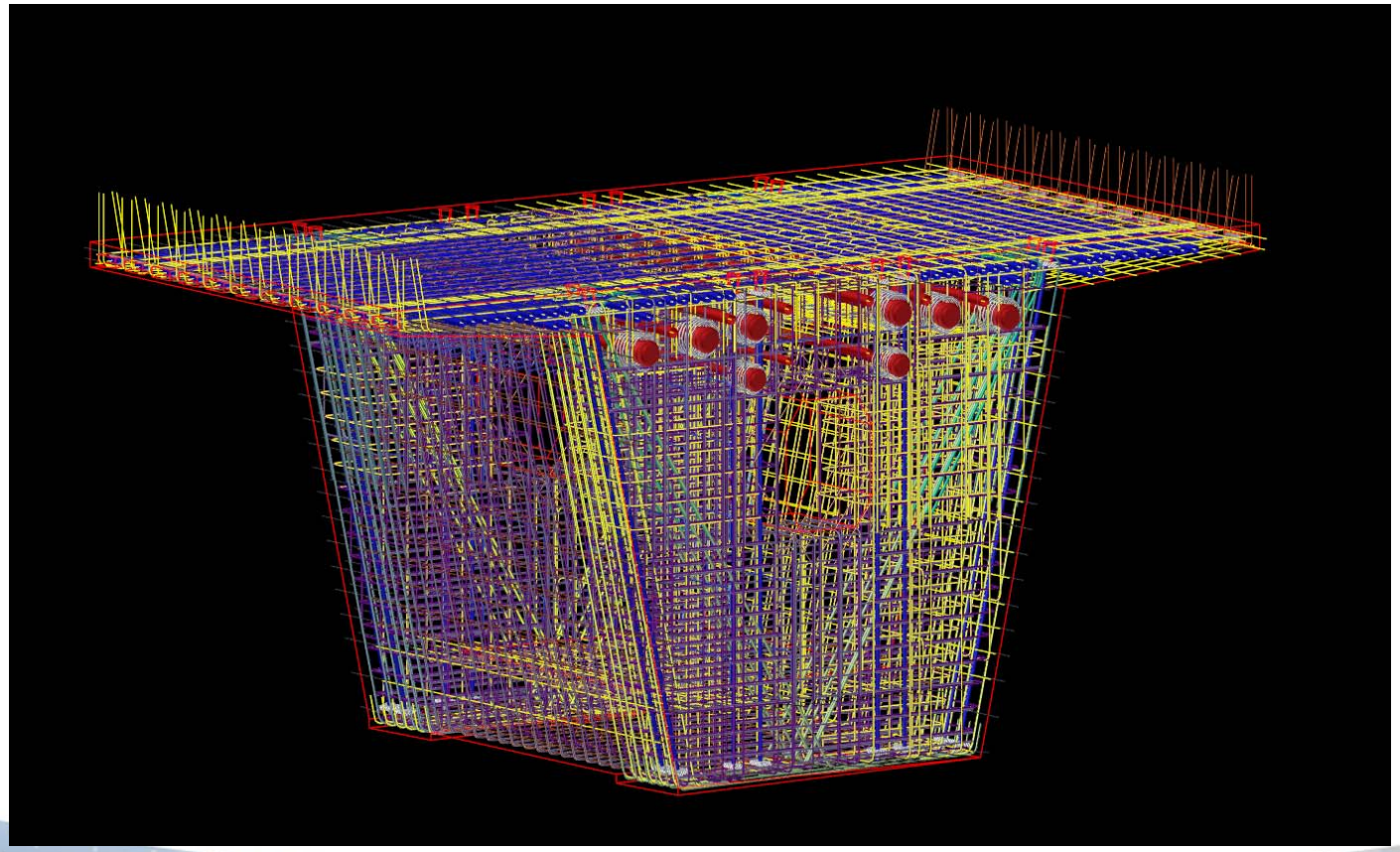
Design

Design

- Visualizations
- Import / export into FEM
- Virtual Construction
- Data Model Creation
- Integration into Refined Analysis
- Fabrication
- Interference – Clash Detection
- Model Handoff

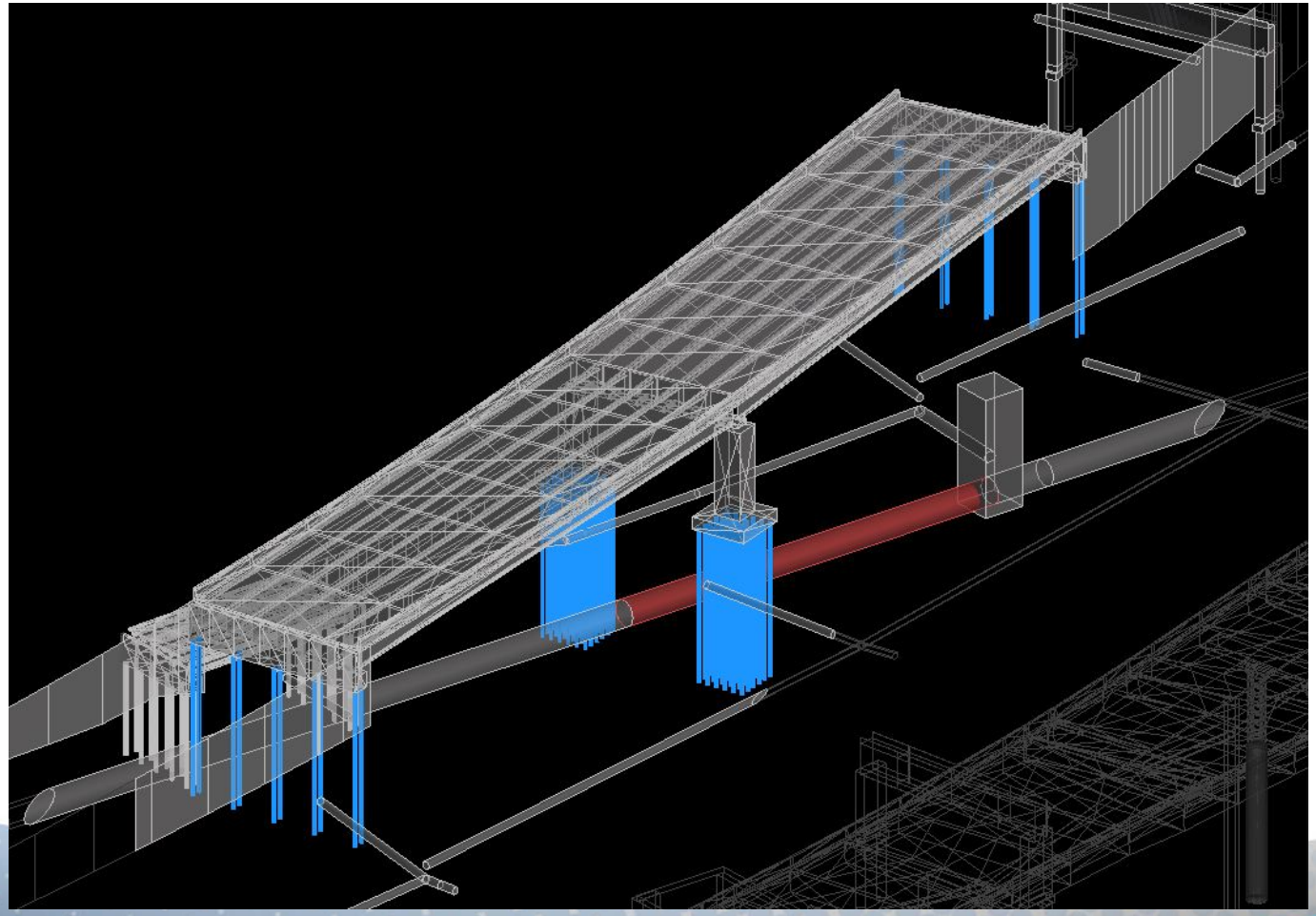
Clash Detection - Micro

Design



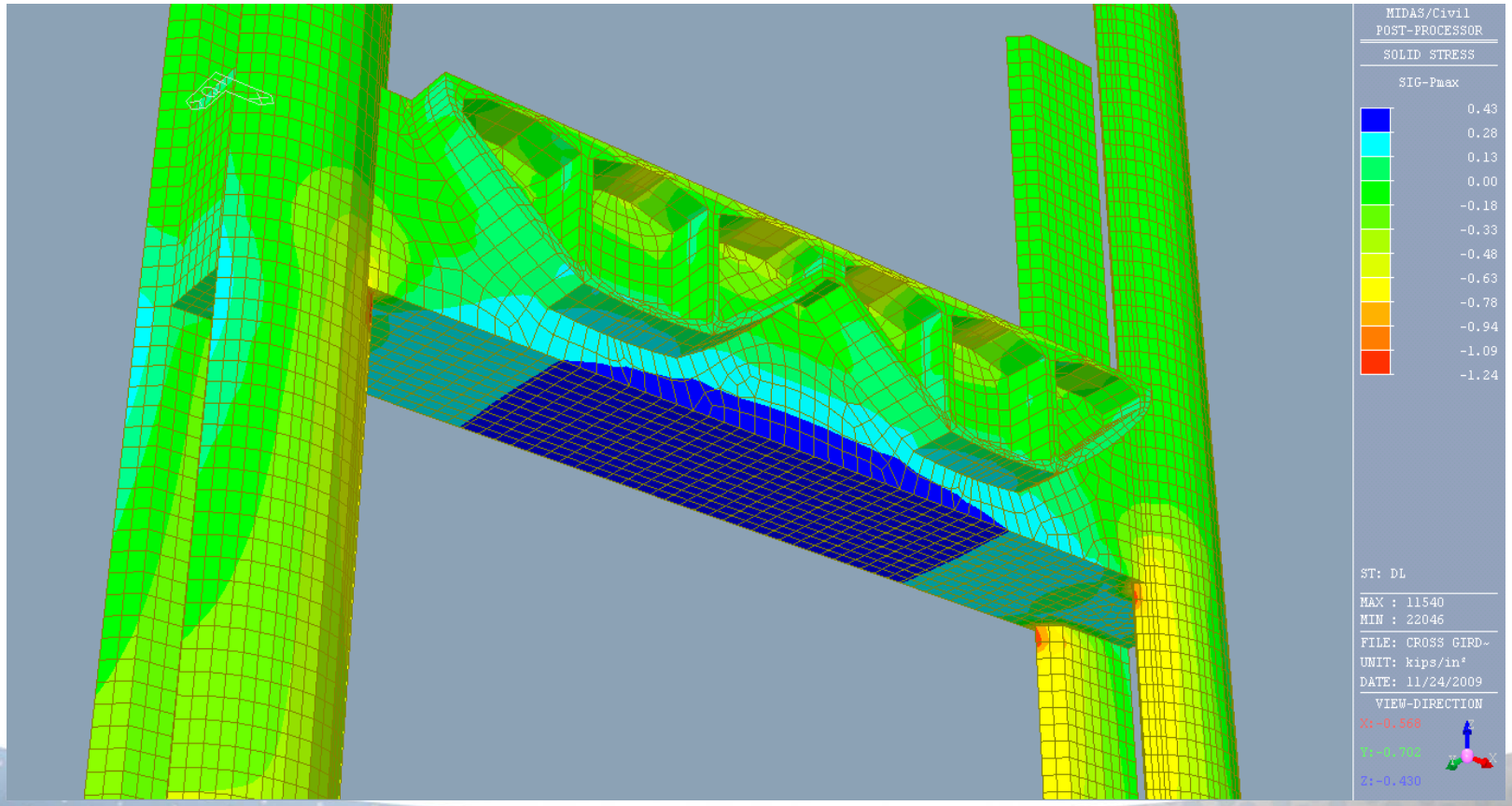
Clash Detection Macro

Design



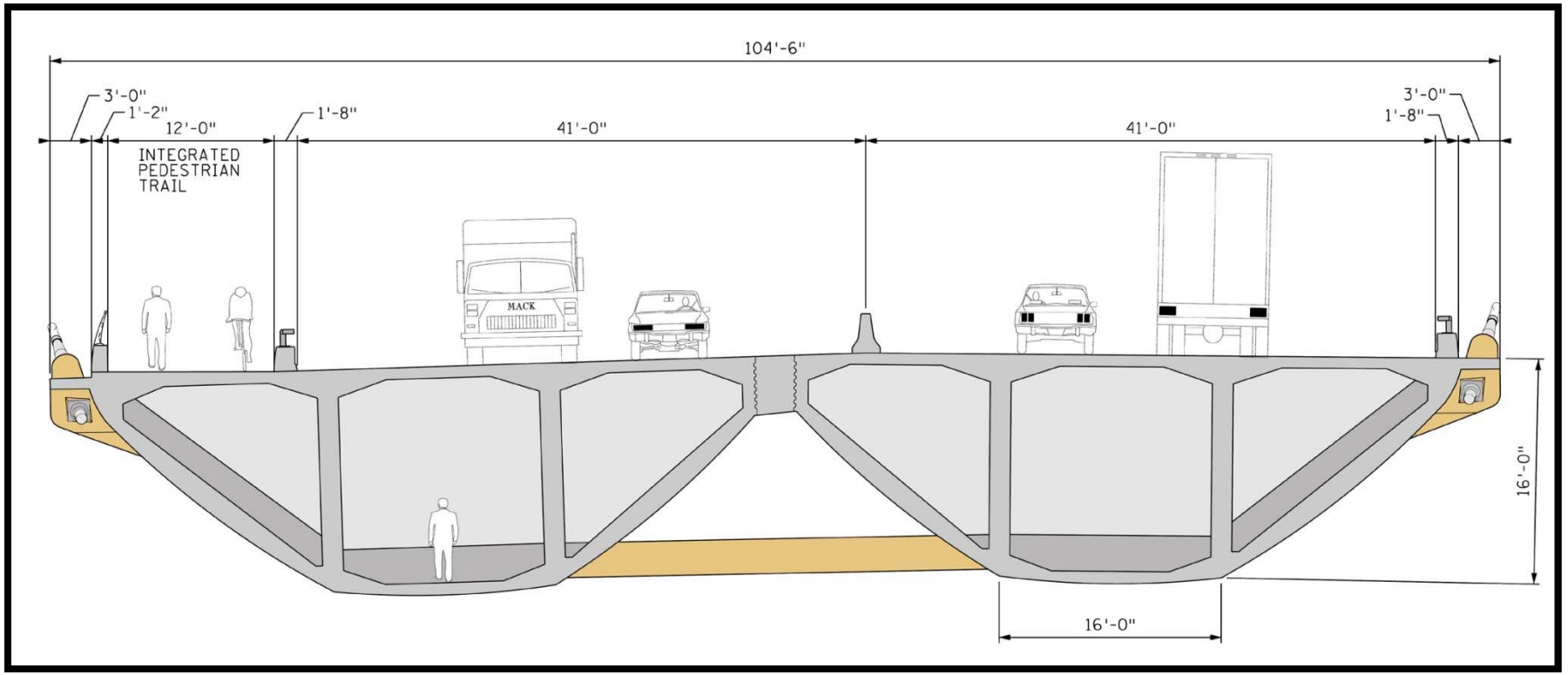
Refined Pier Connection Model

Design



Digital Sections

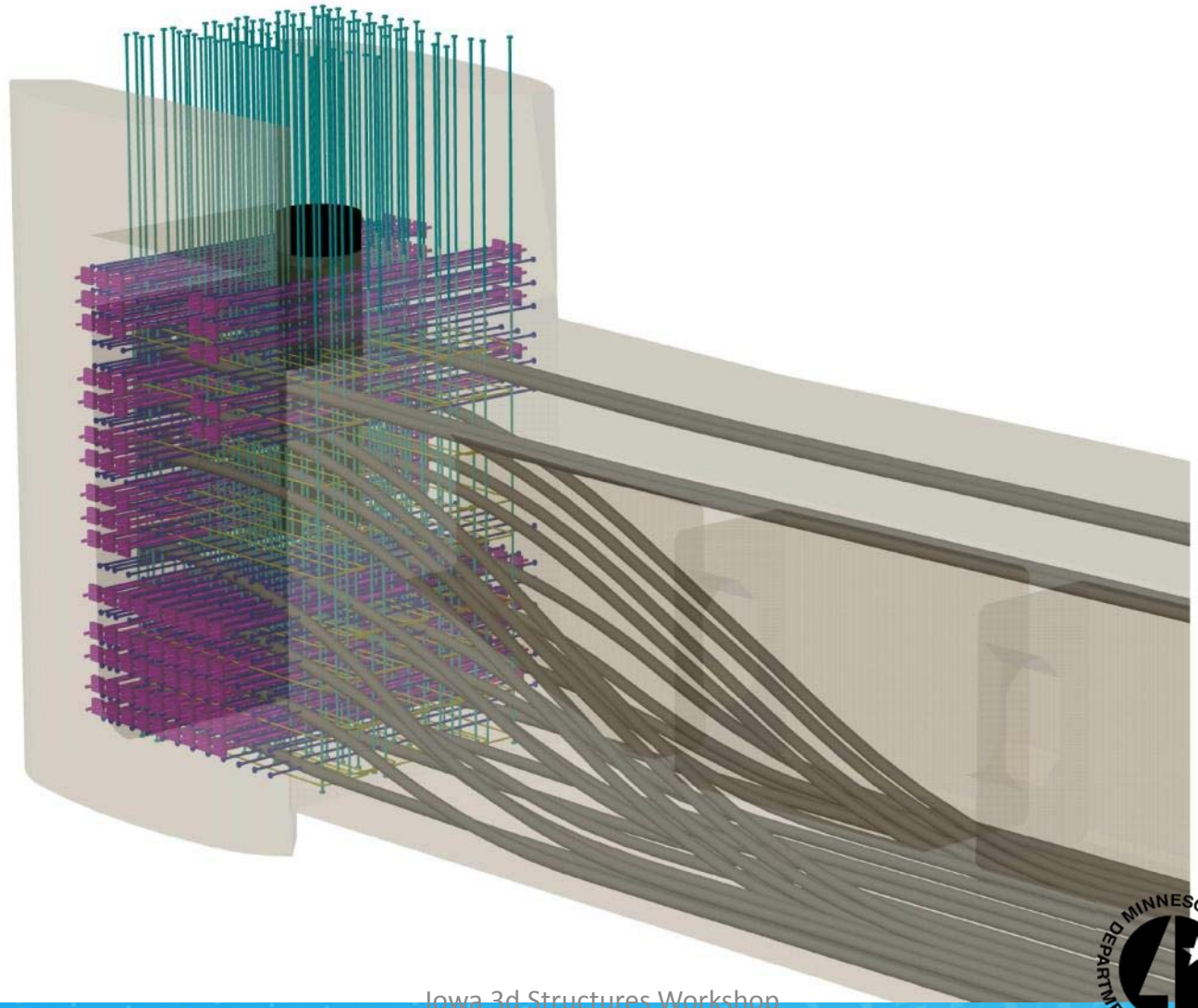
Design



Interference

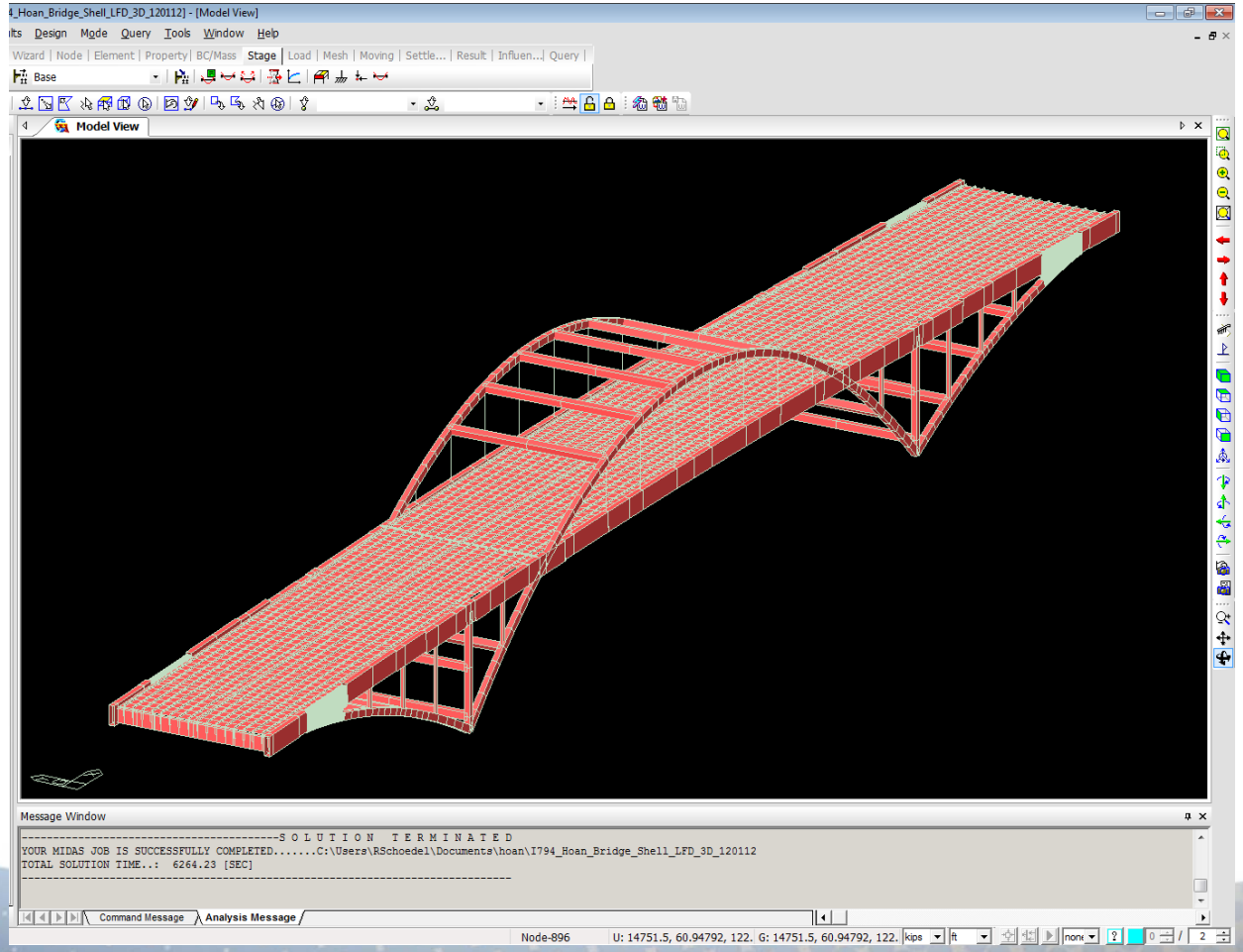
(Tower – Crossbeam – Column Connection)

Design



Integration into Refined Analysis

Design

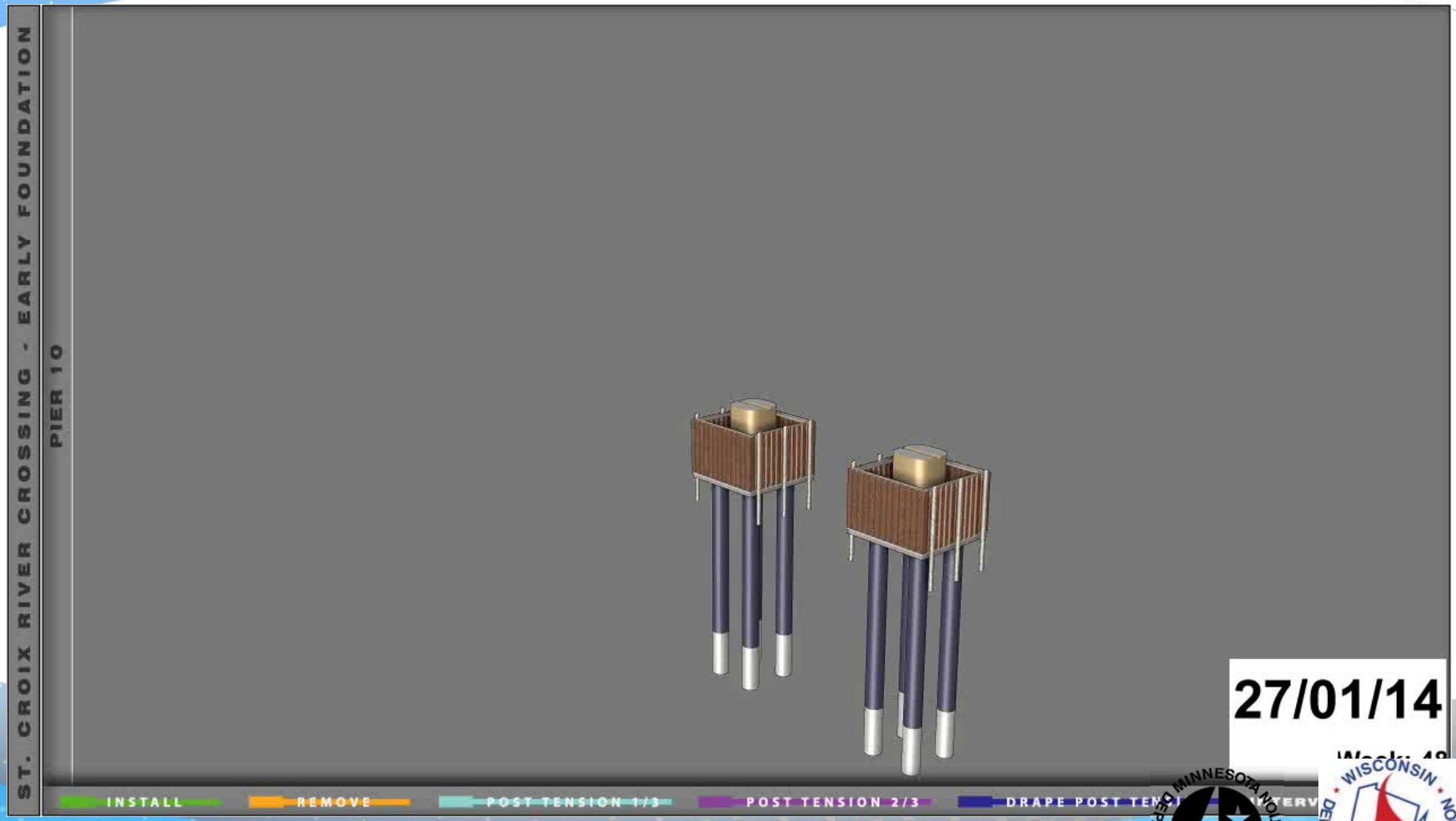


Construction

- Schedule
- Sequencing
- Demolition Planning
- Virtual Fit Up
- Bill of Materials Supplied
- Fabrication
- As built Conditions
- Model Handoff

Construction Schedule and Sequence

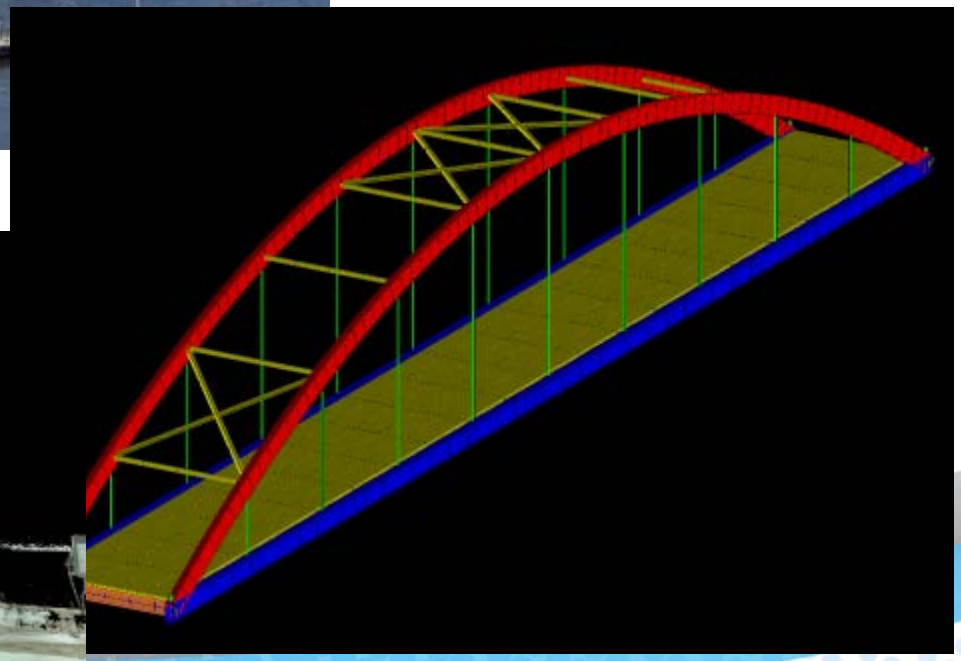
Construction



Operate

- Oversize Over Weight Permits
- Perform Rating and Posting analysis
- In Service Investigations
- Emergency Simulations
- Operations Real time Monitoring
  - Videos, gates, loads etc

In Service Investigations



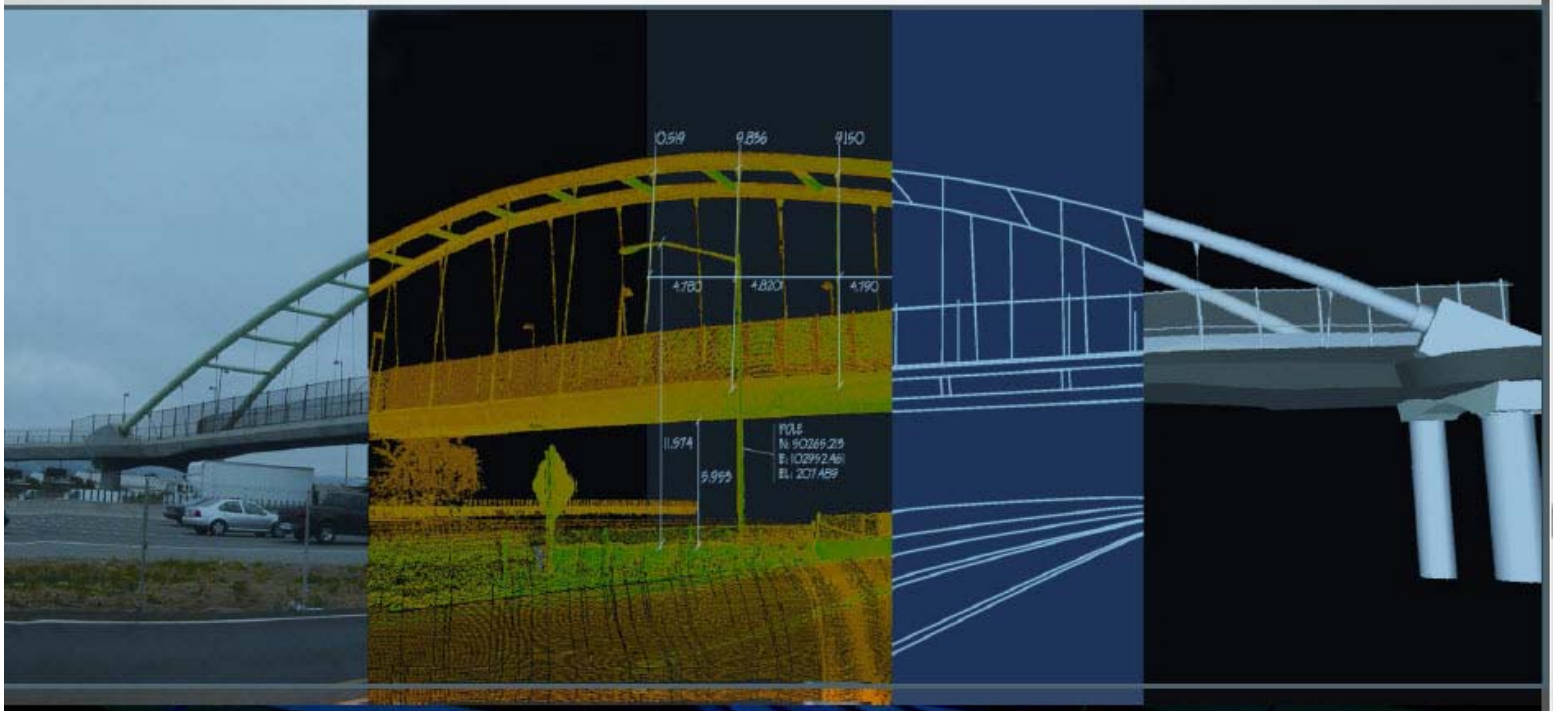
Bridge Management, Preservation, and Maintenance

Bridge Management

- Attach Information from / to Inspection Reports
- Bridge Management
- Cyclic Maintenance – Workflow
- In Service built Conditions

CIM 3D Modeling: Zoo Interchange

Design-grade/Post-construction Surveys



Other Transportation Infrastructure Information Model Initiatives

- Civil Integrated Management (CIM)
- E- Delivery
  - Automated Machine Guidance
  - Stingless Pavers
  - Models in the field for construction
- Paperless Construction

What is T-19 doing?

- Educating SCOBS members on Information Modeling
- Working with Cross AASHTO and TRB committees
- Participating with FHWA in their Information Modeling efforts
- Resourcing a 20-07 to have workshop and provide road map of next steps for a standardized format

Up Coming Events

- Today's Event

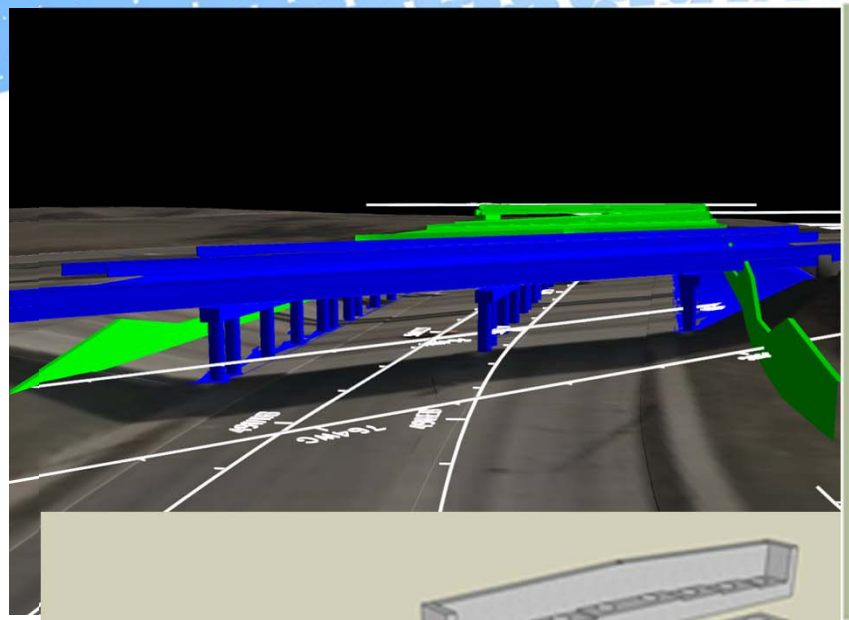
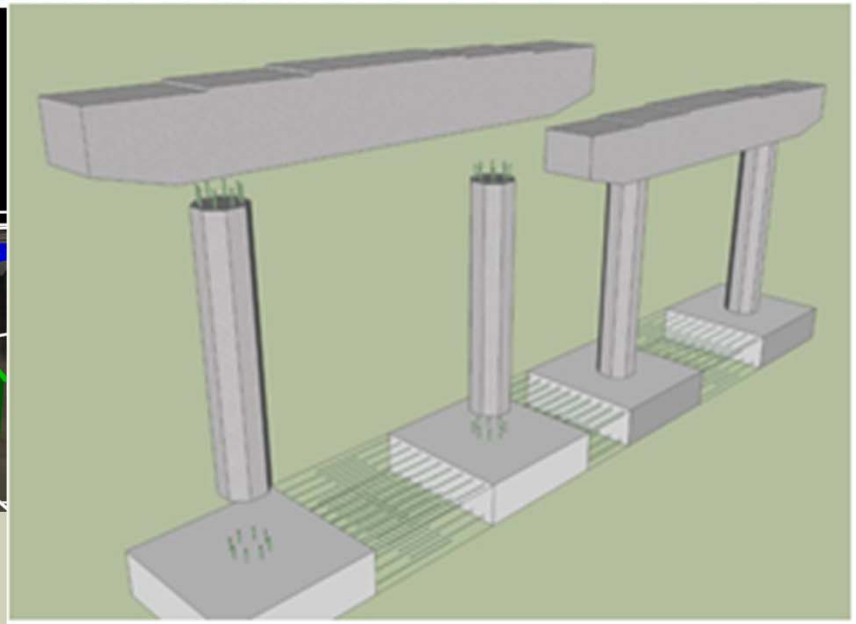
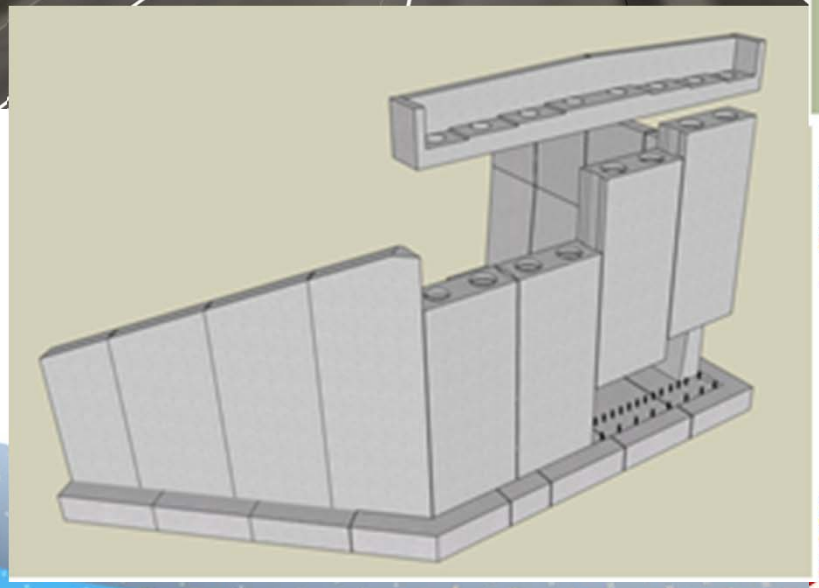
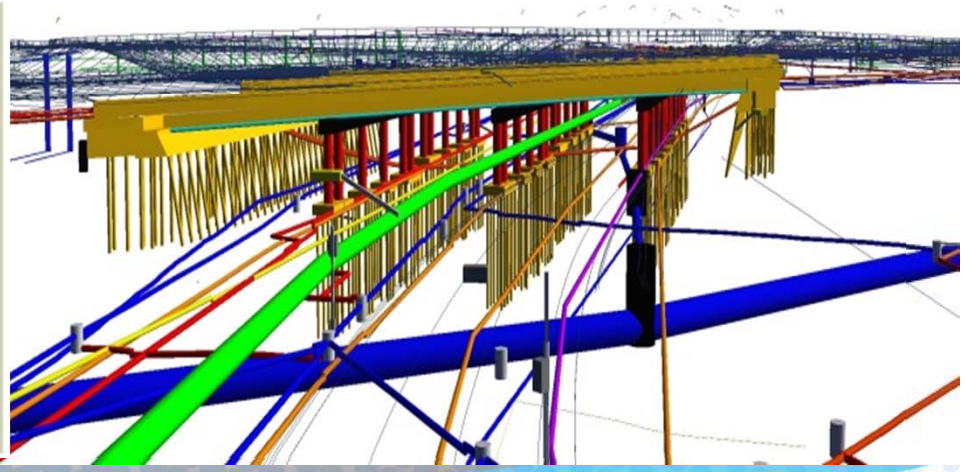
- April 20 AASHTO Subcommittee on Bridges and Structures (SCOBS) – Presentation to State Bridge Engineers

Up Coming Events

- June 11 International Bridge Conference (IBC) FHWA Workshop

- ??? National Workshop on a road map to a Standardized Bridge Information Model

What Can We Do to Foster Change?

- Get Involved
  - Participate at Events
  - Champion Change
- Require Models as deliverables for owning and operating facility
- Partner with Contracting Industry to transform industry construction of structures
  - Fabrication – early Win

Thank You