



# Decreased Costs, Increased Quality – Paving the Way with Modern Technology

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# Transportation Industry Challenges

- Economic pressure
- Volume of projects on the rise
- Tight project development timelines

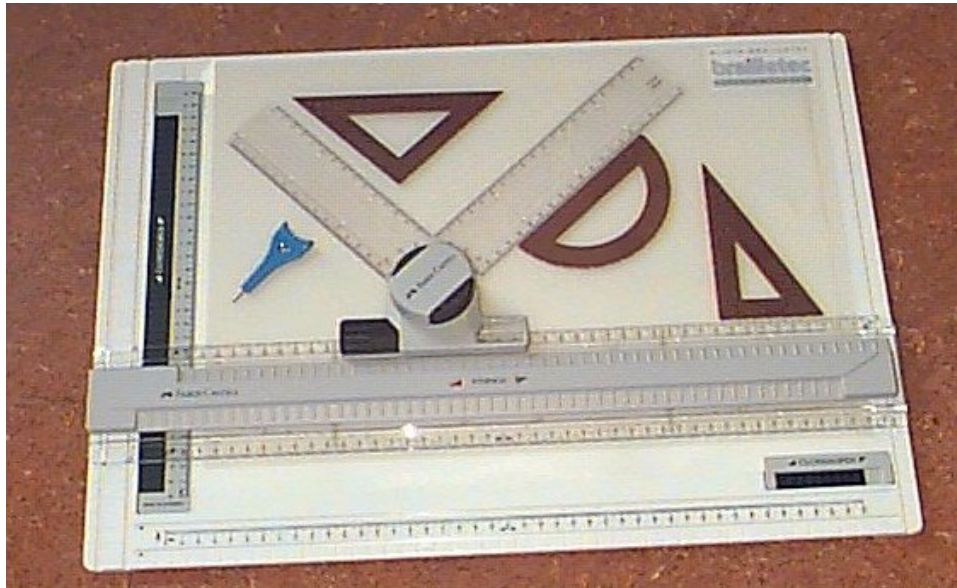


# Wish List

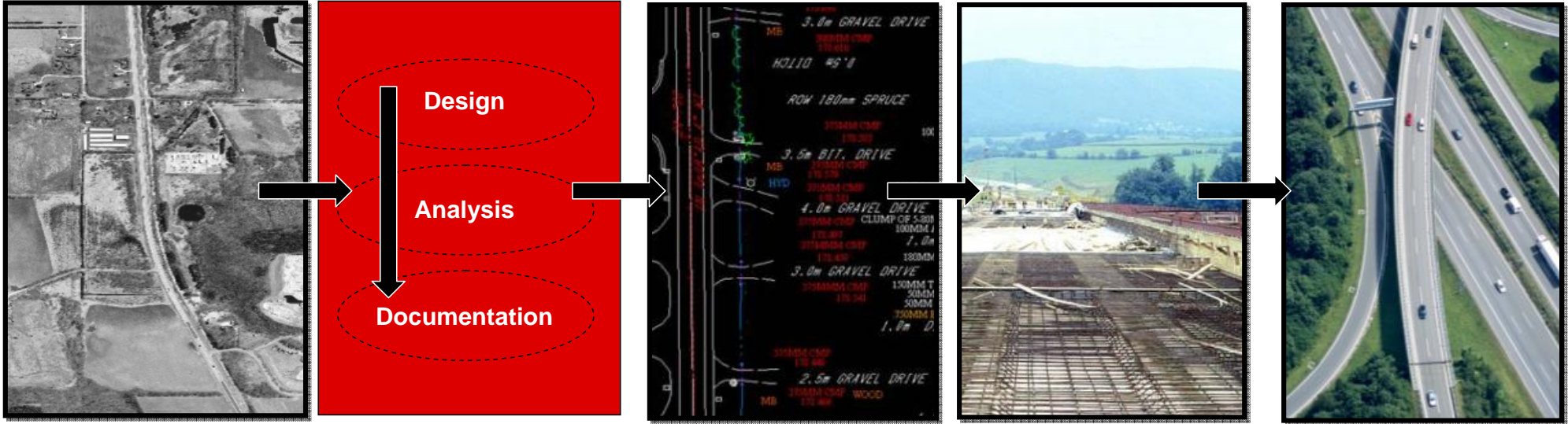
- Lower costs
- Produce high quality work
- Accelerate project schedules



# Historical Perspective: Past and Present



# Traditional Transportation Project Lifecycle



Surveying and Data Collection





# New Project Delivery Methods

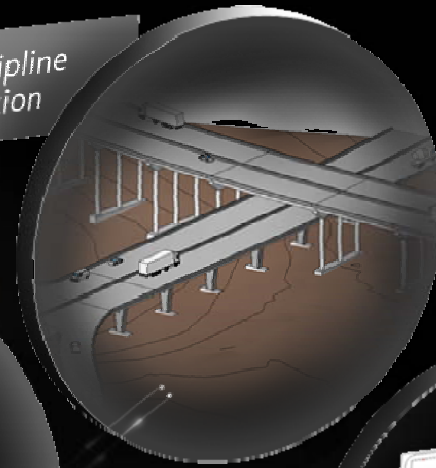


# Building Information Modeling

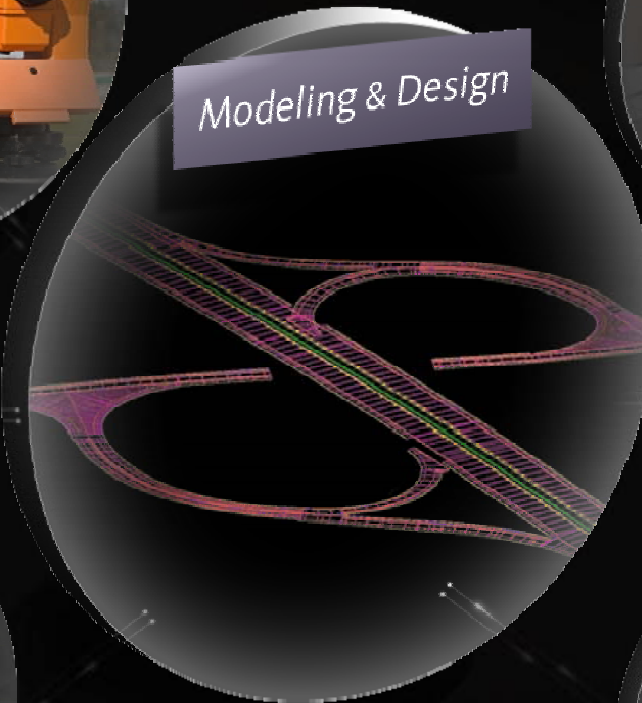
Surveying & Data  
Collection



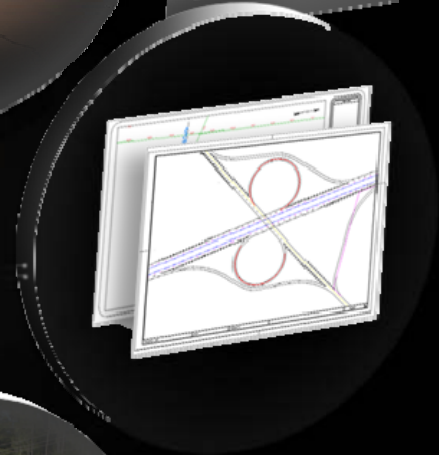
Multidiscipline  
Coordination



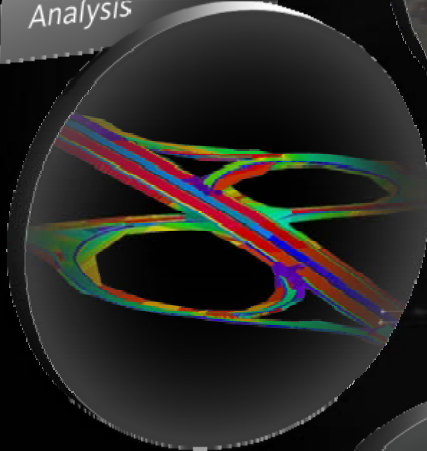
Modeling & Design



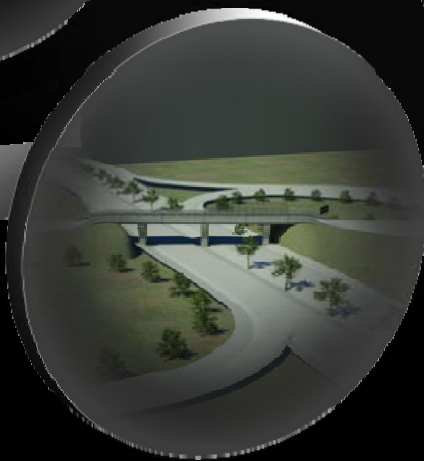
Construction  
Documentation



Simulation &  
Analysis



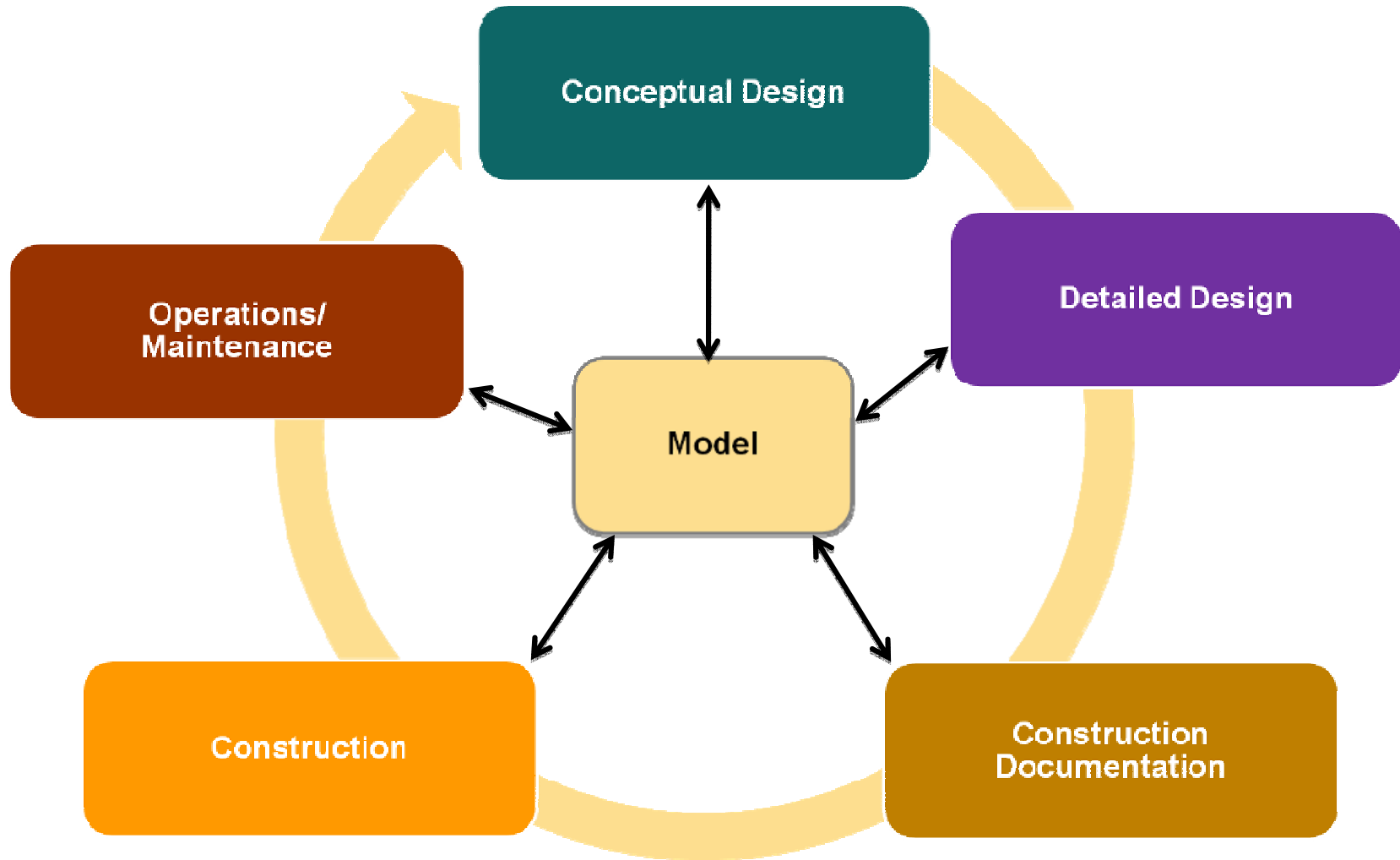
Visualization



Construction,  
Operations &  
Asset Management



# Ideal Transportation Project Lifecycle







# Improving the Design Process: The WisDOT Experience



# WisDOT Process Improvements: Objectives

- Improve design process/workflows
- Improve quality of design and construction documents
- Communicate the design intent
- Fully implement AMG
- Share information throughout various stages of the infrastructure lifecycle





# Changes/Improvements to Workflows

- Shift the focus to evaluating and selecting the optimal solution
- Complete designs more efficiently
- Improve ability to work collaboratively



## Workflow Change/Improvement

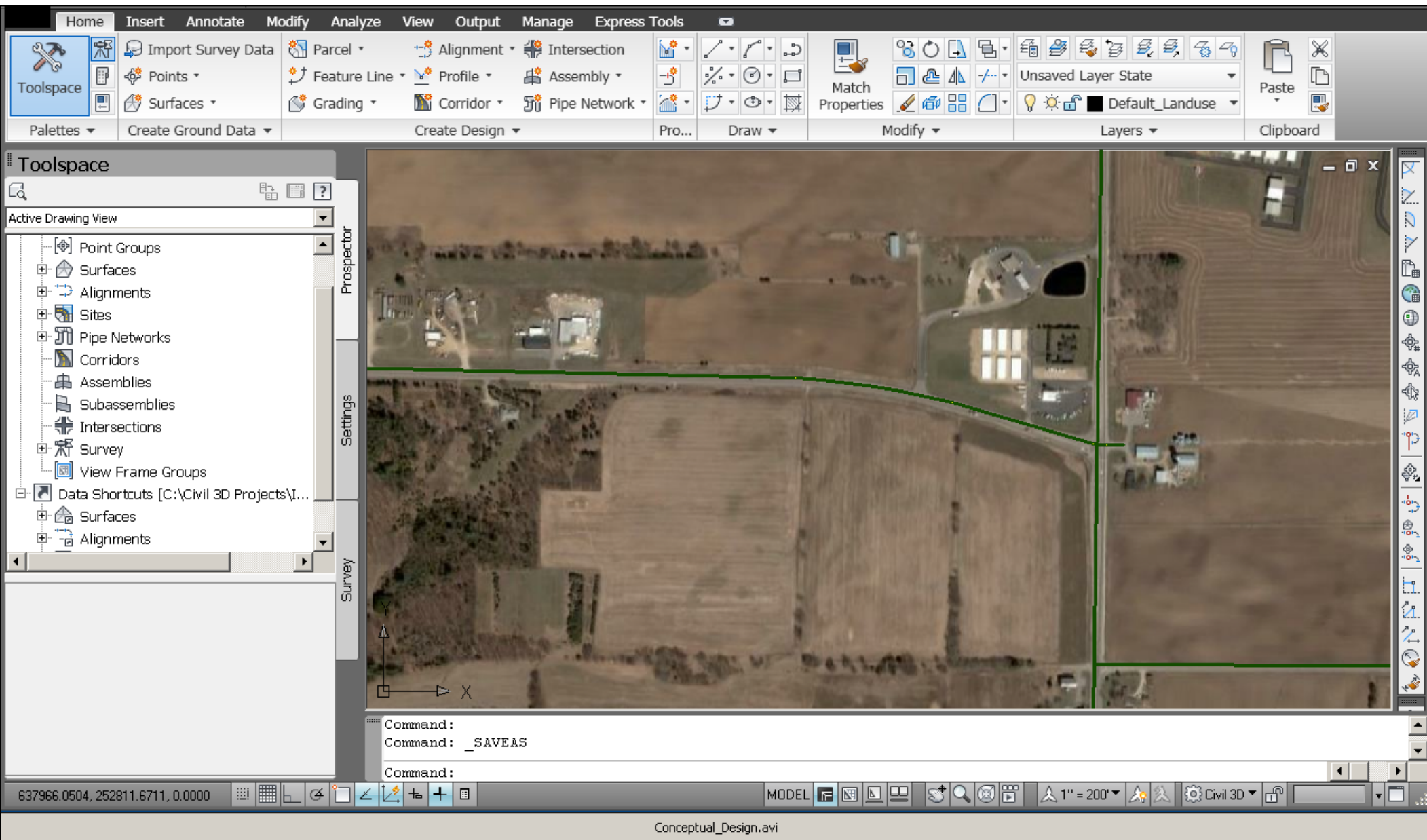
- Shift the focus to selection of the optimal solution

## Modern Technology Solution

- Reduce restriction/reluctance to evaluate multiple alternatives
- Evaluation of all viable alternatives – confidence that design selected is optimal.





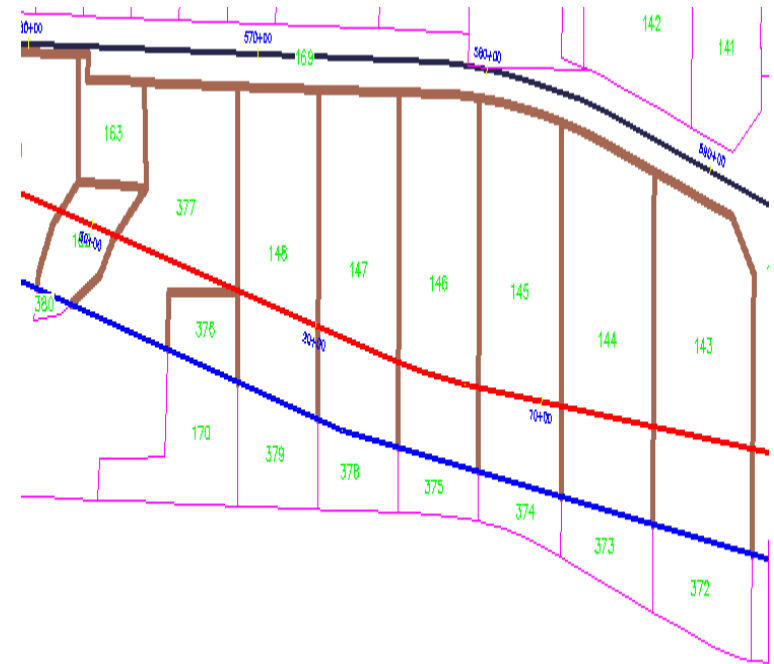


## Workflow Change/Improvement

*Complete designs in a more efficient manner.*

## Modern Technology Solution

- More 'natural' design approach – designing in 3D
- 3D model based design
- Streamlined approach to designing complex 3D design components such as intersections and interchange ramps



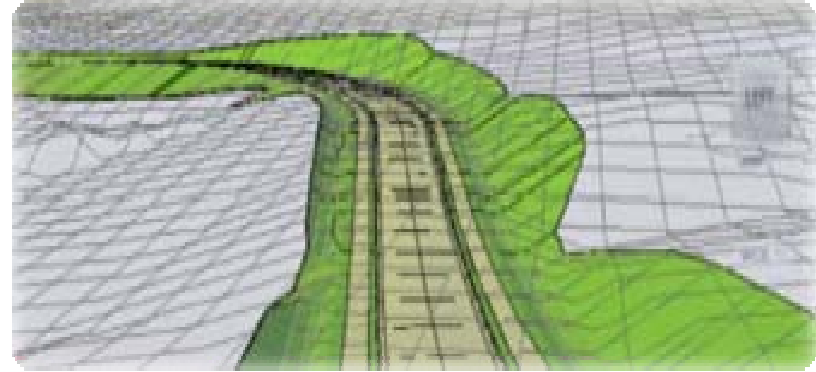


## Workflow Change/Improvement

*Improve ability to work collaboratively.*

## Modern Technology Solution

- Several consumers have access to data model.
- Relationships in the model results in dynamic updating



Home Insert Annotate Modify Analyze View Output Manage Express Tools

Toolspace Palettes Create Ground Data Create Design Pro... Draw Modify Layers Clipboard

Import Survey Data Points Surfaces Match Properties Unsaved Layer State Paste

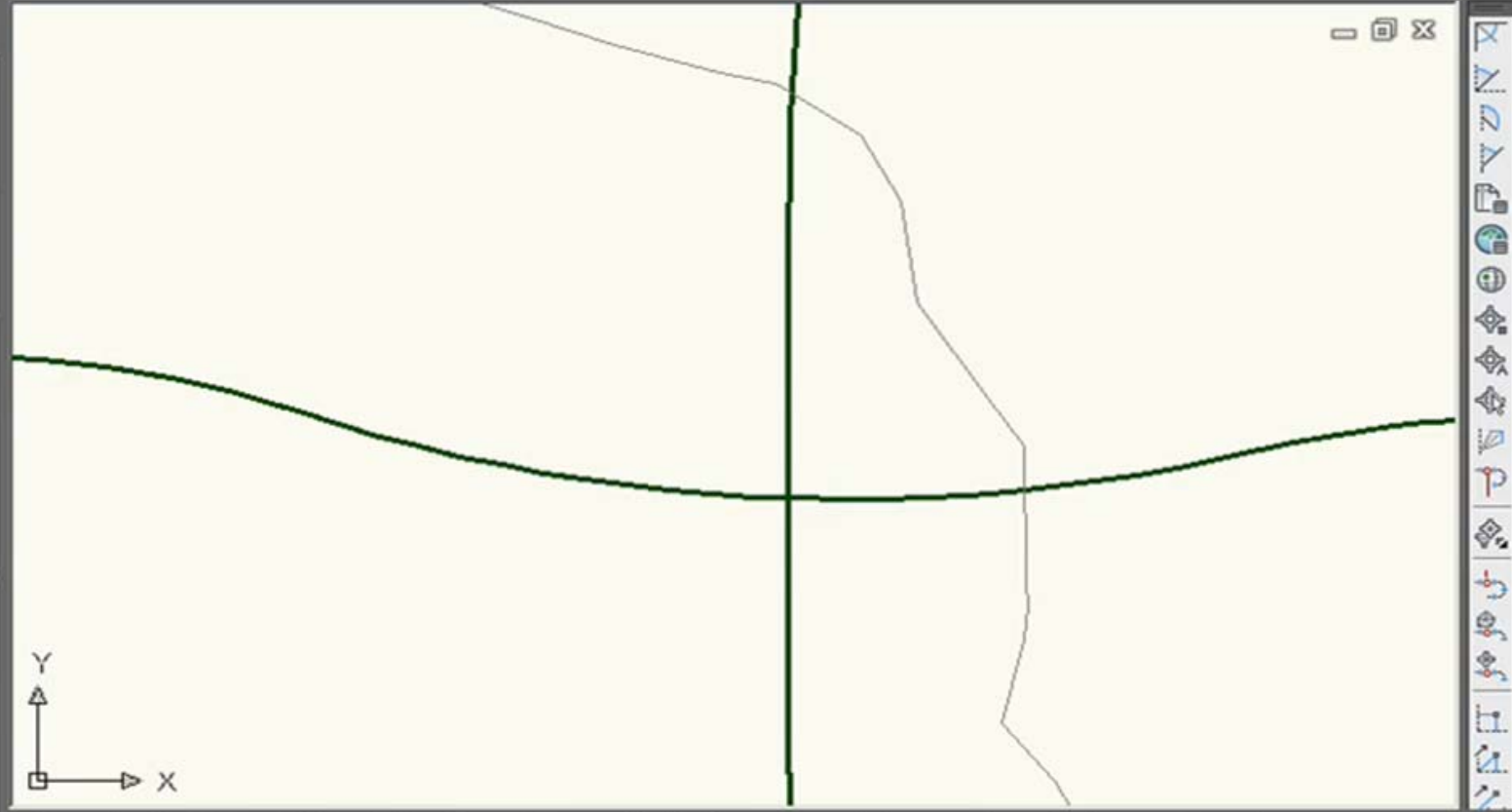
Toolspace

Active Drawing Settings View

Begin - Intersection Demo

- General
- Point
- Surface
- Parcel
- Grading
- Alignment
- Profile
- Profile View
- Sample Line
- Section
- Section View
- Mass Haul Line
- Mass Haul View
- Pipe Network
- Pipe

Prospector Settings Survey



Autodesk DWG. This file is a TrustedDWG last saved by an Autodesk application or Autodesk licensed application.

Command:

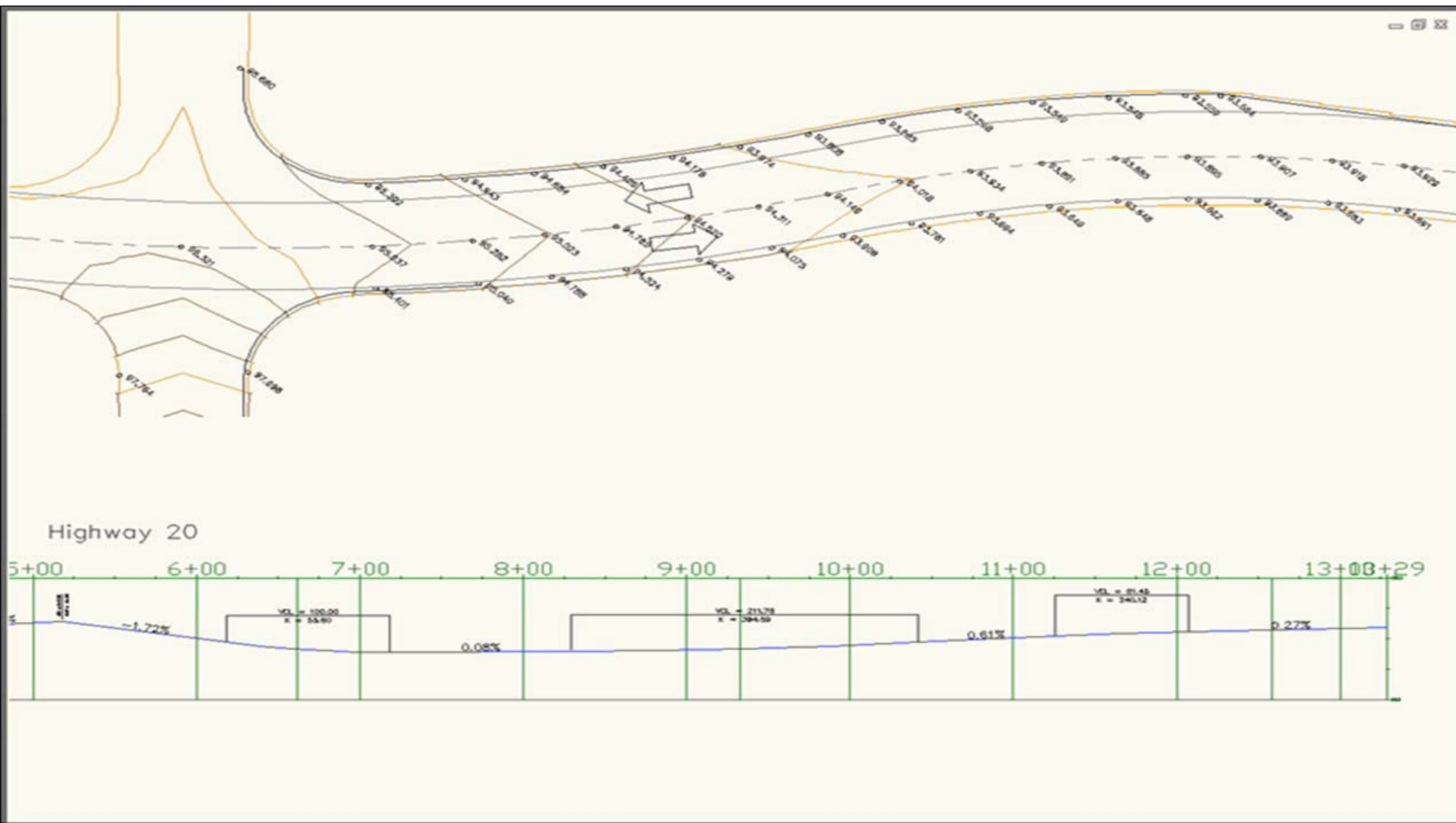


# Documentation Quality

- Better quality resulting from improved work flows
- Error reduction capabilities
- Provide more complete design information to contractors



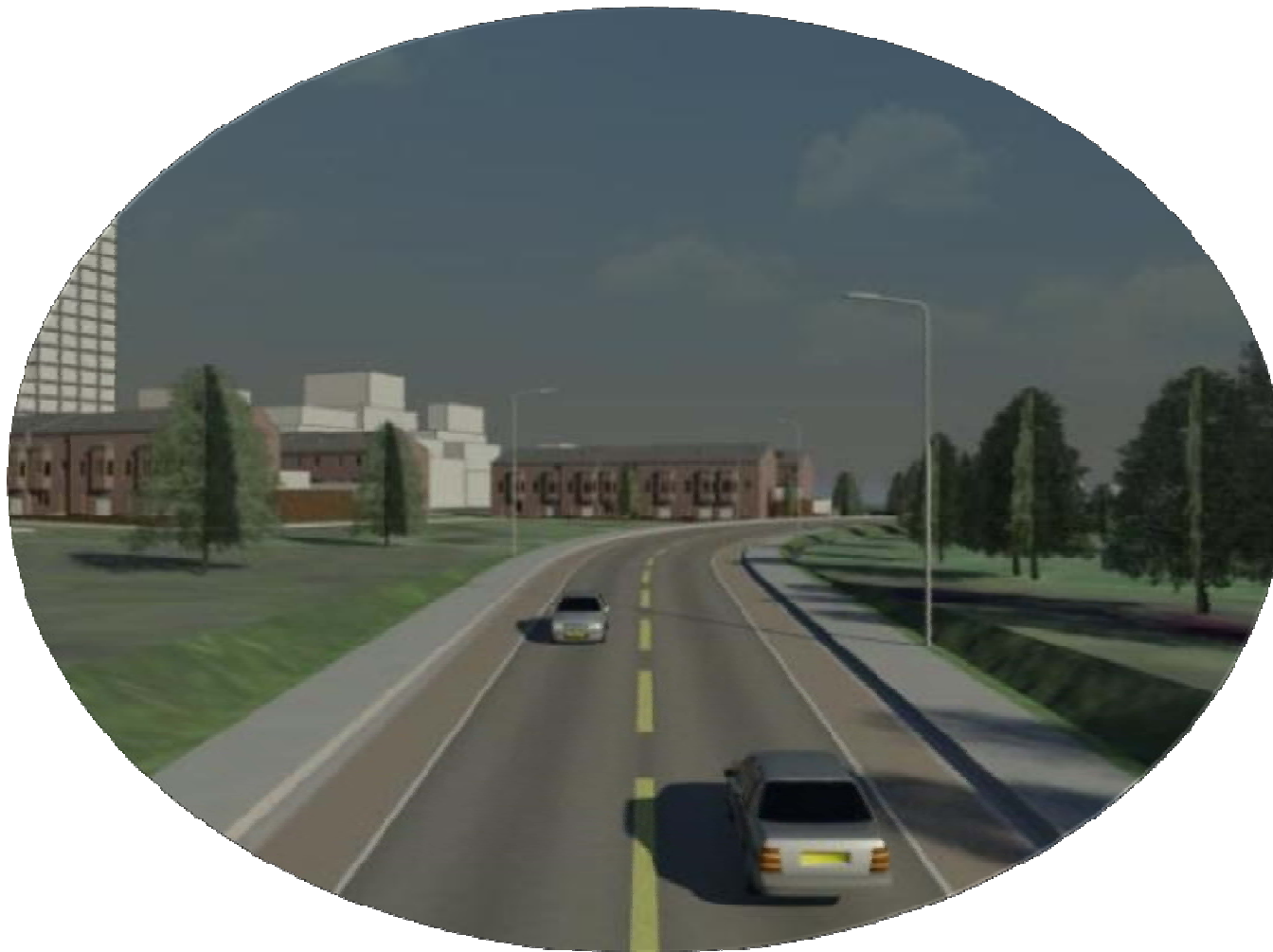


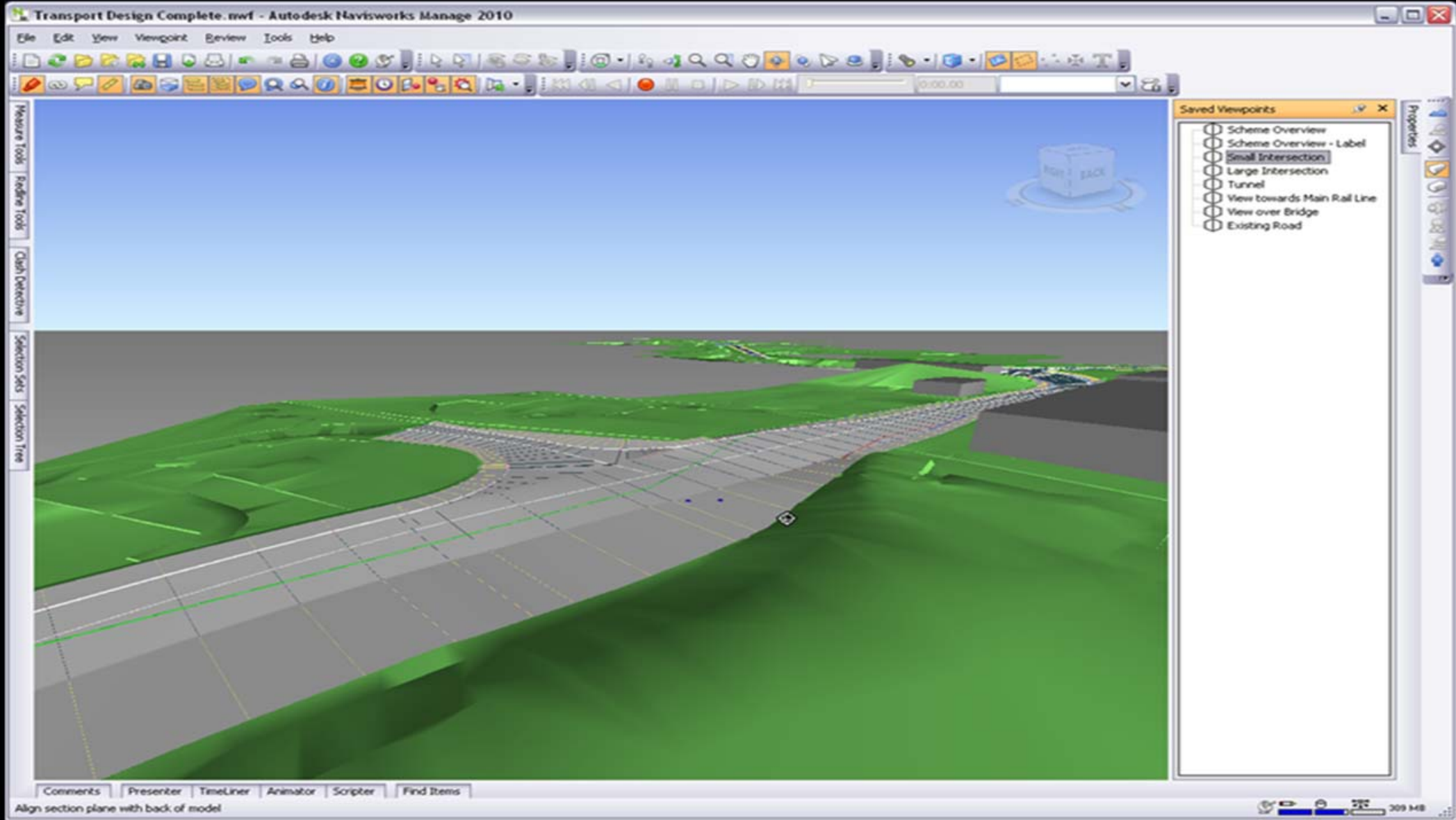


Quality\_Slide.avi



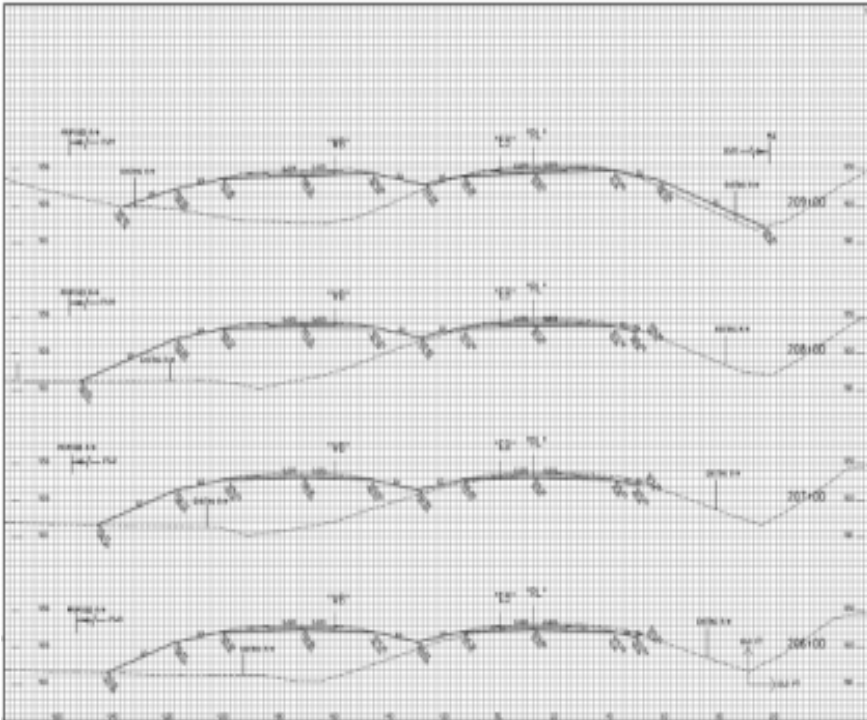
# Communicating Design Intent



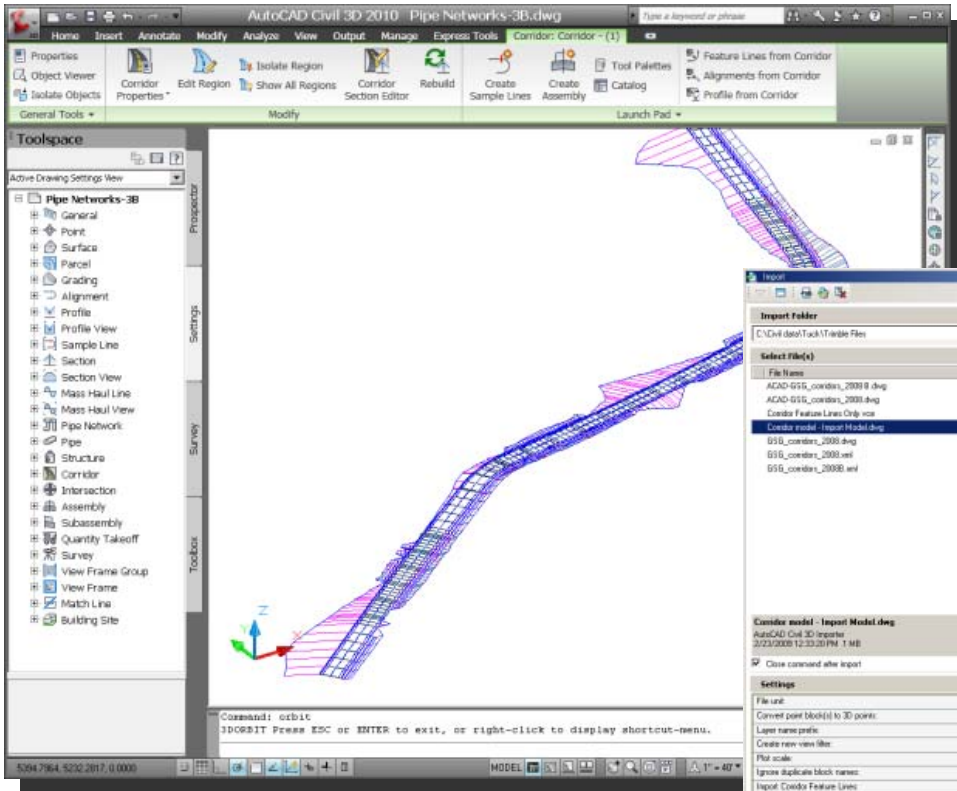




# Automated Machine Guidance

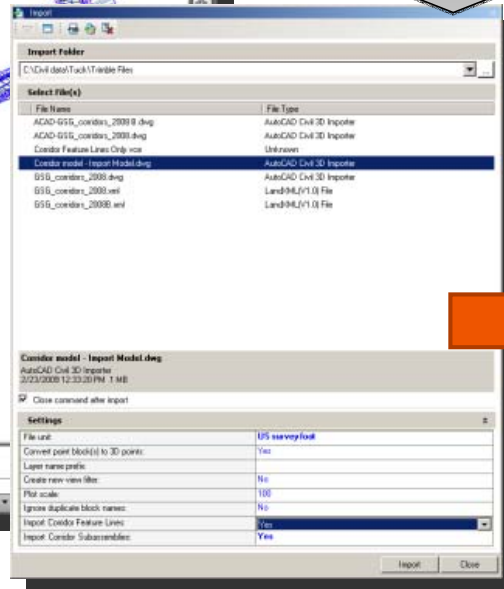


# Modern Technology Solution

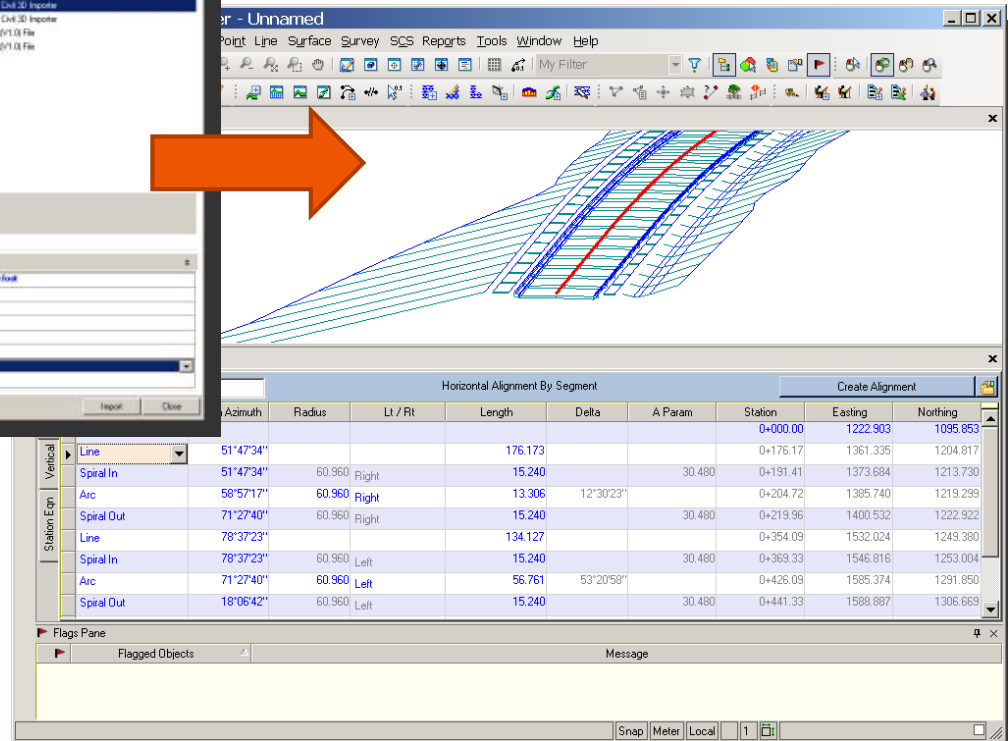


AutoCAD® Civil® 3D

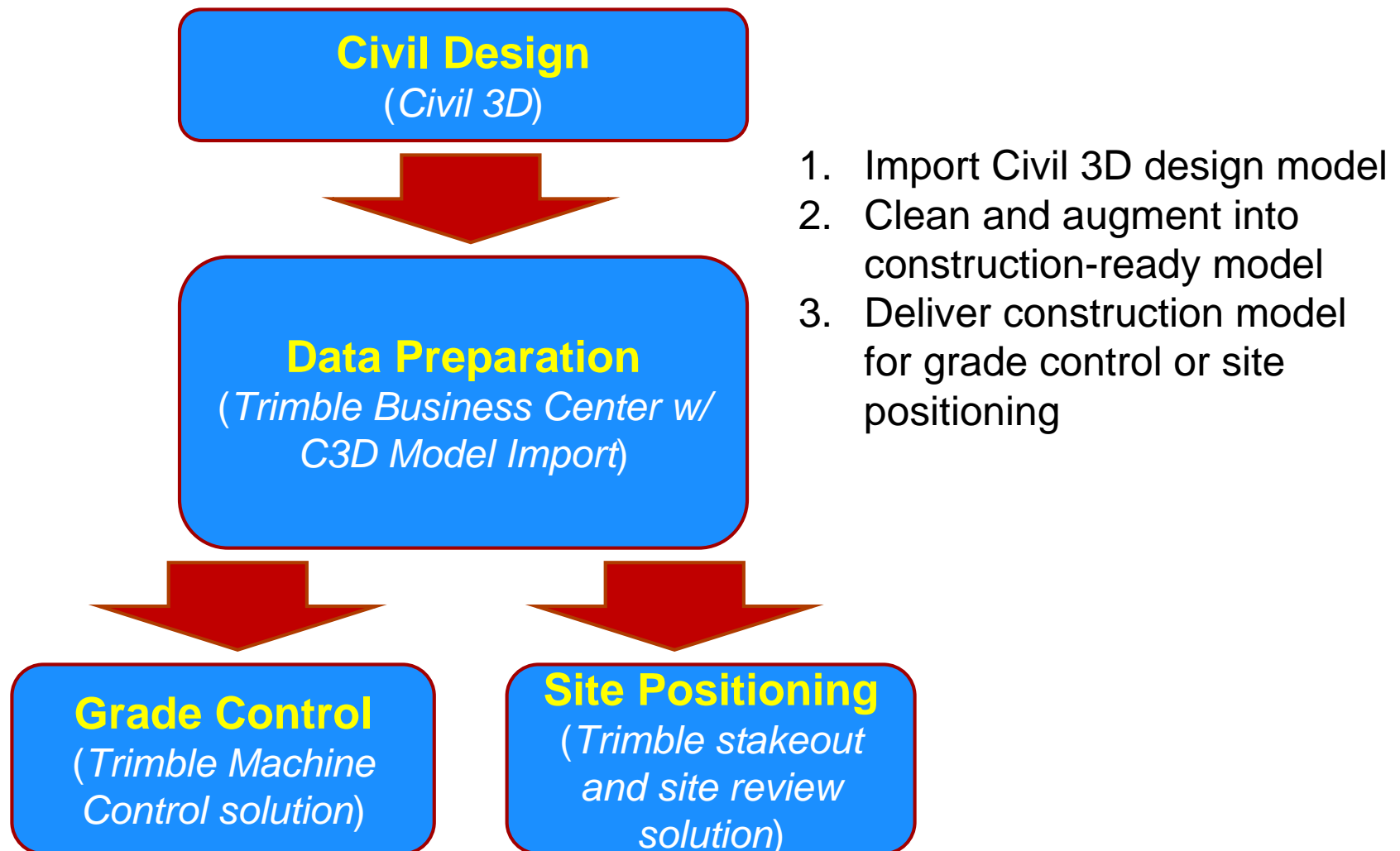
Import model directly into Trimble Business Center



Trimble® Business Center



# Retains Intelligence of Original Model





# Operations, Maintenance and Planning



# Conclusion

*Better, Faster, More Cost-Effective*

## *Modern technology solutions*

- Helps improve productivity
- Enables detailed analysis
- Enables more efficient iterative design
- Produces higher-quality designs and documentation
- Helps improve coordination and communication
- Enhances downstream value of design product

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