

# BIM FOR INFRASTRUCTURE

Driving innovation in digital delivery through  
engineered models and integrated infrastructure assets

**Michael Baker**

INTERNATIONAL



## PROVIDING MORE COMPREHENSIVE AND EFFICIENT DIGITAL INFRASTRUCTURE

The use of digital technology in the design, delivery and construction of transportation projects is rapidly evolving. Many federal and state agencies are recognizing the benefits of the tools in improving the way projects are managed and delivered.

At Michael Baker International, our team of technology experts has been a leader in providing digital support services. We are applying our knowledge and experience to assist departments of transportation (DOTs) and other clients across the country in implementing a variety of digital solutions, including 3D design, software standardization and workflows, planning and delivering digital pilot projects and implementing appropriate training.

Our expertise extends to all areas of the digital landscape identified in the adjacent visual. From engineered models to digital delivery and beyond, we are helping clients implement new technology tools that promote collaboration and efficiency throughout the project life cycle.

*We Make a Difference*

## KEY COMPONENTS OF BIM FOR INFRASTRUCTURE

### ENGINEERED MODEL

Engineered modeling, often combined with the related topic of Building Information Modeling (BIM), is the development of accurate, multidisciplinary 3D models that add value by leveraging mature technology to promote quality, collaboration and efficiency.

### DIGITAL DELIVERY

Digital delivery incorporates the data from engineered models into contract documents that are used directly in construction.

### MODEL WORKSPACE

Workspace customization is a key foundational step for successful utilization of this technology.

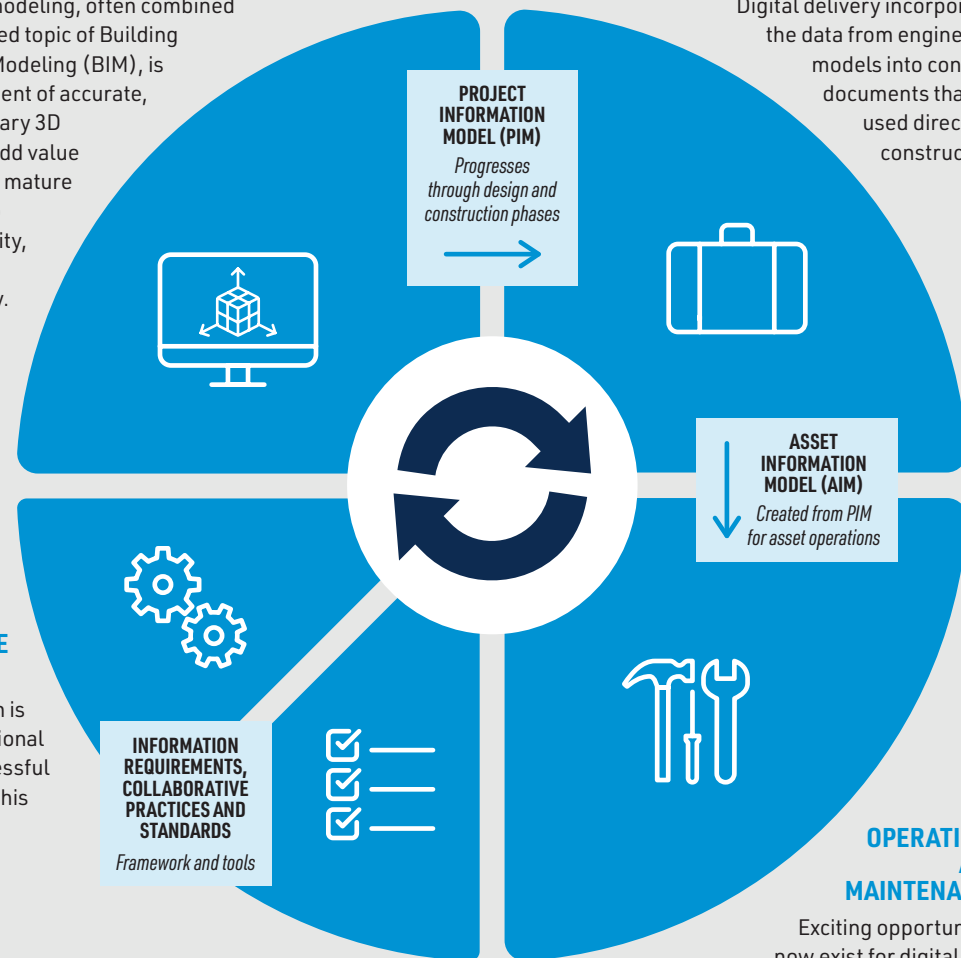
**INFORMATION REQUIREMENTS, COLLABORATIVE PRACTICES AND STANDARDS**  
*Framework and tools*

### DIGITAL STANDARDS

Integration of industry and organizational standards for individualized workflows and documentation.

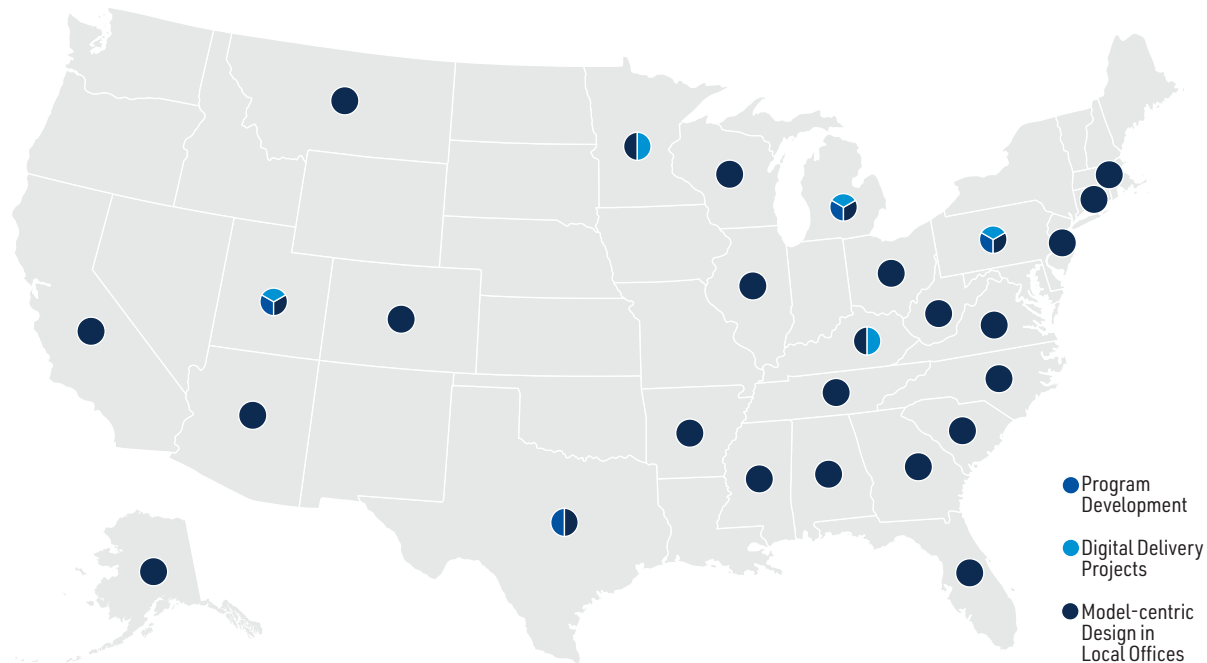
### OPERATIONS AND MAINTENANCE

Exciting opportunities now exist for digital twin use in asset management.



## HELPING TO PREPARE AND POSITION TRANSPORTATION ASSET OWNERS TO REALIZE THE BENEFITS OF THE DIGITAL DATA WINDFALL.

Michael Baker experience throughout the country in model-centric design workflows and digital delivery.



## DEVELOPING FUTURE-FOCUSED DIGITAL ASSETS UTILIZING TODAY'S TECHNOLOGY FOR TOMORROW'S NEEDS.

3D Model Development for the Emergency Repair of the I-40 Hernando de Soto Bridge over the Mississippi River.

## CAPABILITIES

Augmented & Virtual Reality

Custom Training & Material Development

Digital Delivery

Integration of LiDAR & Unmanned Aircraft Systems (UAS) Products into Federated Models

Involvement in:

- American Association of State Highway and Transportation Officials
- American Council of Engineering Companies
- BIM Forum
- buildingSMART USA
- Transportation Research Board

Models as the Contract Document

Model Development & Review Processes

Model Implementation & Project Integration

Procedures for Design & Construction Planning

Robust Digital QA/QC Process

Workspace Development & Adapted Workflows

3D, 4D & 5D Modeling, Animation & Rendering












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# CONTACT

John Wilkerson, P.E.  
 Director, Digital Delivery  
 P: 517-610-6736  
 E: john.wilkerson@mbakerintl.com



## PROJECT KEY

- |   |  |
|---|--|
|  Drainage                                 |  Roadway    |
|  Environmental                            |  Structures |
|  Geotechnical                             |  Survey     |
|  Inspection                               |  UAS        |
|  Intelligent Transportation Systems (ITS) |  Utility    |
|  Maintenance of Traffic                   |  |

We Make a Difference

# REPRESENTATIVE PROJECTS

## I-80 Blackrock (Utah DOT) Digital Delivery Pilot Project

Prime consultant for UDOT's first project to include all disciplines in the Model Based Design Construction (MBDC) initiative delivering fully digital documents for review and construction. Work included developing a new workflow for digital utility data.



## 5600 W. RR Crossing (Utah DOT) Digital Delivery Pilot Project

Prime consultant for UDOT's first design-bid-build project to incorporate all disciplines in digital delivery, furthering the information, guidance and processes materials for delivering 3D models as the contract document.



## TH 169 Elk River (Minnesota DOT) Digital Delivery Pilot Project

As a sub-consultant, Michael Baker provided interchange and bridge design and coordination oversight for MnDOT's first digital delivery project. Michael Baker worked with partners to develop the roadway and bridge staging alternatives.



## PennDOT OpenBridge Designer (OBD) Development (Pennsylvania DOT) Digital Delivery Program Management and Development

Prime consultant for the development of OBD workspace, user guides and training courses in support of the PennDOT 3D2025 initiative to deliver and bid construction projects with 3D digital technology.



## OpenRoads Training and Sample Plans (Michigan DOT) Digital Delivery Training Development

Prime consultant for developing training documents and videos for in-person and self-paced training for MDOT OpenRoads Designer workspace and creating sample plans to guide designers in the plan presentation requirements for use with the new design program.



## I-696 Over Rouge River (Michigan DOT) Digital Delivery Pilot Project

Prime consultant for Michigan's first digital delivery pilot project using the model as the contract documents. Multidiscipline coordination, including 3D drainage and boring log information, was provided in this innovative method for combining and linking data in a simple and easy-to-consume digital format.



## Hernando de Soto Bridge Emergency Repairs Model-Centric Rapid Response Design (Tennessee DOT and Arkansas DOT)

Prime consultant and lead inspectors for this emergency response repair of a major crossing of the Mississippi River. A model of the existing bridge and proposed repairs was developed for engineering-grade visualizations, clash detection and geometric design of repair components, repair and fabrication drawings and comparison with point cloud data.

