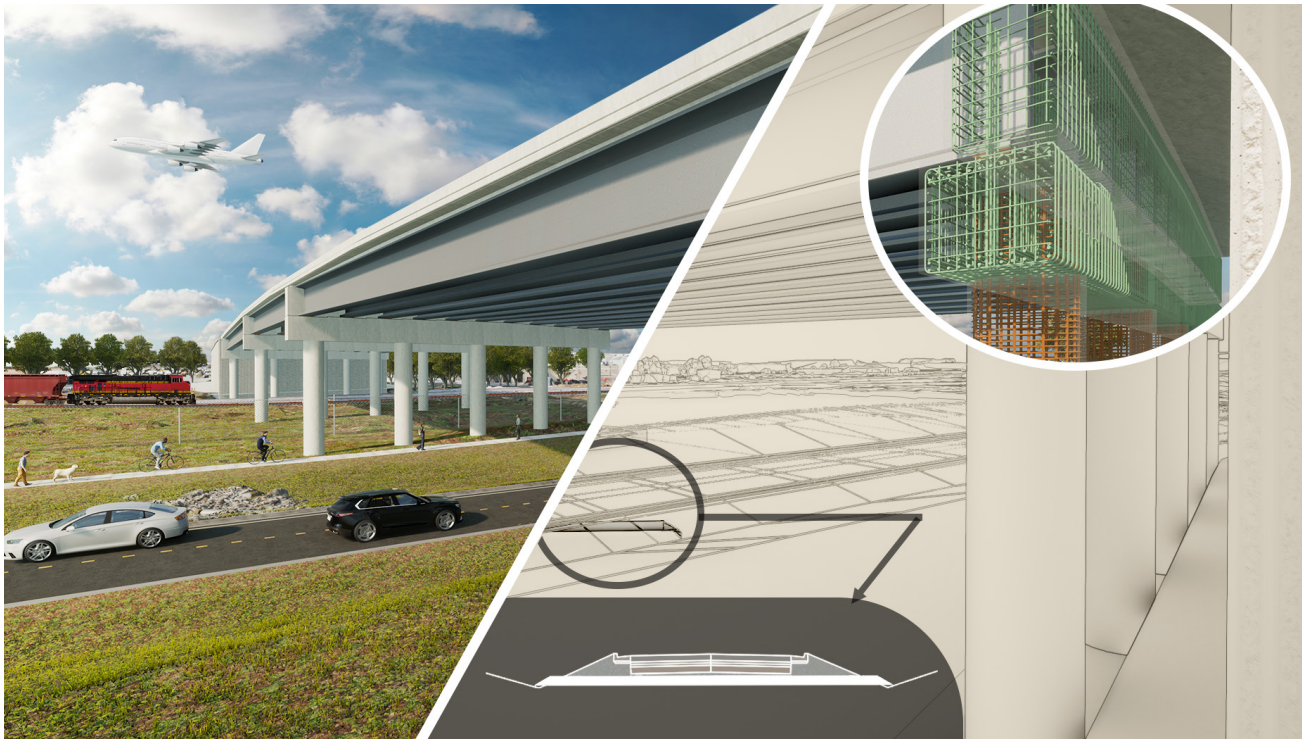
VIRTUAL DESIGN AND CONSTRUCTION

Digital Twins for Transportation Infrastructure



ENHANCE TRANSPORTATION INFRASTRUCTURE WITH DIGITAL TWIN SERVICES

Michael Baker International's digital twin services offer departments of transportation (DOTs) a transformative approach to managing and optimizing infrastructure assets. By creating a virtual replica of physical assets, agencies can access aggregated infrastructure data from a single system through the digital twin's visual interface.

This technology provides valuable insights into the infrastructure asset's performance and condition throughout its lifecycle, leading to improved decision-making and enhanced operational efficiency. With digital twins, transportation agencies can simulate various scenarios, predict potential issues and implement preventive measures, ultimately lowering downtime, reducing risk and extending the lifespan of assets.

WHY MICHAEL BAKER?

Specialized Credentials & Expertise

Our team of technology experts are leading digital transformation strategies for DOTs nationwide, revolutionizing the design, construction and management of our infrastructure assets. Our advanced technology expertise encompasses a wide variety of capabilities, as well as digital delivery standardization, which streamline the collection, aggregation, visualization and analysis across all asset data sources.

Vendor Partnerships

Our extensive partnerships and experience with various technology vendors, such as Bentley, Autodesk and Esri, enable us to develop flexible, custom solutions tailored to our clients' unique needs. This approach empowers clients to own and maintain their data, enabling them to make the best decisions for their agencies.

CAPABILITIES

- 3D Visualization
- Application Programming Interface (API) Development
- Artificial Intelligence (AI)/Machine Learning (ML) for Predictive Analytics & Maintenance
- Asset Management Platform Integration
- Augmented Reality (AR) /Virtual Reality (VR)/Extended Reality (ER)
- Big Data Processing & Analysis
- Building Information Modeling (BIM)/ Virtual Design & Construction for Infrastructure
- Cloud Infrastructure & Edge Computing
- Custom Solutions & Application Development
- Cybersecurity, Industrial Control Systems (ICS) & Operational Technology (OT) Cyber Expertise
- Data Automation & Analytics
- Data Encryption & Access Control
- Data Lake Architecture
- Digital Delivery Data Standards & Exchanges
- Enterprise System Architecture
- Extract, Transform & Load Processing
- Geographic Information System (GIS) & Spatial Analytics
- Internet of Things (IoT) Sensor Integration
- LiDAR for 3D Bridge Modeling, Inspections & Scan to BIM
- Load Rating Analytics
- Smart Corridors & Cities
- Web & Mobile Application Development

CONTACT

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Visit mbakerintl.com/practices/virtual-design-and-construction to learn more about our services.

Michael Baker INTERNATIONAL

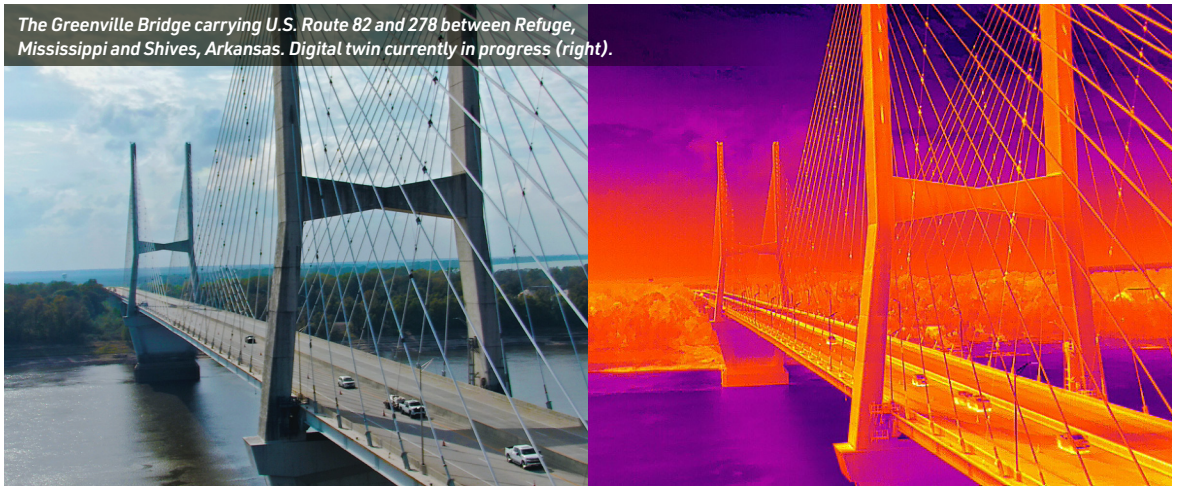
EXPERTISE & STAFF CREDENTIALS

With their advanced knowledge and commitment to excellence, Michael Baker certified professionals play a crucial role in maintaining our reputation as an industry leader.

- American Society for Photogrammetry and Remote Sensing (ASPRS) Certified Photogrammetrist
- Bentley Accredited Developer for iTwin Platform
- Bentley Premier Scholar for OpenRoads Designer and Open Bridge Modeler
- Certified Geographic Information Systems Professionals (GISP)
- ICS/OT Cybersecurity Professionals
- ISO19650 Certified Professionals

Interactive 3D model of Steese-Johansen Parkway Diverging Diamond Interchange / Fairbanks, Alaska

Michael Baker
INTERNATIONAL



The Greenville Bridge carrying U.S. Route 82 and 278 between Refuge, Mississippi and Shives, Arkansas. Digital twin currently in progress (right).

KEY OFFERINGS

Full-Service Digital Capabilities

Michael Baker's full-service digital consulting strategy ensures that we can support our clients both now and in the future. We provide user adaptation and change management services, as well as staff augmentation to plan, develop and maintain digital twins, integrating them into policies and procedures. In the long term, we offer ongoing education to successfully embed these solutions into the culture and routine operations of client organizations.

Focus on Resilience and Sustainability

Our digital twin services help DOTs achieve sustainability and resilience goals by effectively tracking and managing environmental impacts. These services ensure regulatory compliance and mitigate risks.

Comprehensive Public Safety Services

We use digital twins to help transportation departments optimize traffic flow, reduce congestion and enhance safety, thereby minimizing risk and liability. Our remote monitoring and control of infrastructure assets, along with emergency scenario modeling, enable swift emergency responses and better disaster recovery coordination. Also, our geospatial experts within DATAMARK Technologies enhance public safety services by providing the only fully interoperable suite of Next Generation 9-1-1 (NG9-1-1) location solutions.

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