



Quarterly Work Zone Webinar

May 30, 2013

Accelerated Construction

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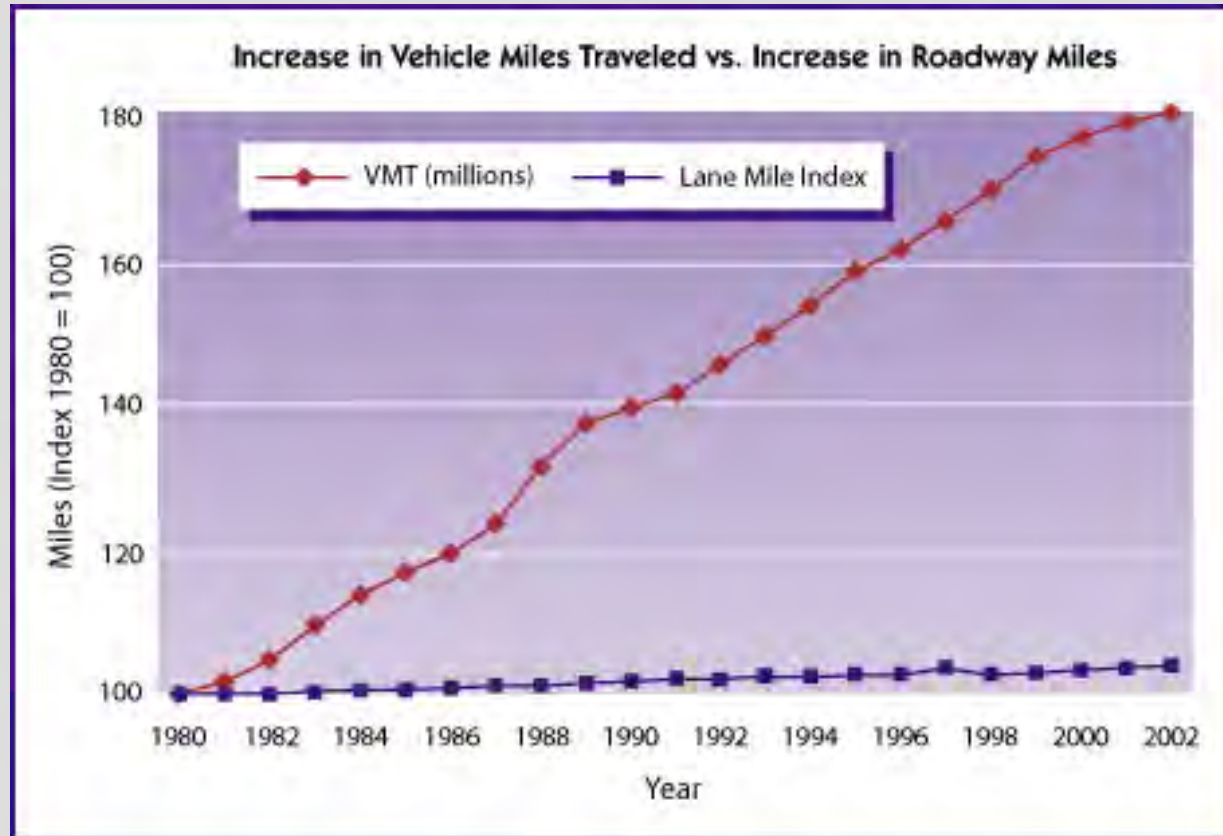


Agenda

- History
- Accelerated Construction Options
- Benefits
- Success Stories
- Questions



History



History

- Accelerated Construction Technology Transfer started in 1999.
- Construction practices that speed project delivery.
- Management practices that minimize the duration of work zone occupation.



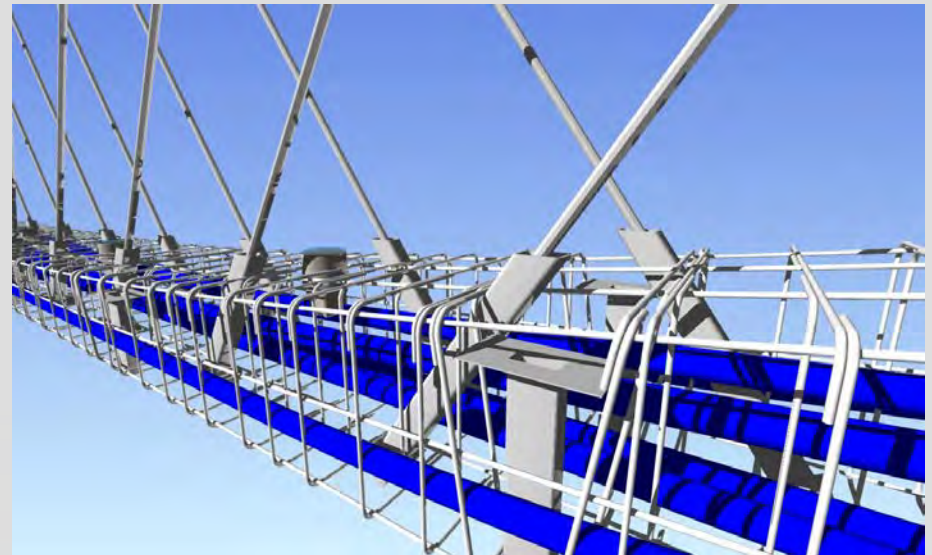
Accelerating Construction Options

- 3D Engineered Models for Construction
- Accelerated Bridge Construction
- Construction Manager / General Contractor
- Design Build – (including Alternative Technical Concepts)
- Intelligent Compaction
- Prefabricated Concrete Panels

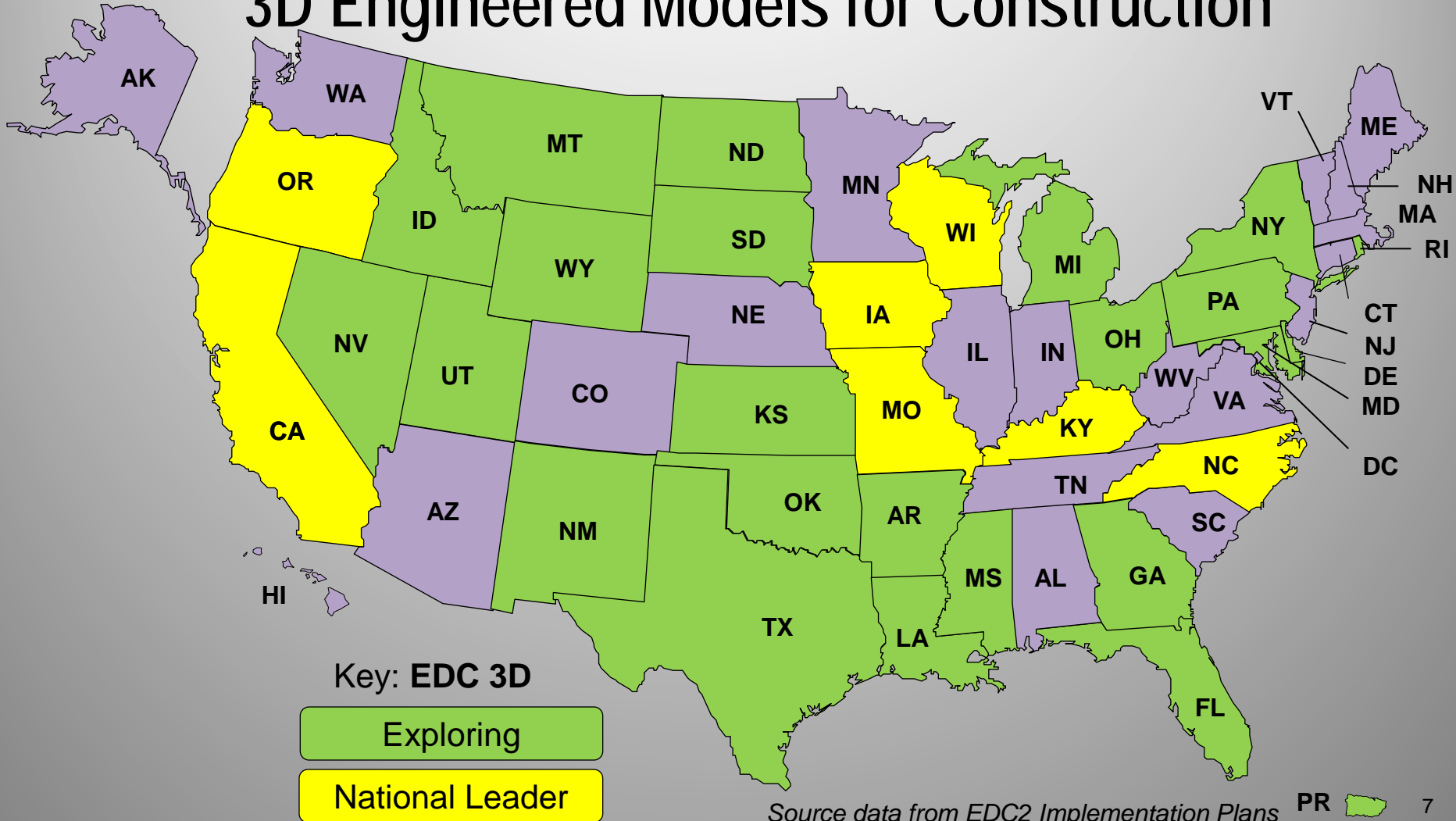


3D Modeling

- Can increase some construction operations by up to 50%



States Exploring 3D Engineered Models for Construction



4D Modeling - Scheduling



North End 5.18.10.sp - Synchro

File Edit View 3D Play Windows Tools Help

Install Finish to start

Navigator Animations North End

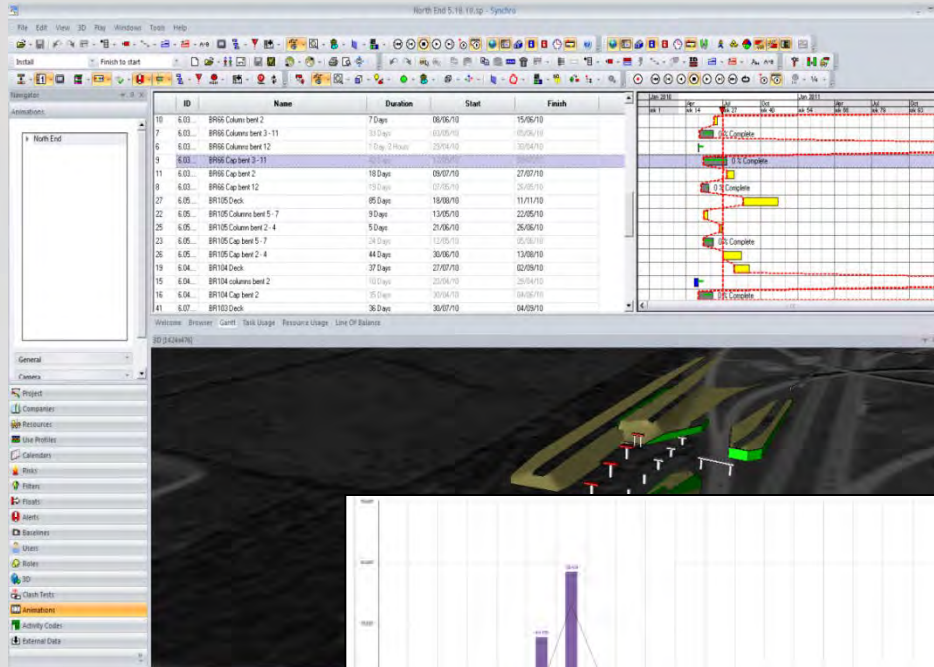
ID	Name	Duration	Start	Finish
10	6.03... BR66 Columns bent 2	7 Days	08/06/10	15/06/10
7	6.03... BR66 Columns bent 3 - 11	33 Days	03/05/10	05/06/10
6	6.03... BR66 Columns bent 12	1 Day, 2 Hours	23/04/10	30/04/10
9	6.03... BR66 Cap bent 3 - 11	42 Days	12/05/10	19/07/10
11	6.03... BR66 Cap bent 2	18 Days	09/07/10	27/07/10
8	6.03... BR66 Cap bent 12	19 Days	07/05/10	26/05/10
27	6.05... BR105 Deck	85 Days	18/08/10	11/11/10
22	6.05... BR105 Columns bent 5 - 7	9 Days	13/05/10	22/05/10
25	6.05... BR105 Column bent 2 - 4	5 Days	21/06/10	26/06/10
23	6.05... BR105 Cap bent 5 - 7	24 Days	12/05/10	05/06/10
26	6.05... BR105 Cap bent 2 - 4	44 Days	30/06/10	13/08/10
19	6.04... BR104 Deck	37 Days	27/07/10	02/09/10
15	6.04... BR104 columns bent 2	10 Days	20/04/10	29/04/10
16	6.04... BR104 Cap bent 2	35 Days	30/04/10	04/06/10
41	6.07... BR103 Deck	36 Days	30/07/10	04/09/10

3D [1424376]

General Camera Project Companies Resources Use Profiles Calendars Risks Filters Floats Alerts Baselines Users Roles 3D Clash Tests Animations Activity Codes External Data

Baseline Selected Tasks Filter Off 30/06/10 Private Project Transactions: 113 Administrator

5D Modeling – Cost Estimating



Accelerated Bridge Construction

- Prefabricated Bridge Elements and Systems
- Slide-In Bridge Construction
- Geosynthetic Reinforced Soil



Prefabricated Bridge elements and systems (PBES)

- Offers a wide range of advantages, including savings in cost and time, enhanced safety for both construction workers and the driving public, increased quality, and potential for cost savings.
- 2500 replacement bridges



39 states and 3 FLH Divisions have used PBES in at least one bridge project

Slide in Bridge

- A bridge is built adjacent to an old structure and slid into place once the old facility is removed.



Geosynthetic Reinforced Soil - Integrated Bridge System (GRS-IBS)

- Technology uses alternating layers of compacted granular fill and fabric sheets of geotextile reinforcement to provide support for the bridge.



90 GRS-IBS bridges have been designed or constructed.

Construction Manager/ General Contractor (CM/GC)

- Owner hires a contractor to provide feedback during the design phase, before the start of construction they may stay on for construction.
- 20 projects advanced over the past 3 years; 25 planned over the next 2 years



18 States have laws/policies allowing CM/GC contracting;
20 projects

Design Build

- 25 DOTs and 1 FLH division have each administered more than 3 DB projects in the past two years
- **Alternative Technical Concept**



29 States have expanded their DB Statutory authority

Intelligent Compaction

- Modern approach to compaction
 - special vibratory rollers equipped with accelerometers,
 - an integrated measurement system,
 - a map based Global Positioning System– (GPS–),
 - onboard display and computer reporting system
- Overall result more consistent pavement that can be constructed more quickly than traditional methods.



Prefabricated Concrete Panels

- Concrete panels are precast in a controlled environment, brought on site and for assembly and placement.
- Smaller/ simple bridges can be replaced in as little as 12 days as opposed to 100 days.
- Concrete panels on roadways can be replaced expeditiously.



Accelerated Construction Benefits

Maintenance of Traffic

Work Zone Safety

Reduced User Delays

Life-Cycle Cost

Sustainability

Economic Impacts

Environmental Impacts

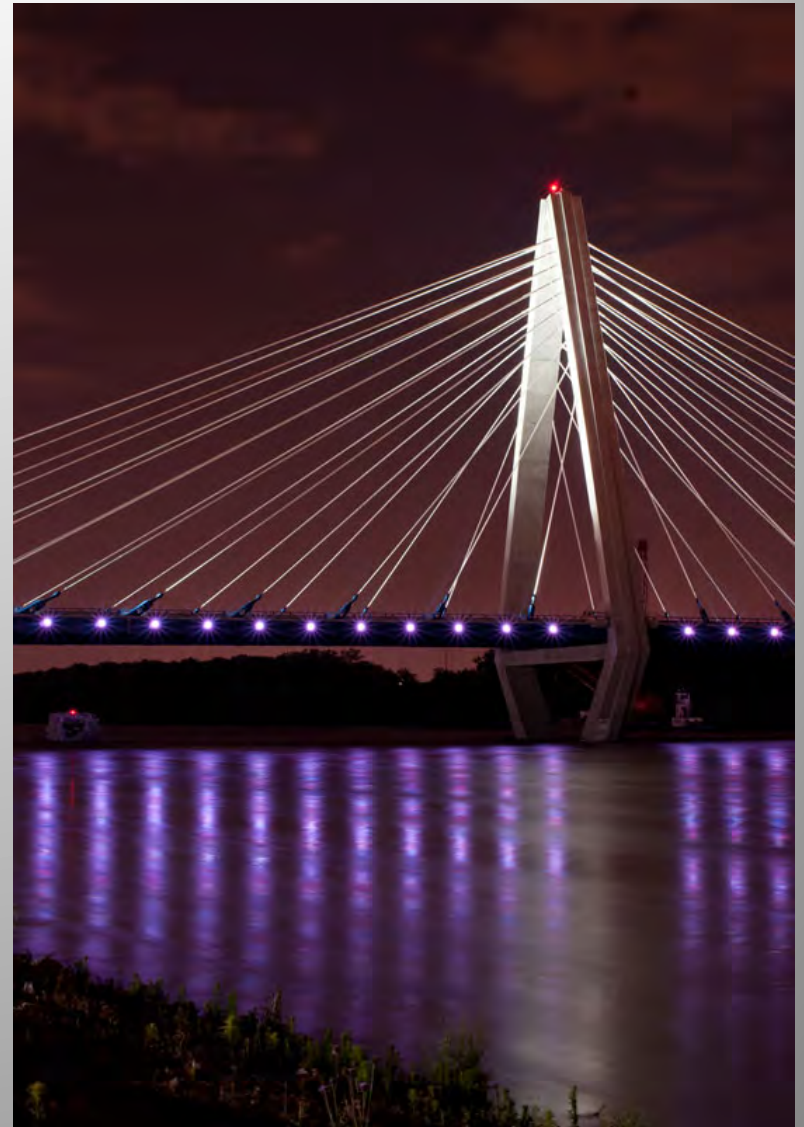
Social Impacts



Success!

The Christopher S. Bond Bridge
- Missouri Department of
Transportation (MoDOT)

- Design Build and Prefabricated Bridge Elements and Systems used
- Bridge opened a full 9-months ahead of schedule
- MoDot saved up to \$89 million and 5 years of construction related traffic congestion





Questions?

