Quarterly Work Zone Webinar
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Accelerated Construction

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Agenda

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

Increase in Vehicle Miles Traveled vs. Increase in Roadway Miles

- VMT (millions)
- Lane Mile Index

Miles (Index 1980 = 100)

Year


100 120 140 160 180
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

Key: EDC 3D
- Exploring
- National Leader

Source data from EDC2 Implementation Plans
4D Modeling - Scheduling
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 has used PBES in at least one bridge project

39 states and 3 FLH Divisions
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?