



2009

***Domestic Scan of
Accelerated
Construction Practices***



Objective

Agencies are seeking ways to accelerate project delivery

You've heard:

“Get in, Get out, and Stay Out”

The scan focus was on how to accomplish this dictum rapidly



Overview

- **The Scan Approach**
- **Successful Projects & Keys to Success**
- **The Fundamentals**
- **Conclusions**



Scan Team



George Raymond
Oklahoma DOT

Chris Schneider
FHWA, HQ

Steven DeWitt
NC Turnpike Authority

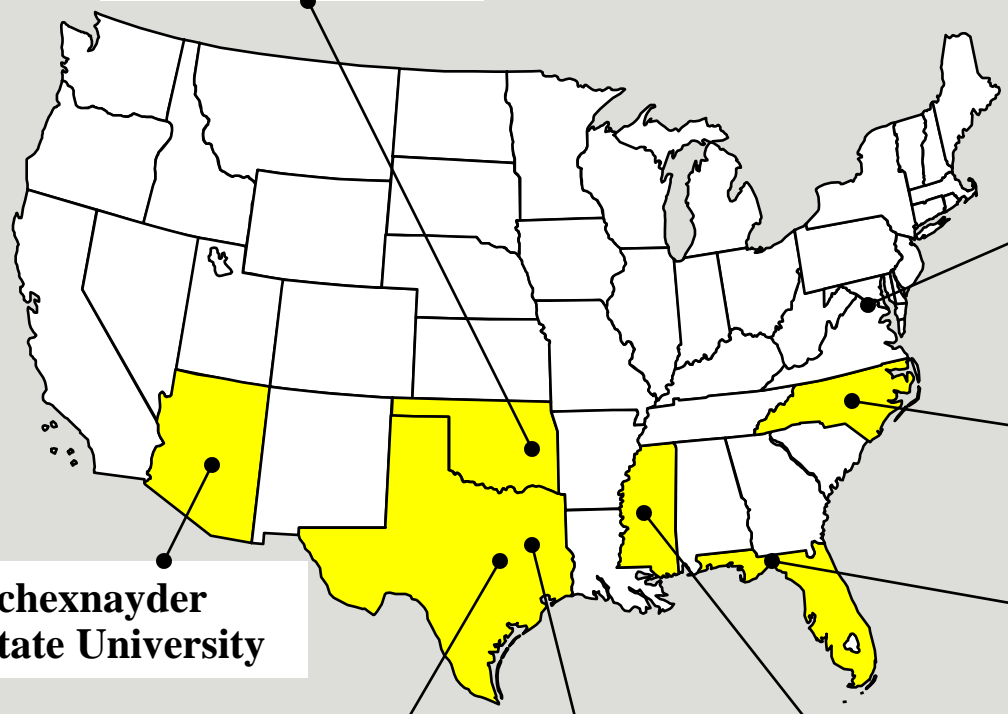
Clifford Schexnayder
Arizona State University

Brian Blanchard
Florida DOT

Thomas Bohuslav
Texas DOT

Stuart Anderson
Texas A&M

Richard Sheffield
Mississippi DOT



Projects Visited



Russian River Bridge



I-40 Mojave Desert

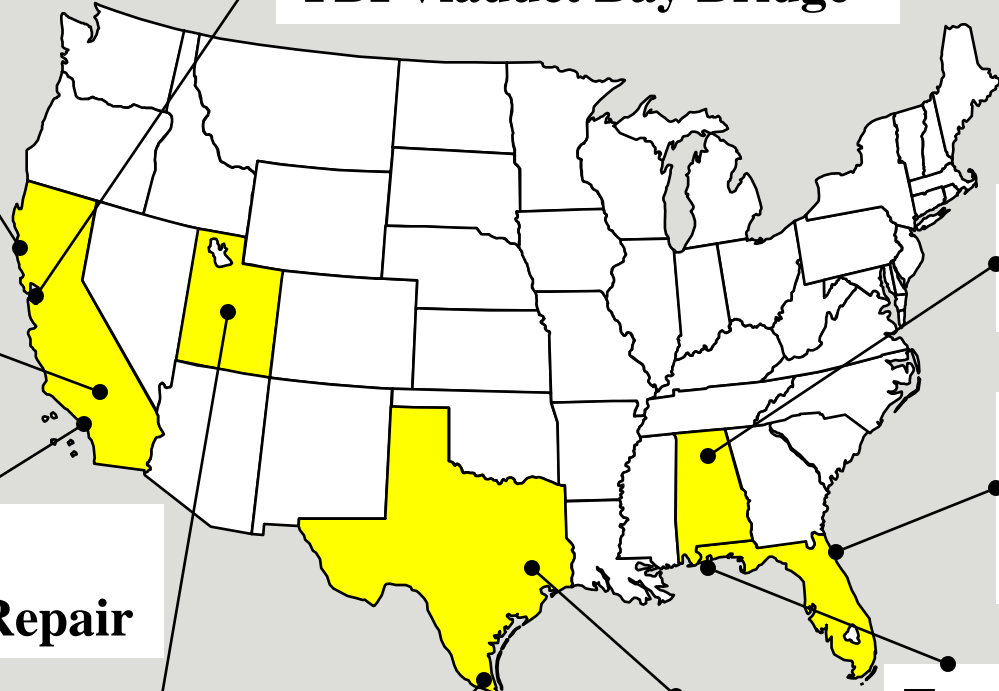


**I-15 Repave
I-5 Tunnel Fire Repair**



Accelerated Bridge Construction, Utah

**I-880 MacArthur Bridge
YBI Viaduct Bay Bridge**



Queen Isabella Causeway

I-10 Houston

I-65/59 Bridges, Birmingham

Duval St. Bridge & SR9A/I-295, Jacksonville

Escambia Bay Bridge, I-10 (Emergency & Rebuild), Pensacola



Acceleration Focus Areas

- **Acceleration related to emergency projects**
 - emergency situation response
- **Project / Program construction acceleration**
 - a planned approach

Acceleration Focus Question Areas

1. General Program Level Issues
2. Contracting Strategies/Contract Administration
3. Planning and Scheduling
4. Construction Practices – Cost, Time, Quality
5. Traffic Control and Management
6. Post-Construction

– WHAT DID HAPPEN



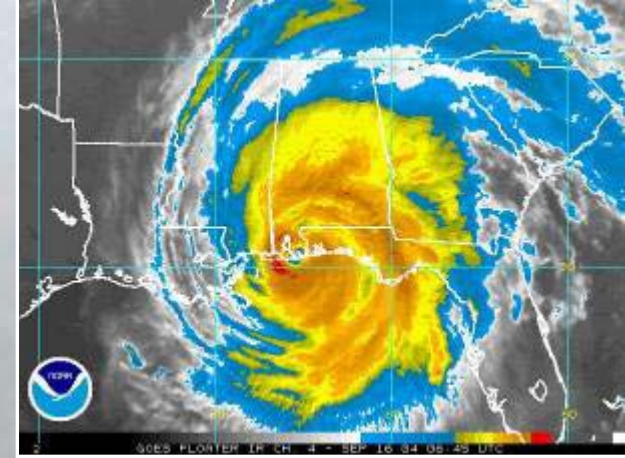
Emergency Acceleration

Projects accelerated under emergency conditions have very compressed schedules yet they still have to be delivered following sound design, construction, and management processes

This is the challenge!



Hurricane Ivan, Pensacola, Florida Night of Sept. 15/16, 2004



I-10 Bridge

Escambia Bay



Hurricane Ivan, Night of Sept. 15/16

Date 2004	Event
17 Sept.	9:00 a.m. Pre-proposal meeting, Chipley, FL
17 Sept.	1:00 p.m. Questions and Answer meeting
17 Sept.	4:00 p.m. Price Proposals
17 Sept.	4:00 p.m. Public Price Proposal open
17 Sept.	5:00 p.m. Anticipated Execution Date
17 Sept.	5:00 p.m. Notice to Proceed
11 Nov.	Phase 1 complete, Westbound Bridge
16 Dec.	Contract Completion

Escambia Bay Bridge

**Across
prefabricated
steel bridge
system**

Looking West

**All designs had to conform
to the available materials**





Keys to Success

- ***Delegated Contract Award and Execution to Local FDOT Office*** – This fast tracked the signing of a contract



Escambia Bay Bridge Contract



6/4
deterioration of shoreline or roadway is not our responsibility. No ^{erosion} control measures have been included.

(2) We understand that Phase I is to be completed (as in "open the bridge to traffic") in 24 days; liquidated damages of \$250,000/day will apply after that. Incentive bonus for opening the bridge to traffic also equals \$250,000/day up to a max. of 14 days.

~~(5) We understand that the 24 day schedule is developed by the owner on the basis of his quantities~~

Keys to Success

- ***Basic Scope Only*** – Contractors need latitude about means and methods on these types of projects
- ***Work Concurrent with Design*** – The design has to utilize available materials





Keys to Success

- ***Availability of Materials***
 - Hard to find materials during the early phase of the work

San Francisco

**Sunday
April 29, 2007**

I-80 Bay Bridge

I-580/880

**MacArthur Maze,
Oakland**

I-580 connector

I-880 connector





MacArthur Maze

Day

29 Apr.	Sunday, 3:41 a.m. tanker accident	1
30 Apr.	Caltrans locating steel, begin design	2
1 May	Clean-up, inspection	3
3 May	I-580 contract advertised	5
5 May	Mandatory onsite bid conference	7
7 May	Monday, bid 10a.m., award 3:30 p.m.	9
10 May	Penn. steel arrives fabricator in AZ	12
11 May	Begin girder fabrication	13
15 May	Precast bent cap arrives at night	17
24 May	Thursday, opened at 8:40 p.m.	26

Keys to Success

- *Availability of Materials* –
Design to available materials
- *Team Effort* –
Located people where needed



Keys to Success

- *Incentive/Disincentive* –
The project was advertised with a \$200,000 per day incentive / disincentive clause capped at **\$5 million**





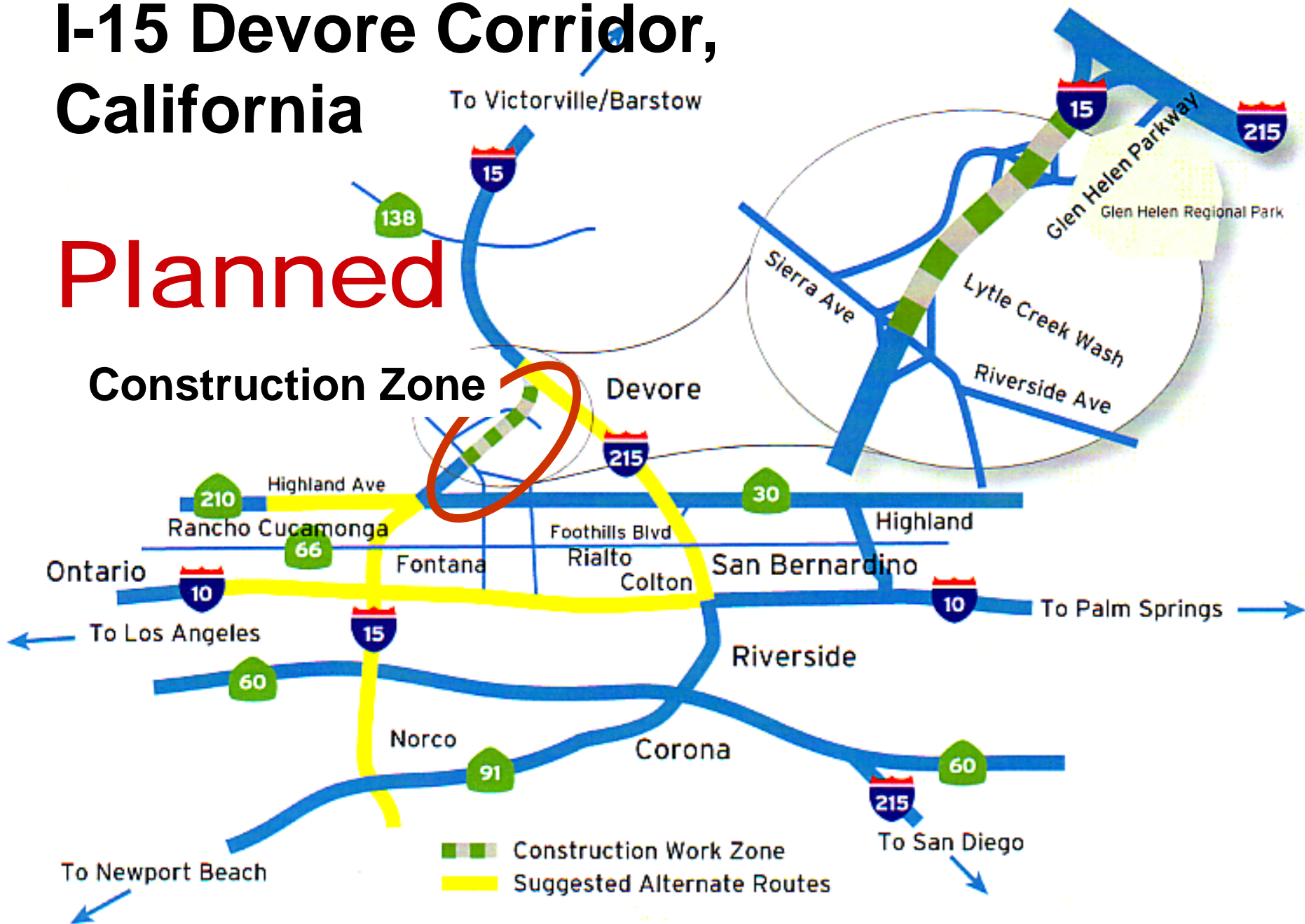
Planned Acceleration

- Projects can be accelerated
- by careful planning of preconstruction activities and
 - thoughtful staging of field operations

I-15 Devore Corridor, California

Planned

Construction Zone





Keys to Success

- ***Contract*** –
Incentive/Disincentive
provisions
- ***Design*** –
Rapid-strength concrete
and substituted AC base



Keys to Success

- ***Public Outreach*** – Intensive outreach achieved a 20-percent reduction in peak-hour traffic demand



Program Approach to Project Acceleration

Some agencies are beginning to institutionalize project acceleration through a program approach

A change in agency culture is required as well as a new paradigm



Utah DOT Accelerated Bridge Construction (ABC)

UDOT accelerated its program for the following reasons:

- Reducing turn around times
- Lessening the impact of their projects
- Improving trust
- Response to public desire





New UDOT Paradigm

From

“Lowest Construction Cost”

to

“Lowest Project Cost”

UDOT ABC Stats

UDOT has 17 projects, including **80 bridges total**, completed or under construction that utilized ABC

- **Self Propelled Modular Transports** 4 projects/13 Bridges
- **Half Thickness Precast Deck Panels** 2 Projects/47 Bridges
- **Prefab Bridges – “Lego Bridges”** 2 Projects
- **Full Depth Precast Deck Panels** 8 Projects/11 Bridges
- **Precast voided slabs** 1 Project/2 Bridges
- **Segmental Bridges** 1 Project/1 Bridge
- **Heavy Lift Cranes** 1 Project/1 Bridge



UDOT ABC SPMT

- 1st SPMT Project (I-215 at 45th South) completed in 1 weekend during 2007
- 12 Additional SPMT Projects completed in 2008
- ABC used as standard practice for future projects



BENEFITS OF USING ABC

- Reduce **TRAFFIC** impacts
- Improve **SAFETY** to workers and public
- Improve **QUALITY** of constructed product



BENEFITS OF USING ABC

- **COSTS** savings
- Reduced **ECONOMIC** and Business impacts
- Reduced **CONSTRUCTION SEASON**
- Reduced **ENVIRONMENTAL** impacts





Success Fundamentals

- Partnering
- Design
- Planning
- Contracting Strategy



Partnering

People are the critical element in successfully accelerating a project

- ✓ **Align goals**
- ✓ **Delegate**
- ✓ **Timely decisions**



Design

✓ *Material Availability*

✓ *Logistics*



Planning

- ✓ *Detailed*
- ✓ *Backup plans*
- ✓ *Plan multiple fronts*
- ✓ *Look-ahead plans*



Contracting Strategy

- ✓ **Aligned** *with requirements*
- ✓ **Set an aggressive schedule** *with proper incentives*



Conclusions

Emergency Projects

Contractor –

Find a contractor that has the resources

Experts –

Ensure that experts are on the project



Conclusions

Emergency Projects

Agreement –

Get an agreement

Delegate –

To the lowest possible level

Scope –

Expect changes

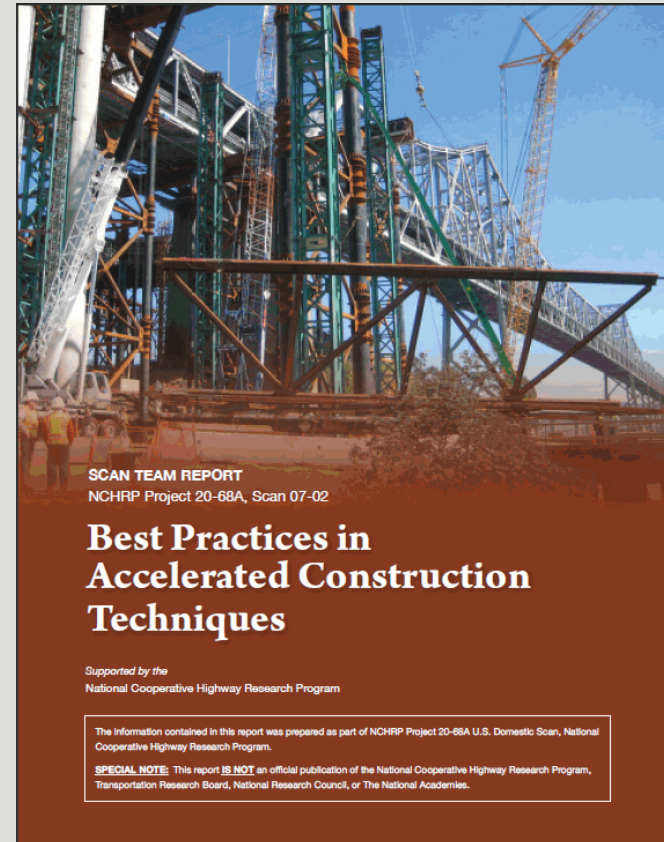
Conclusions

DOT and contractor **goals align** when a **partnering** atmosphere is created and all team members view the accelerated work as an **opportunity to demonstrate excellence**



Scan Final Report

www.trb.org
(search under
NCHRP20-68A,
U.S. Domestic
Scan Program)





Visit FHWA's website at:

www.fhwa.dot.gov/construction/accelerated/

The collage features several key documents:

- ACTT NOW** (September 2005): A purple and green publication with the tagline "Innovation + collaboration = acceleration".
- Building on Success** (January 2007): A blue and orange report titled "Building on Success" under the heading "Construction Technology Transfer".
- ACTT: A "How To" Guide for State Highway Agencies** (Fall 2005): A white report with a cityscape background.
- ACTT Workshop Toolkit**: A red and yellow toolkit for the Columbus, Ohio ACTT Workshop, titled "Enhancing Mobility: The I-70/I-71 South Innerbelt Corridor".
- ACTT Accelerated Construction Technology Transfer**: A white report with a cityscape background, published by the U.S. Department of Transportation Federal Highway Administration.



Thank You

