



Accelerated Bridge Construction (ABC)

Technical Resources for Implementation

Mary Lou Ralls, P.E., Ralls Newman, LLC

September 17, 2015



U.S. Department of Transportation
Federal Highway Administration

AMERICAN ASSOCIATION
OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS

AASHIO

ABC Technical Resources

- FHWA
- NCHRP
- SHRP2
- TRB ABC Subcommittee
- Industry
- ABC-UTC

FHWA ABC Website

<http://www.fhwa.dot.gov/bridge/abc>

The screenshot shows the FHWA ABC website interface. At the top, there is a browser address bar with the URL <https://www.fhwa.dot.gov/bridge/abc/>. Below the browser, the FHWA logo and navigation links (About, Programs, Resources, Briefing Room, Contact, Search FHWA) are visible. The main header features the word "Construction" and a large image of a highway interchange. A secondary navigation bar includes "Contract Administration" and "Technologies and Innovations", with "Accelerated Construction" highlighted. Below this is a horizontal menu with categories: "3D Engineered Models", "Accelerated Construction", "e-Construction", "Intelligent Compaction", "Slide-in Bridge Construction", and "SHRP2". The main content area is titled "Accelerated Bridge Construction" and contains a list of links: "Project Planning", "Geotechnical Solutions" (with sub-links "Foundations and Wall Elements" and "Rapid Embankment Construction"), and "Structural Solutions" (with sub-links "Prefabricated Elements & Systems" and "Structural Placement Methods"). Red arrows point to these links. To the right, a sidebar contains "Related Links" (with a link to a 2007 workshop), "What's New" (with a link to the ABC Manual), and "ABC Technical Contacts" (listing Benjamin Beerman and Gerald Yakowenko).

U.S. Department of Transportation
Federal Highway Administration

About Programs Resources Briefing Room Contact Search FHWA

Construction

FHWA / Programs / Construction / Technologies and Innovations / Accelerated

Contract Administration **Technologies and Innovations**

3D Engineered Models **Accelerated Construction** e-Construction Intelligent Compaction Slide-in Bridge Construction SHRP2

Accelerated Bridge Construction

- [Project Planning](#)
- Geotechnical Solutions
 - [Foundations and Wall Elements](#)
 - [Rapid Embankment Construction](#)
- Structural Solutions
 - [Prefabricated Elements & Systems](#)
 - [Structural Placement Methods](#)

What is ABC?

ABC is a paradigm shift in the project planning and procurement approach where the need to minimize mobility impacts which occur due to onsite construction activities are elevated to a higher priority.

Intrinsic benefits of the ABC approach include improvements in:

Related Links

- [2007 FHWA Seismic Accelerated Bridge Construction Workshop](#)

What's New

- [ABC Manual](#) (.pdf, 11 mb)

ABC Technical Contacts

- **Decision Making Framework**
Benjamin Beerman
(404) 562-3930
benjamin.beerman@dot.gov
- **Innovative Contracting**
Gerald Yakowenko
(202) 366-1562

FHWA ABC Website

<http://www.fhwa.dot.gov/bridge/abc>

The screenshot shows the top portion of a web browser displaying the FHWA ABC website. The browser's address bar shows the URL <https://www.fhwa.dot.gov/bridge/abc/fast.cfm>. The website header includes the U.S. Department of Transportation Federal Highway Administration logo and navigation links for About, Programs, Resources, Briefing Room, Contact, and Search FHWA. Social media icons for Facebook, Twitter, YouTube, LinkedIn, and Instagram are also present. Below the header is a large banner image of a highway interchange. A navigation menu below the banner includes 'Contract Administration' and 'Technologies and Innovations', with the latter being the active section. Under 'Technologies and Innovations', there are links for '3D Engineered Models', 'Accelerated Construction' (highlighted), 'e-Construction', 'Intelligent Compaction', 'Slide-in Bridge Construction', and 'SHRP2'.

Project Planning

- Decision Making Framework
 - [ABC AHP Decision Making Tool](#) (zip, 64 kb) - A decision making tool based on the Analytic Hierarchy Process (AHP) transportation specialists and decision-makers to determine if ABC is more effective than traditional construction for a given bridge replacement or rehabilitation project.
 - Installation Instructions
 - Save the zip file to your hard drive.
 - Open the zip file and extract the files.
 - Microsoft .NET Framework 4.0 or later is required. If you need that, please see Section 1.3 of the user's manual http://www.fhwa.dot.gov/bridge/abc/dmtool/software_manual.cfm#s1_3
 - To run the AHP Tool, locate the AHPTool icon and click on it. See Section 1.4 of the user's manual http://www.fhwa.dot.gov/bridge/abc/dmtool/software_manual.cfm#s1_4.
 - Related Documents
 - [Manual](#)
 - [Survey Form](#)
 - [Definition List](#)



Contacts

- **Benjamin Beerman**
[Resource Center](#)
404-562- 3930
[E-mail Benjamin](#)
- **Romeo Garcia**
[Office of Asset Management, Pavements, and Construction](#)
202-366-1342
[E-mail Romeo](#)

Accelerated Bridge Construction Decision Tool

Transportation Pooled Fund Study TPF-5(221)

Completion Date: 2011

Participating DOTs: Oregon (lead), California, Iowa, Minnesota, Montana, Texas, Utah, Washington, FHWA

PI: Toni Doolen, Oregon State University

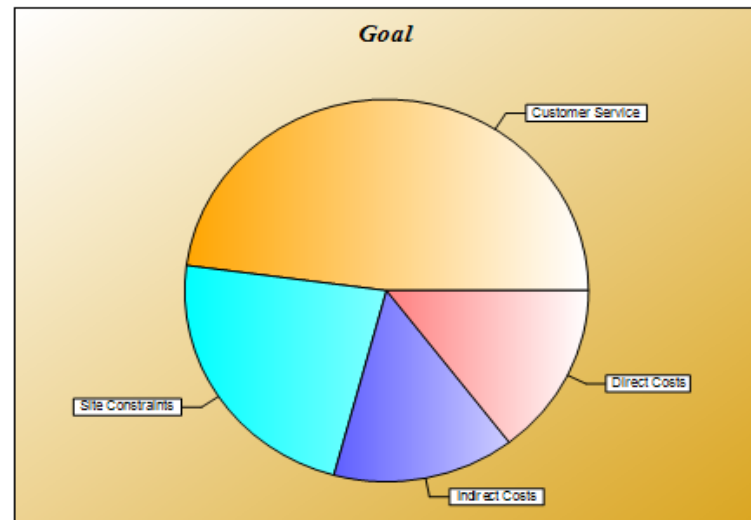
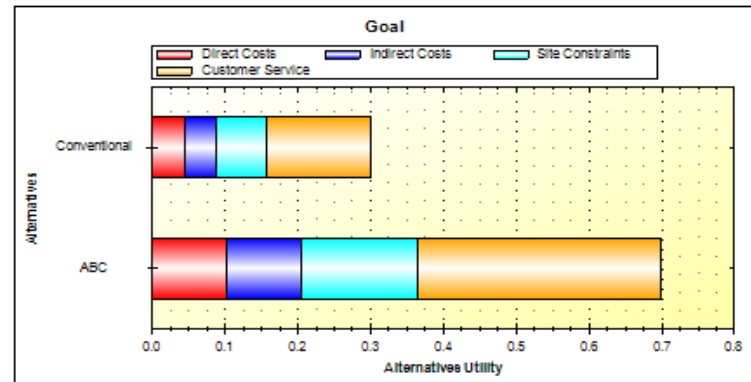
Project Manager: Benjamin Tang, P.E.,
Oregon Department of Transportation

ABC AHP Decision Tool

AHP Decision Making Software

File Help

Decision Hierarchy Pairwise Comparison Results Cost Weighted Analysis



-- Alternatives Utility --
 ABC: 0.699
 Conventional: 0.301

-- Criteria Utility Contribution [%] --

Direct Costs:
 ABC: 10.2 Conventional: 4.4
 Indirect Costs:
 ABC: 10.2 Conventional: 4.4
 Site Constraints:
 ABC: 16 Conventional: 6.9
 Customer Service:
 ABC: 33.5 Conventional: 14.4

-- Synthesized Criteria Weights --

Direct Costs: 14.6%
 Indirect Costs: 14.6%
 Site Constraints: 22.9%
 Customer Service: 47.9%

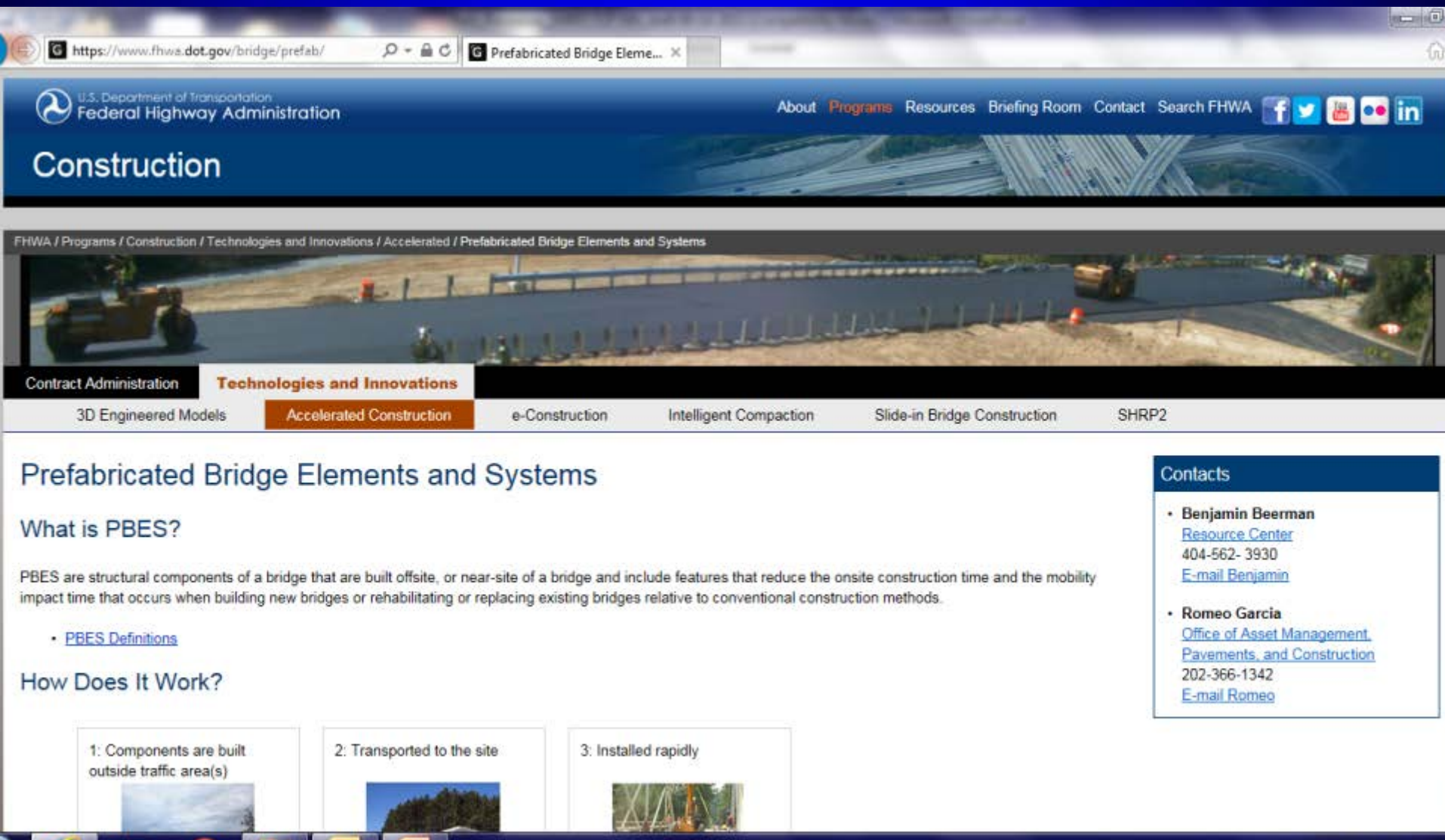
Goal

- Direct Costs= (0.146)
- Indirect Costs= (0.146)
- Site Constraints= (0.229)
- Customer Service= (0.479)

Summary Report

FHWA ABC Website

<http://www.fhwa.dot.gov/bridge/prefab>



The screenshot shows a web browser window displaying the FHWA ABC Website. The browser's address bar shows the URL <https://www.fhwa.dot.gov/bridge/prefab/>. The website header includes the U.S. Department of Transportation Federal Highway Administration logo and navigation links for About, Programs, Resources, Briefing Room, Contact, and Search FHWA. Social media icons for Facebook, Twitter, YouTube, and LinkedIn are also present. The main navigation menu is highlighted, with "Technologies and Innovations" selected. Below the menu, the page title is "Prefabricated Bridge Elements and Systems". The main content area includes a section titled "What is PBES?" with a paragraph explaining that PBES are structural components of a bridge built offsite to reduce onsite construction time and mobility impact. A list of links includes "PBES Definitions". A section titled "How Does It Work?" features three numbered steps: 1. Components are built outside traffic area(s), 2. Transported to the site, and 3. Installed rapidly. A sidebar on the right contains a "Contacts" section with information for Benjamin Beerman and Romeo Garcia, including their titles, phone numbers, and email addresses.

U.S. Department of Transportation
Federal Highway Administration

About Programs Resources Briefing Room Contact Search FHWA

Construction

FHWA / Programs / Construction / Technologies and Innovations / Accelerated / Prefabricated Bridge Elements and Systems

Contract Administration **Technologies and Innovations**

3D Engineered Models Accelerated Construction e-Construction Intelligent Compaction Slide-in Bridge Construction SHRP2

Prefabricated Bridge Elements and Systems

What is PBES?

PBES are structural components of a bridge that are built offsite, or near-site of a bridge and include features that reduce the onsite construction time and the mobility impact time that occurs when building new bridges or rehabilitating or replacing existing bridges relative to conventional construction methods.

- [PBES Definitions](#)

How Does It Work?

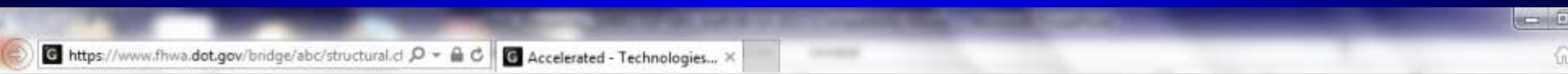
- 1: Components are built outside traffic area(s)
- 2: Transported to the site
- 3: Installed rapidly

Contacts

- Benjamin Beerman**
[Resource Center](#)
404-562-3930
[E-mail Benjamin](#)
- Romeo Garcia**
[Office of Asset Management, Pavements, and Construction](#)
202-366-1342
[E-mail Romeo](#)

FHWA ABC Website

<http://www.fhwa.dot.gov/bridge/abc>



Construction

FHWA / Programs / Construction / Technologies and Innovations / Accelerated



Contract Administration **Technologies and Innovations**

3D Engineered Models **Accelerated Construction** e-Construction Intelligent Compaction Slide-in Bridge Construction SHRP2

Structural Placement Methods

- [Self-Propelled Modular Transporters \(SPMTs\)](#)
- [Slide-in Bridge Construction](#)
- Longitudinal launching
- Horizontal sliding or skidding
- Conventional & heavy lifting equipment & methods



Videos



[Bridge construction - Incremental Launching - 3D Animation](#) (YouTube video)



Related Links

- [850 Ton Bridge Lifted](#)

Contacts

- **Benjamin Beerman**
[Resource Center](#)
404-562- 3930
[E-mail Benjamin](#)
- **Romeo Garcia**
[Office of Asset Management, Pavements, and Construction](#)
202-366-1342
[E-mail Romeo](#)

FHWA ABC Website

<http://www.fhwa.dot.gov/bridge/abc>



Construction



FHWA / Programs / Construction / Technologies and Innovations / Accelerated / Self Propelled Modular Transporters (SPMTs)



Contract Administration

Technologies and Innovations

3D Engineered Models

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Slide-in Bridge Construction

SHRP2

Self Propelled Modular Transporters (SPMTs)

A Self-Propelled Modular Transporter is a combination of multi-axle platforms operated through a state-of-the-art computer-controlled system that is capable of pivoting 360 degrees as needed to lift, carry, and set very large and heavy loads of many types.

SPMTs are motorized vehicles that move at walking speed and are capable of carrying large structures, such as bridges, from offsite locations, positioning them precisely into final position. The SPMT then exits the site, opening the area to traffic possibly within minutes or certainly within a few hours.

What is a Self-Propelled Modular Transporter - or SPMT?

The Federal Highway Administration (FHWA) has identified reducing construction-related impacts to the traveling public as a major priority for the nation's highway program.

The use of self-propelled modular transporter (SPMT) technology provides agencies and contractors with the **ultimate flexibility and speed** in removing and installing bridges.

Contacts

- **Benjamin Beerman**
[Resource Center](#)
404-562- 3930
[E-mail Benjamin](#)
- **Romeo Garcia**
[Office of Asset Management, Pavements, and Construction](#)
202-366-1342
[E-mail Romeo](#)

FHWA ABC Website

<http://www.fhwa.dot.gov/construction/sibc>



Slide-in Bridge Construction

Slide-in bridge construction (SIBC, more commonly known as "lateral slide") is one of several [Accelerated Bridge Construction](#) (ABC) technologies being promoted by the [FHWA Every Day Counts](#) program.

This web page [links](#) to a variety of key resources from across the country. The focus is on helping owner-agencies, designers, and construction contractors with no experience in SIBC get started in implementing this technology. [Read more about SIBC](#)

Quick Links



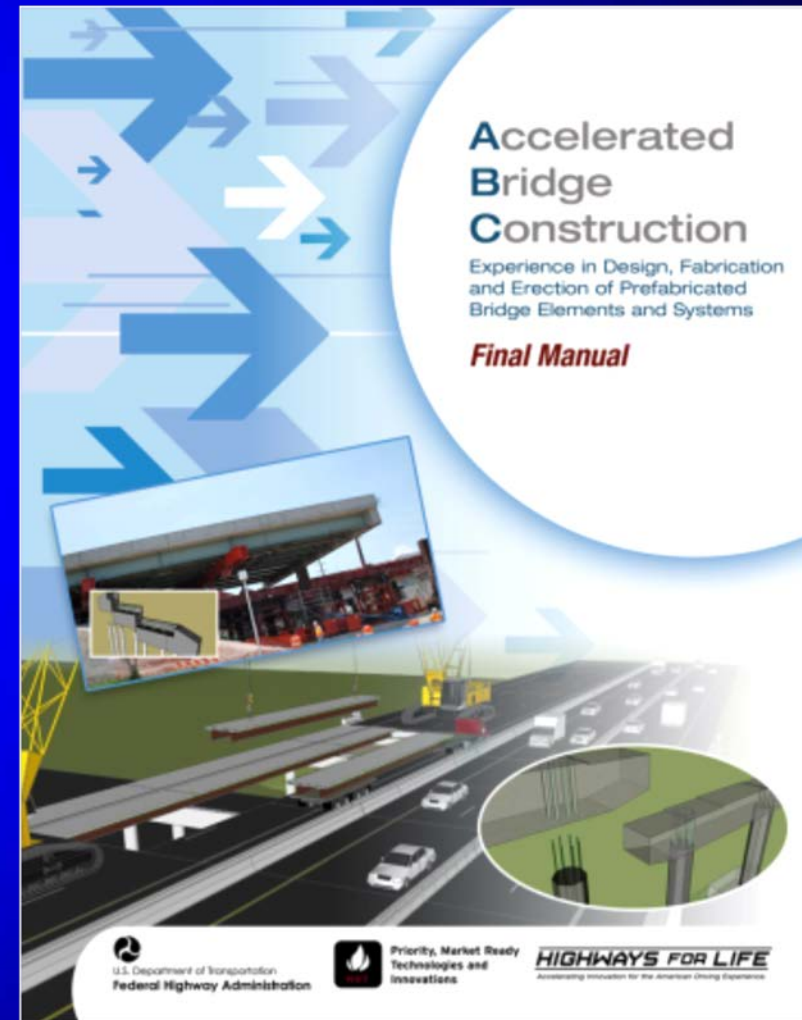
FHWA ABC Manual

<http://www.fhwa.dot.gov/bridge/abc>

*Accelerated Bridge Construction
Experience in Design, Fabrication
and Erection of Prefabricated
Bridge Elements and Systems*

Published November 2011

Available Online



ABC Manual Chapter 2 – ABC Technologies

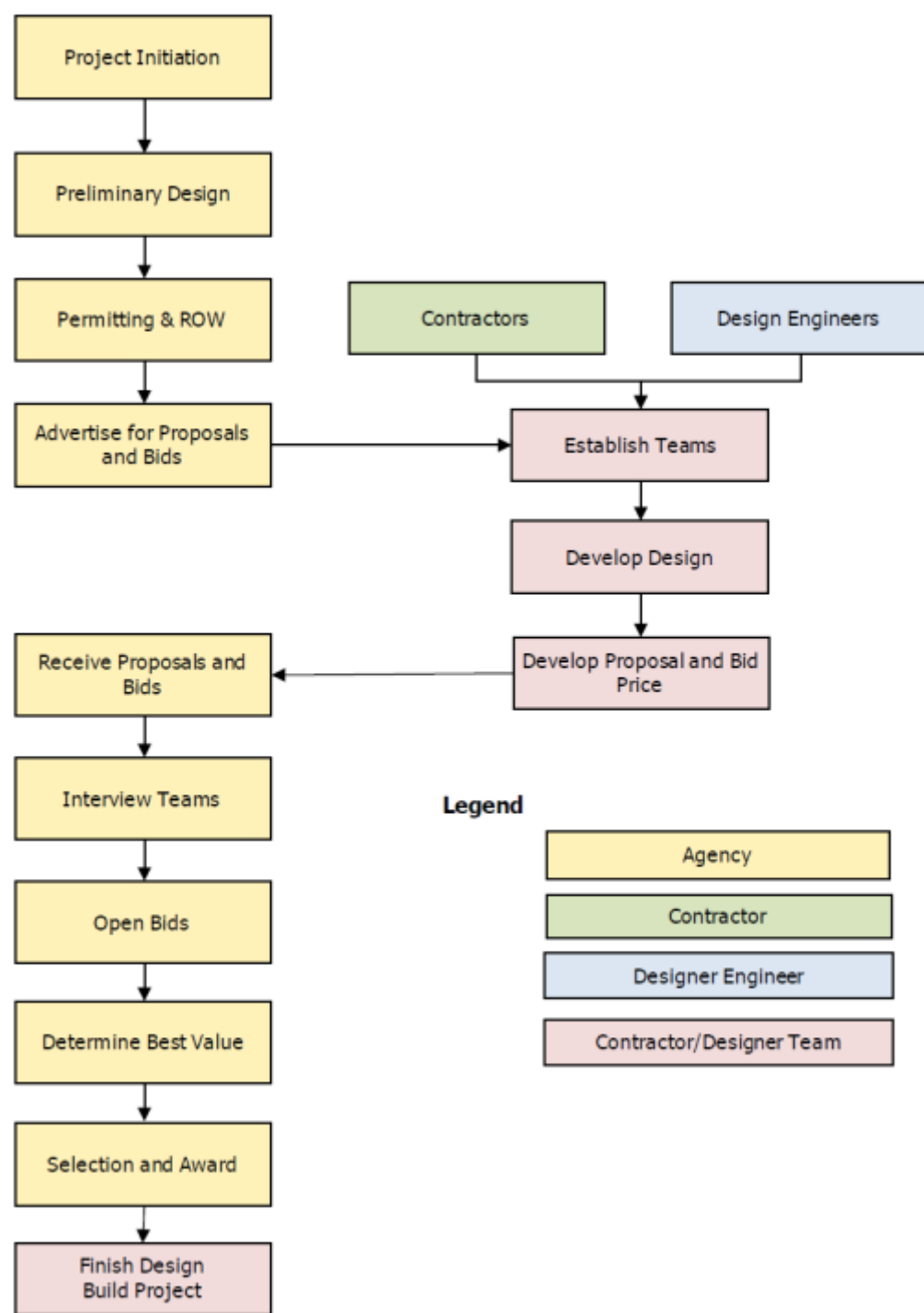
2.5 Fast Track

Contracting

2.5.1.1

Design-Build

[Fig. 2.5.1.1-1]



ABC Manual

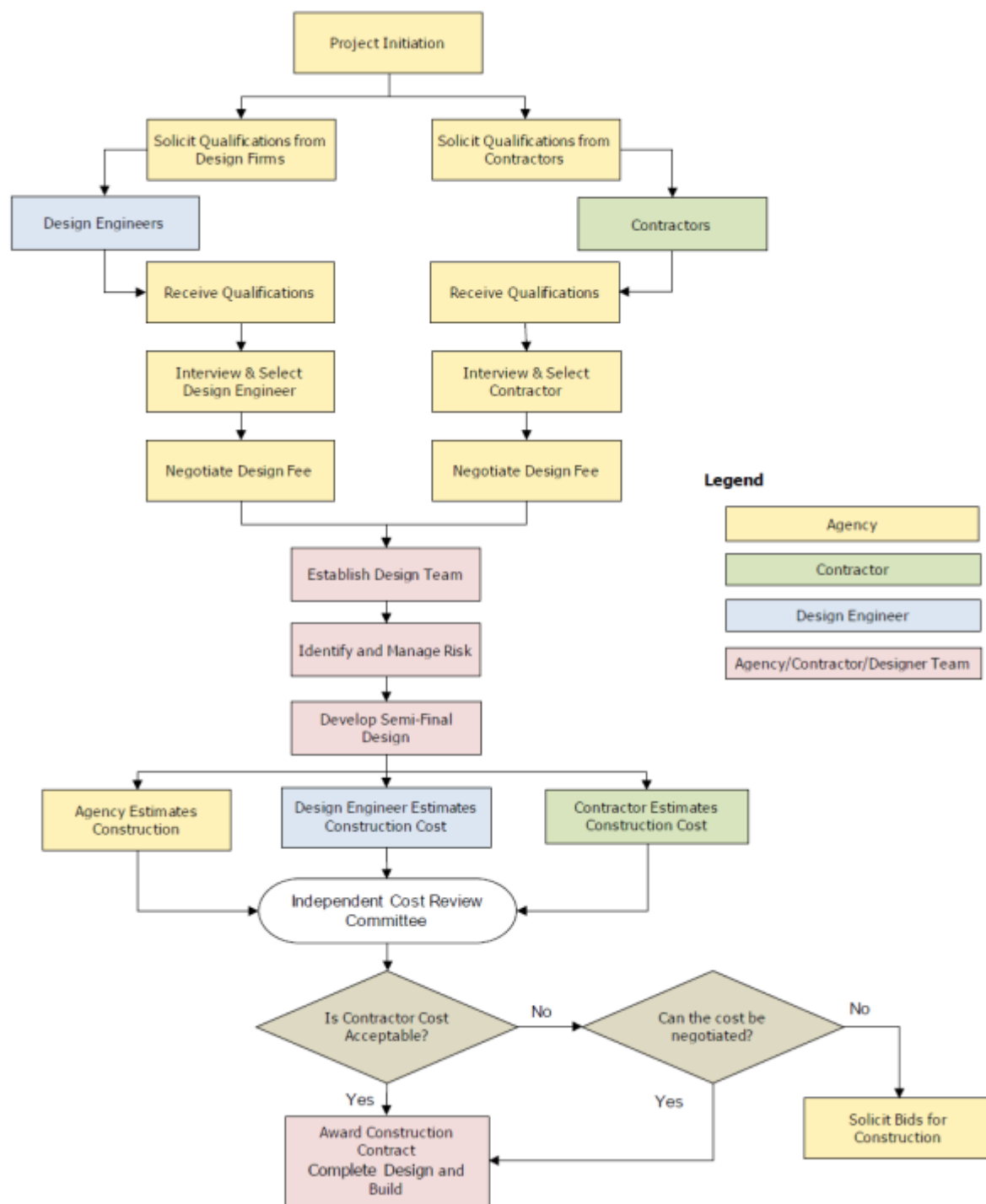
Chapter 2 – ABC

Technologies

2.5 Fast Track Contracting

2.5.1.2 CMGC

[Fig. 2.5.1.2-1]

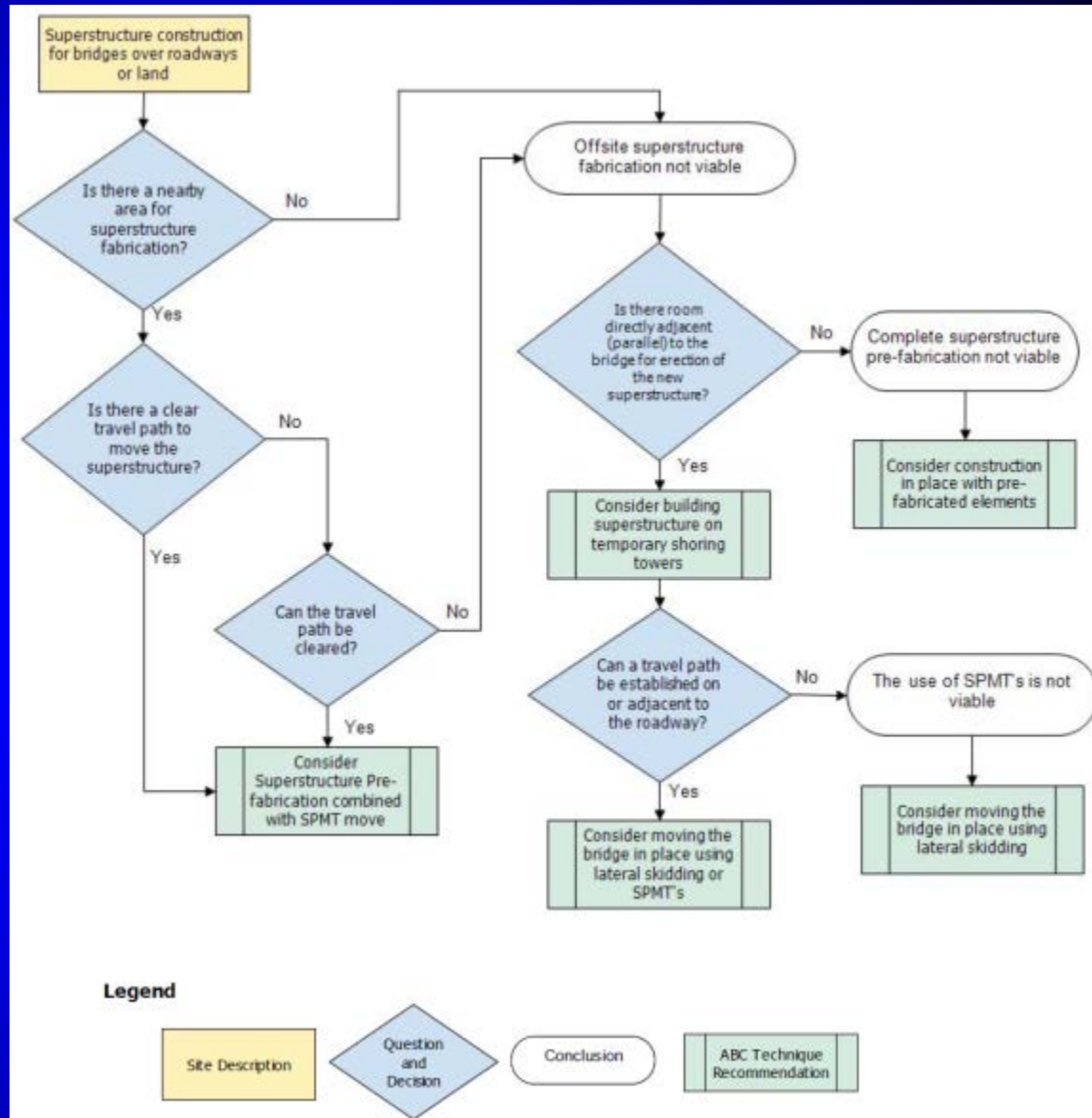


ABC Manual

Chapter 3 – Planning and Scoping Projects

3.2.2 Flowcharts for Determination of Appropriate ABC Methods

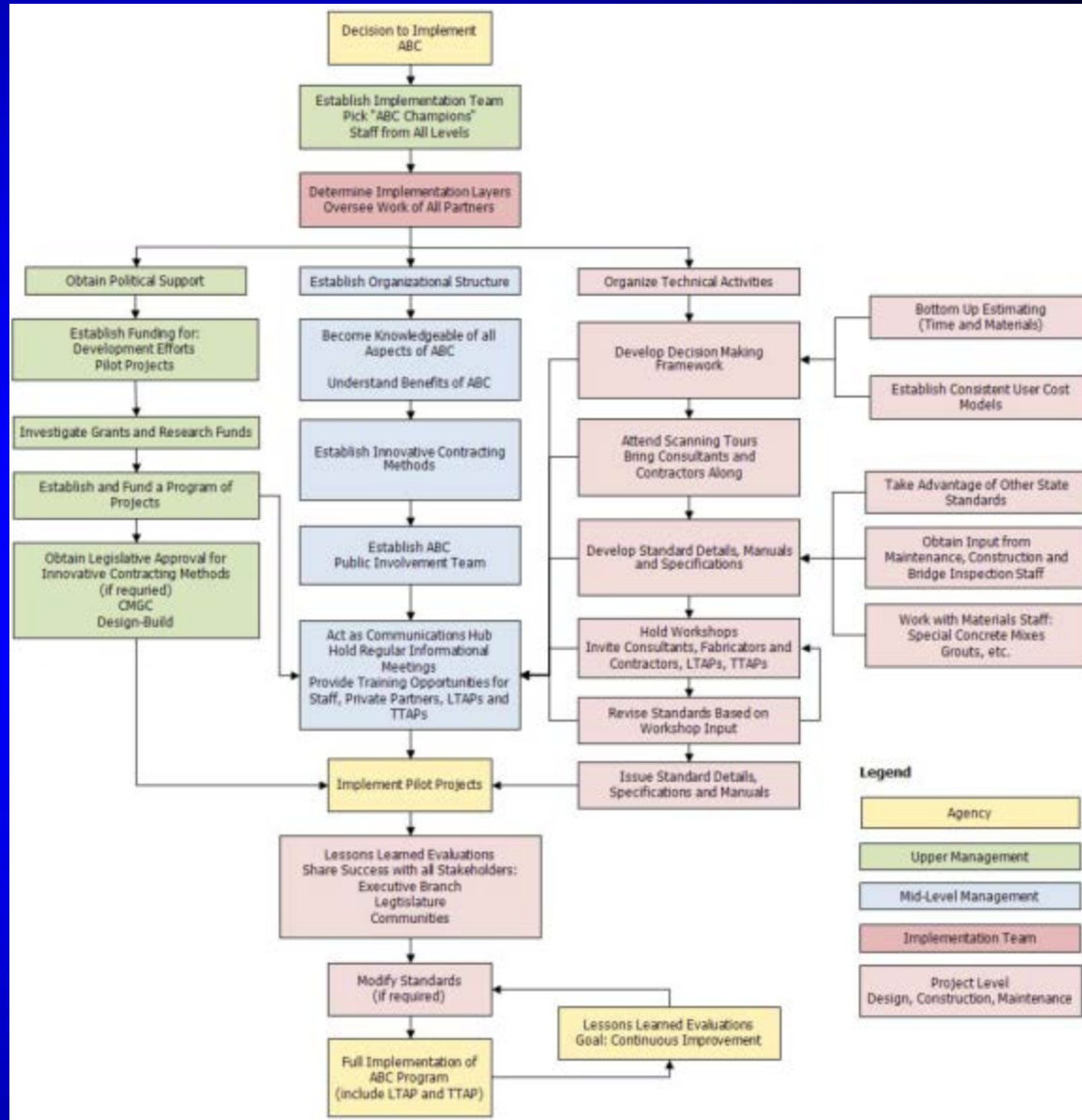
Fig. 3.2.2-1
Over Roadway
or Land



ABC Manual

Chapter 4 – Implementing ABC in a Transp. Agency

Fig. 4.1-1



FHWA ABC Website

<http://www.fhwa.dot.gov/bridge/abc>

The screenshot displays the FHWA ABC website interface. At the top, the browser address bar shows the URL <https://www.fhwa.dot.gov/bridge/prefab/>. The header includes the U.S. Department of Transportation Federal Highway Administration logo and navigation links for About, Programs, Resources, Briefing Room, Contact, and Search FHWA, along with social media icons for Facebook, Twitter, YouTube, and LinkedIn.

The main navigation bar features the word "Construction" and a large banner image of a bridge under construction. Below this, a breadcrumb trail reads: FHWA / Programs / Construction / Technologies and Innovations / Accelerated / Prefabricated Bridge Elements and Systems.

A secondary navigation bar contains several categories: Contract Administration, Technologies and Innovations (highlighted), e-Construction, Intelligent Compaction, Slide-in Bridge Construction, and SHRP2. Under "Technologies and Innovations", sub-links for 3D Engineered Models, Accelerated Construction (highlighted), and SHRP2 are visible.

The main content area is titled "Prefabricated Bridge Elements and Systems" and includes a section "What is PBES?". The text explains that PBES are structural components built offsite to reduce construction time and mobility impact. A link for "PBES Definitions" is provided.

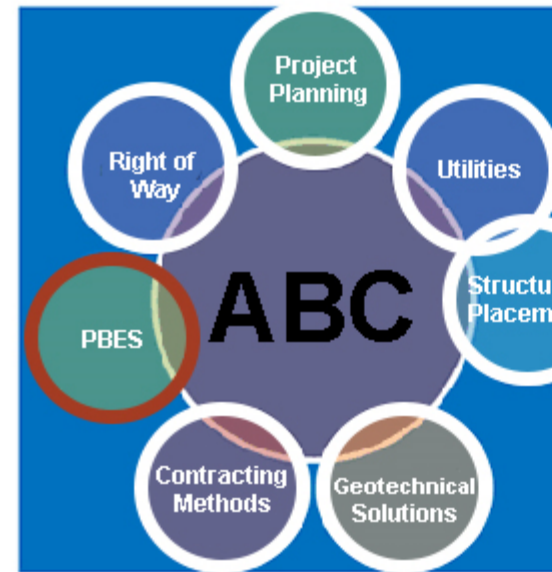
A "How Does It Work?" section follows, with three numbered steps: 1: Components are built outside traffic area(s), 2: Transported to the site, and 3: Installed rapidly. Each step is accompanied by a small image.

On the right side, a "Contacts" sidebar lists Benjamin Beerman (Resource Center, 404-562-3930, E-mail Benjamin) and Romeo Garcia (Office of Asset Management, Pavements, and Construction, 202-366-1342, E-mail Romeo).

How Does PBES Impact ABC?

Use of PBES is one strategy that can meet the objectives to Accelerate Bridge Construction while providing additional benefits beyond those with only reducing on-site construction time:

- ABC improves:
 - Site Constructability
 - Total project delivery time
 - Material quality and product durability
 - Work-zone safety for the traveling public and contractor personnel
- ABC reduces:
 - Traffic Impacts
 - Onsite construction time
 - Weather-related time delays
- ABC can minimize
 - Environmental impacts
 - Impacts to existing roadway alignment
 - Utility relocations and right-of-way take



Publications

- [Connection Details for PBES](#) ←
- [Framework for Decision-Making](#)
- [Manual on Use of Self-Propelled Modular Transporters to Remove and Replace Bridges](#)
- [Prefabricated Bridge Elements and Systems Cost Study: Accelerated Bridge Construction Success Stories](#)
- [Prefabricated Bridge Elements and Systems in Japan and Europe](#)
 - [Scan Team Implementation Plan](#)

Projects

- [Graves Avenue Prefabricated Bridge Project](#)

Archive

FHWA ABC Website

<http://www.fhwa.dot.gov/bridge/abc>



3D Engineered Models

Accelerated Construction

e-Construction

Intelligent Compaction

Slide-in Bridge Construction

SHRP2

Connection Details for PBES

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[1.2 Accelerated Construction Overview](#)

[1.2.1 When to Use Accelerated Construction](#)

[1.2.2 Rehabilitation Projects](#)

[1.2.3 Typical Accelerated Construction Approaches](#)

[1.2.3.1 Short-term Full Closure Projects](#)

[1.2.3.2 Weekend Closures](#)

[1.2.3.3 Overnight Closures](#)

[1.2.4 Examples of Prefabricated Elements](#)

[1.2.5 Opportunities for Architectural Treatments](#)

[1.3 Applicability to Typical Bridges](#)

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[1.3.2 Replacement of Existing Bridges](#)

[1.3.3 Rehabilitation of Existing Bridges](#)

[1.3.4 Issues with Curved, Skewed and Flared Bridges](#)

[1.3.5 Truss Bridges and Girder Floorbeam Bridges](#)

[1.4 Typical Accelerated Construction Connection Types](#)

[1.4.1 Steel Elements](#)

[1.4.1.1 Bolted](#)

[1.4.1.2 Welded](#)

[1.4.1.3 Cast-in-place Concrete closure pours with shear studs](#)

[Next >>](#)



Printable Version

- [PDF \(.pdf, 32 mb\)](#)

Contacts

- **Benjamin Beerman**
[Resource Center](#)
404-562- 3930
[E-mail Benjamin](#)
- **Romeo Garcia**
[Office of Asset Management,
Pavements, and Construction](#)
202-366-1342
[E-mail Romeo](#)

Connection Details for Prefabricated
Bridge Elements and Systems



March 30, 2009

Publication No. FHWA-IF-09-010



FHWA ABC Website

<http://www.fhwa.dot.gov/bridge/prefab/if09010/>

Connection Details for Prefabricated Bridge Elements and Systems

Published June 2009

Available Online

Connection Details for Prefabricated Bridge Elements and Systems



March 30, 2009

Publication No. FHWA-IF-09-010



Priority, Market Ready
Technologies and
Innovations

HIGHWAYS FOR LIFE
Accelerating Innovation for the American-Driving Experience

FHWA Accelerating Innovation Website

<http://www.fhwa.dot.gov/accelerating/innovation.cfm>



FHWA Home / Accelerating Innovation / Find an Innovation

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[Apply for a Grant](#)

[Get Engaged](#)

[Every Day Counts](#)

[STIC Network](#)

Find an Innovation

▼ Bridge

- [Accelerated Bridge Construction](#)
 - [Geosynthetic Reinforced Soil-Integrated Bridge System](#)
 - [Prefabricated Bridge Elements and Systems](#)
 - [Slide-in Bridge Construction](#)
- [Composite Bridge Decking for Moveable Bridges](#)
- [Fully Precast Bridge Bents for Use In Seismic Regions](#)
- [Full Depth Ultra High Performance Concrete Waffle Bridge Panels](#)

CONTACTS

Hari Kalla, Director
Center for Accelerating Innovation
202-366-5915
E-mail Hari

EVENTS

There are currently no FHWA
Accelerating Innovation events listed.
All Upcoming Events

EMAIL NOTIFICATION

Sign up to receive Accelerating
Innovation notices

FHWA Highways for LIFE Website

http://www.fhwa.dot.gov/hfl/summary/projects_summary.cfm

The screenshot shows a web browser window displaying the FHWA Highways for LIFE website. The browser address bar shows the URL: https://www.fhwa.dot.gov/hfl/summary/projects_summary.cfm. The website header includes the U.S. Department of Transportation Federal Highway Administration logo and the "HIGHWAYS FOR LIFE" branding. Navigation tabs include Innovations, Communications, Technology Partnerships, Demonstration Projects, and Technology Transfer. A breadcrumb trail indicates the current location: FHWA > Hfl > Projects > Project Summary Archives.

The main content area features a blue header with a right-pointing arrow and the text: "Highways for LIFE Project Summary Reports for FY2006-FY2013 Awarded Grants". Below this is a table with two columns: "Project" and "Innovation".

Project	Innovation
Arizona Demonstration Project: Reconstruction of SR 179 in Sedona	Needs-Based Involvement Process
Arkansas Demonstration Project: The Use of Roller Compacted Concrete to Reconstruct a Segment of SH 213 in Fayetteville	Roller Compacted Concrete (RCC)
California Demonstration Project: Pavement Replacement Using a Precast Concrete Pavement System on I-15 in Ontario	Precast Concrete Pavement System (PCPS)
California Demonstration Project: Safety Improvements on Mountain Ranch Road in Calaveras County	Safety Edge, Road Safety Audit
Colorado Demonstration Project: Pecos Street over I-70 Bridge Replacement Using SPMT Technology	Self Propelled Modular Transport (SPMT), Construction Management General Contractor (CMGC), Roundabouts, HAWK signal
Colorado Demonstration Project: Reconstruction of the I-25 Bronco Arch Bridge	ABC/PBES, Contractor value engineering, A (cost) + B (time to complete), Lane rentals, Incentives and Disincentives, Automatic anti-icing system
Connecticut Demonstration Project: Pavement Preservation on Interstate 95, Towns of Westbrook and Old Saybrook	Warm Mix Asphalt, Safety Edge, Polymer modified asphalt
District of Columbia Demonstration Project: Reconstruction of Eastern Avenue Bridge Over Kenilworth Avenue in Washington, DC	Prefabricated Bridge Elements and Systems (PBES), No-Excuse bonus
Florida Demonstration Project: Precast Concrete Pavement System on US 92	Precast Concrete Pavement System (PCPS)
Georgia Demonstration Project: I-85 Interchange Design-Build Project Using Prefabricated Bridge Elements in West Point, GA	Design-build contracting, roller-compacted concrete, prefabricated bridge components/connections
Georgia Demonstration Project: Pavement Replacement Using a Precast Concrete Pavement System along a Section of SR 44/Broad Street in	Precast Concrete Pavement System (PCPS)

On the right side of the page, there is a "Contact" sidebar with the following information:

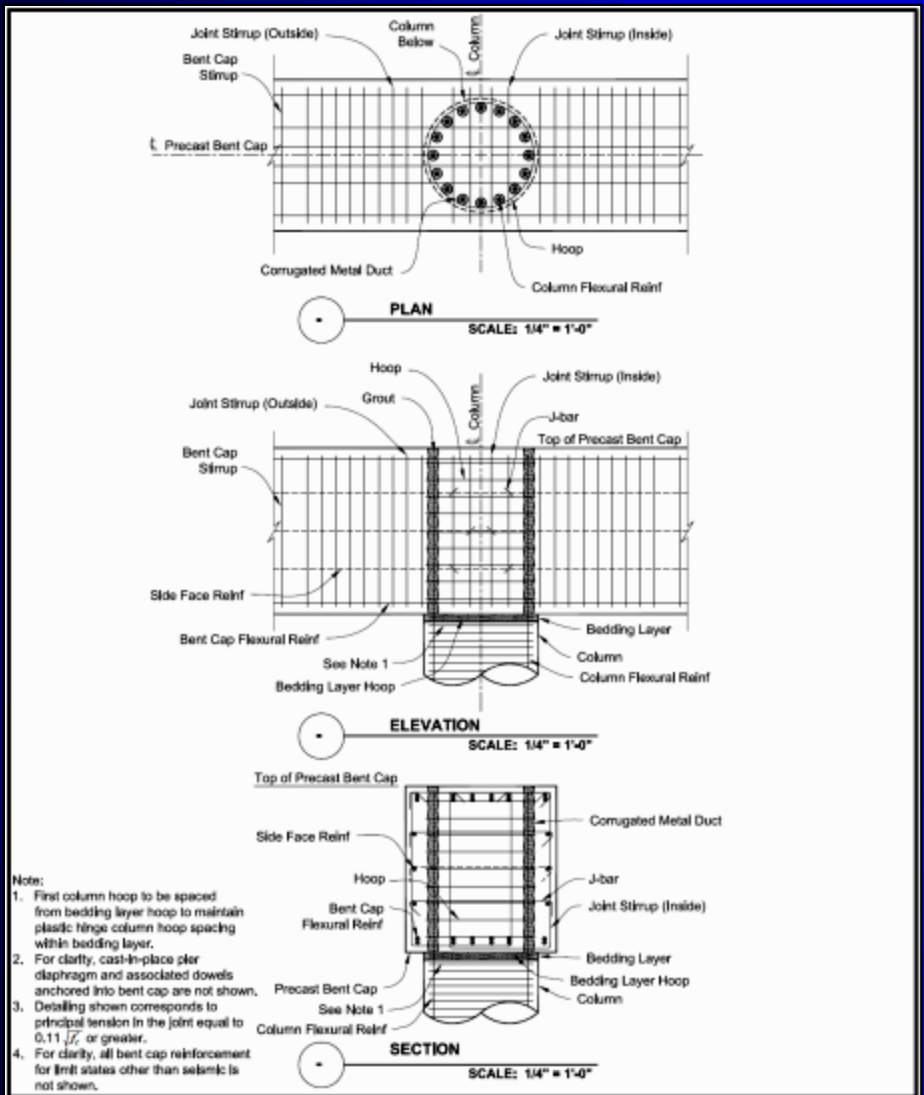
Contact
 Ewa Flom
 Highways for LIFE
 202-366-2169
 Ewa.Flom@dot.gov

National Cooperative Highway Research Program (NCHRP) Example Research Related to ABC

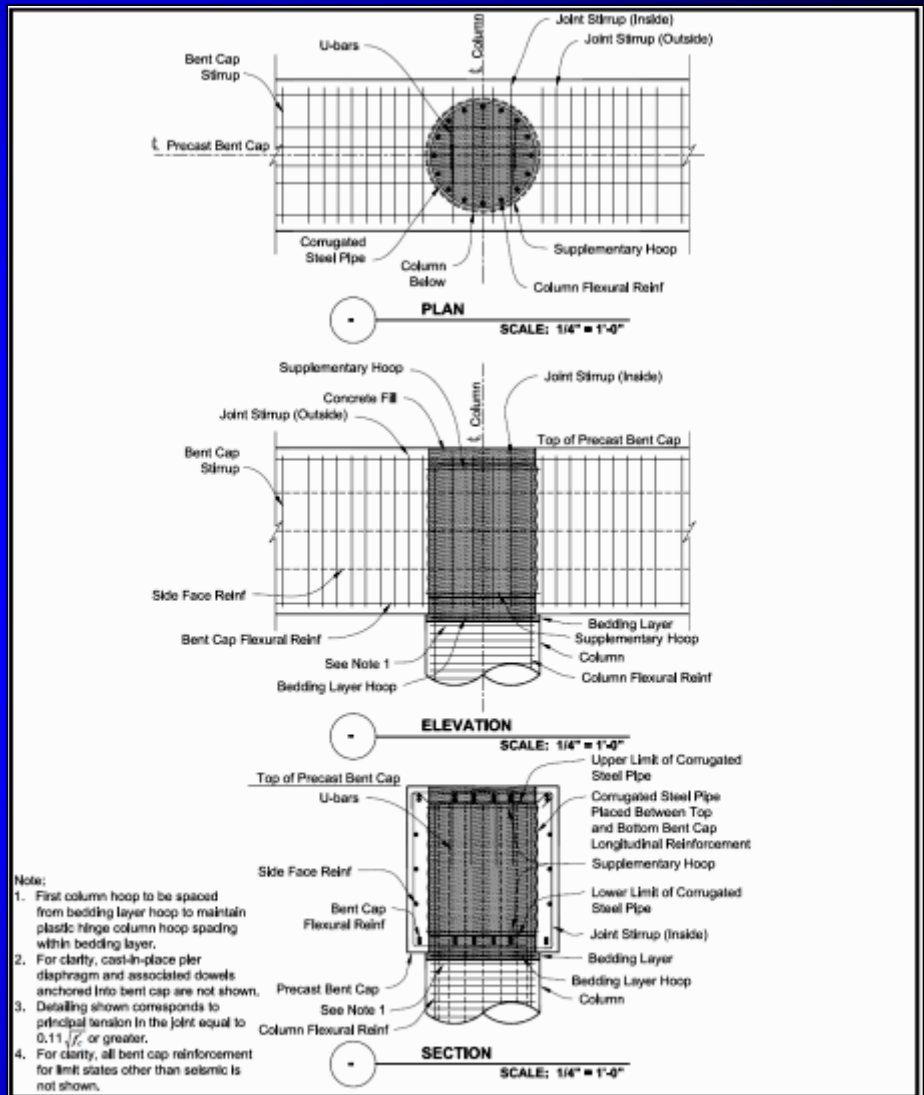
No.	Title	Status
12-65	Full-Depth, Precast-Concrete Bridge Deck Panel Systems	Report 584
12-74	Development of a Precast Bent Cap System for Seismic Regions	Report 681
12-88	Synthesis of System Performance of Accelerated Bridge Construction (ABC) Connections in Moderate-to-High Seismic Regions	Report 698

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_xxx.pdf

Example Connection Detail



- Note:
1. First column hoop to be spaced from bedding layer hoop to maintain plastic hinge column hoop spacing within bedding layer.
 2. For clarity, cast-in-place pier diaphragm and associated dowels anchored into bent cap are not shown.
 3. Detailing shown corresponds to principal tension in the joint equal to $0.11 \sqrt{f'_c}$ or greater.
 4. For clarity, all bent cap reinforcement for limit states other than seismic is not shown.



- Note:
1. First column hoop to be spaced from bedding layer hoop to maintain plastic hinge column hoop spacing within bedding layer.
 2. For clarity, cast-in-place pier diaphragm and associated dowels anchored into bent cap are not shown.
 3. Detailing shown corresponds to principal tension in the joint equal to $0.11 \sqrt{f'_c}$ or greater.
 4. For clarity, all bent cap reinforcement for limit states other than seismic is not shown.

FY 2014 NCHRP Research Related to ABC

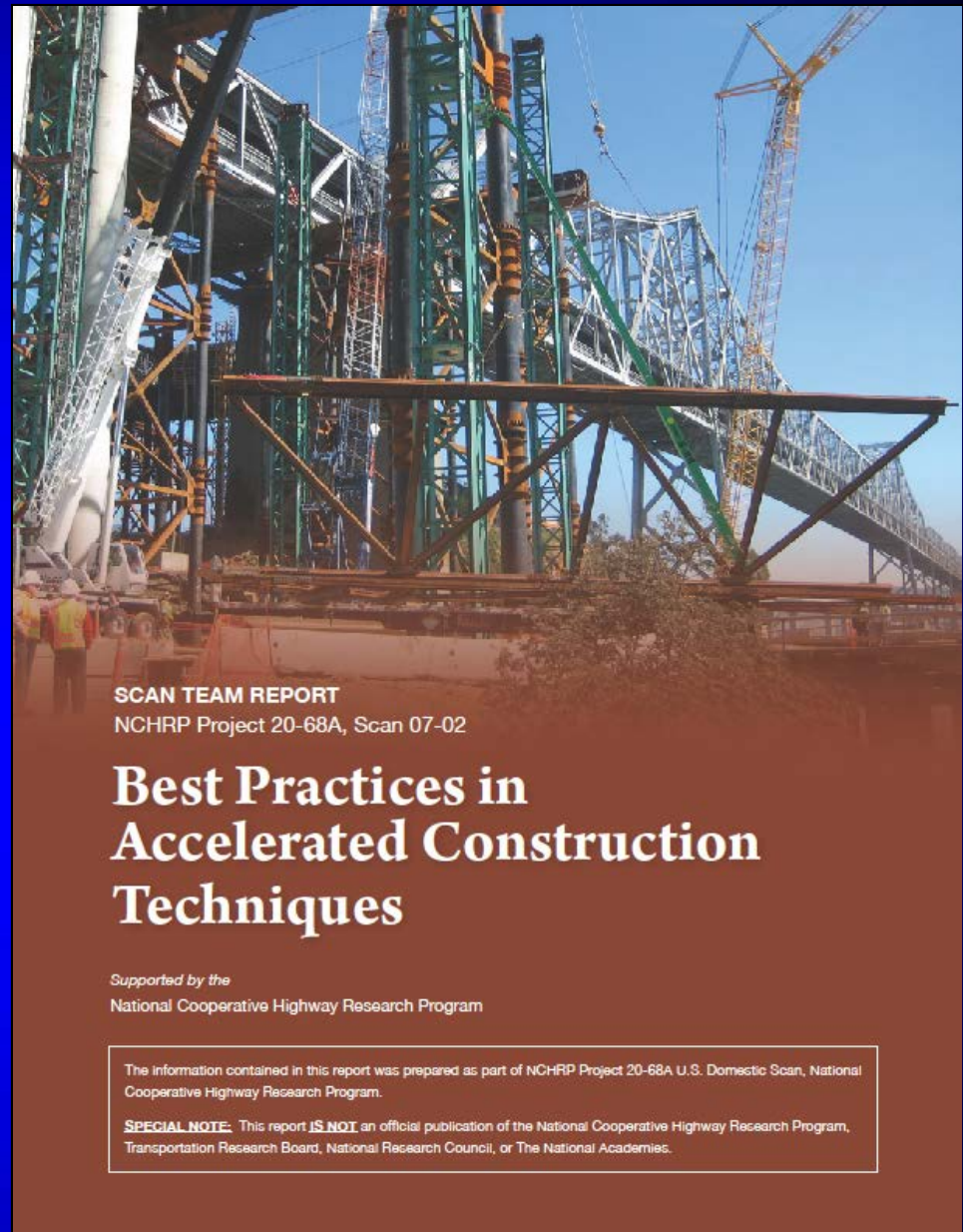
No.	Title	Status
12-98	Recommended Guidelines for Prefabricated Bridge Elements and Systems Tolerances and Dynamic Effects of Bridge Moves	ongoing
12-102	Recommended AASHTO Guide Specification for ABC Design and Construction	ongoing
12-105	Proposed AASHTO Seismic Specifications for ABC Column Connections	ongoing

Google search: NCHRP xx-xxx

NCHRP Domestic Scan Program

Domestic Scan on
Best Practices in
Accelerated Construction
Techniques

March 2009

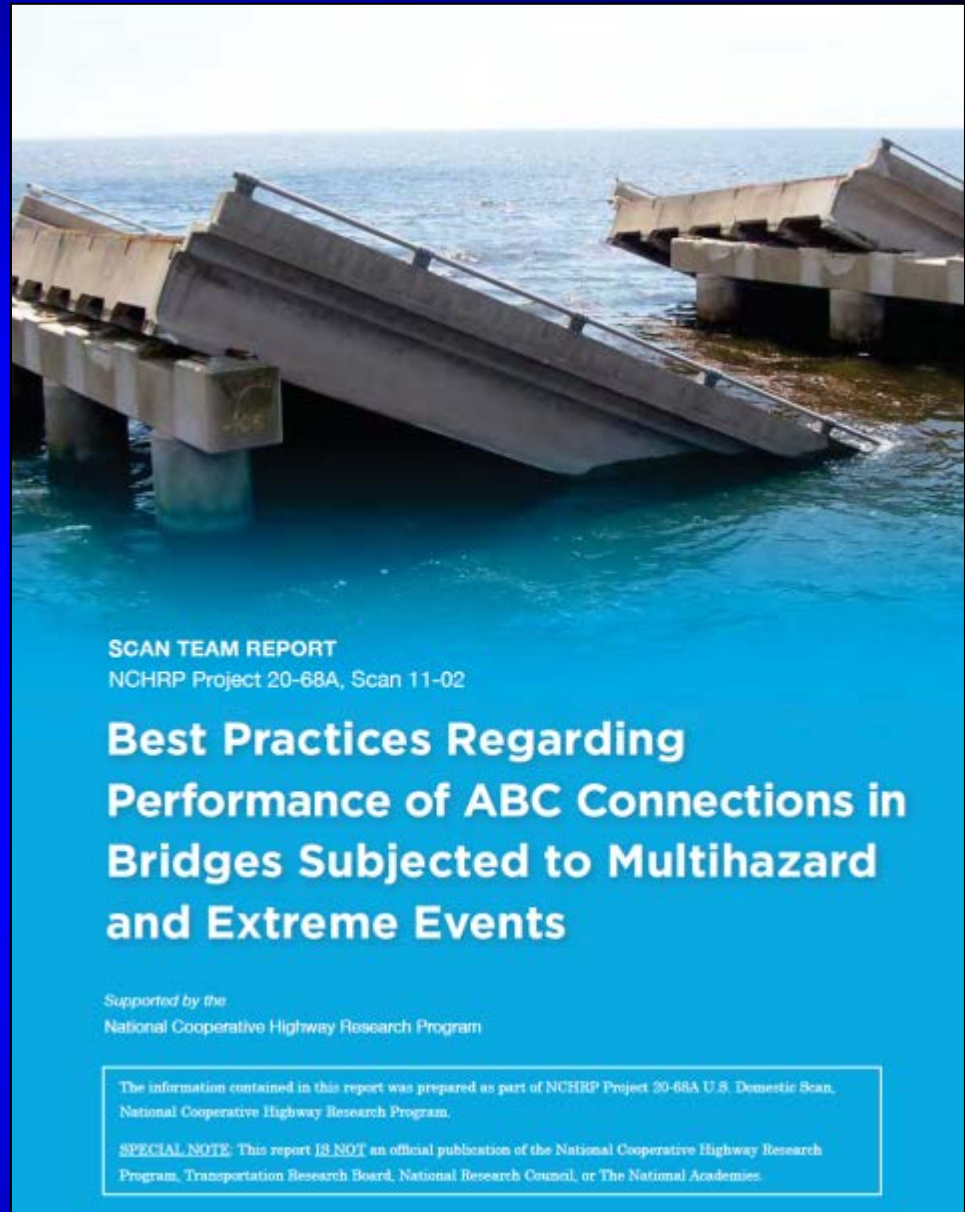


http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-68A_07-02.pdf

NCHRP Domestic Scan Program

Domestic Scan on
Best Practices in
Performance of ABC
Connections in Bridges
Subjected to Multi-hazard
And Extreme Events

October 2012

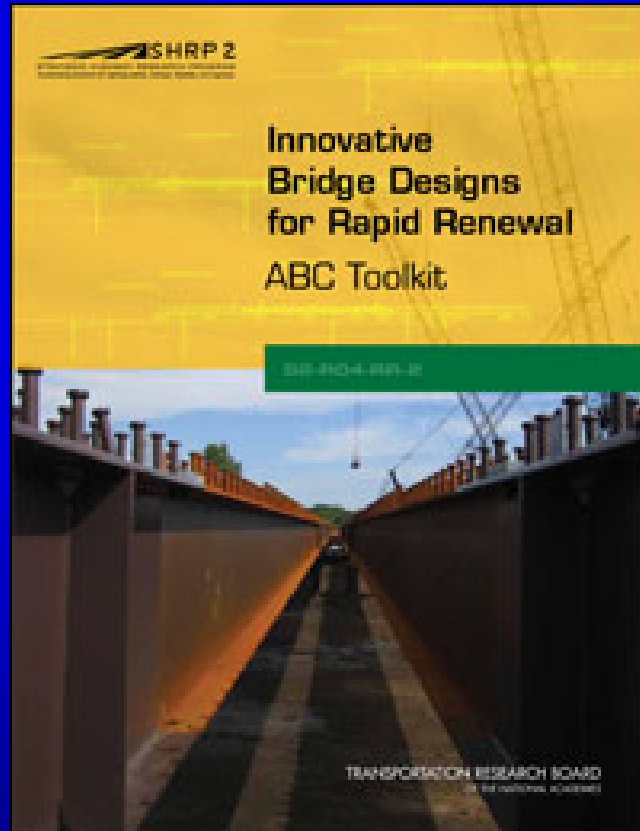


http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-68A_11-02.pdf

Strategic Highway Research Program 2 (SHRP2) – Renewal: Bridges

<http://shrp2.transportation.org/Pages/Bridge-Designs-for-Rapid-Renewal.aspx>

SHRP2 R04:
Innovative
Bridge
Designs
for Rapid
Renewal



Transportation Research Board (TRB) ABC Subcommittee

<https://www.sites.google.com/site/trbaff103/home>



- Welcome
- Registration
- Members
- News/Events 2014
- ABC Research Projects
 - Project Tracker
- Annual Meetings 2014
- Comments

TRB

Committee on General Structures (AFF10) Subcommittee on Accelerated Bridge Construction (AFF10-3)

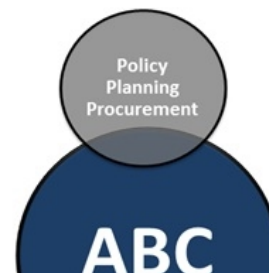
Approximately one-fourth of the Nation's 600,000 bridges require rehabilitation, repair, or total replacement. The construction-related work used to address these needs can have significant impact to the surrounding area including mobility, safety, and other social-economic related impacts. Throughout the U.S., owner agencies are realizing that the results of using ABC strategies not only help address onsite related constraints, but can also improve how a bridge program is delivered when used in a more routine, programmatic manner.

Scope: The TRB Accelerated Bridge Construction (ABC) Subcommittee supports research, technology transfer, and implementation to advance ABC technologies related to policy, planning, procurement, design, materials, construction and contracting. The **objective** of the subcommittee is to expand the knowledge and expertise to foster the implementation of ABC related technologies.

Road Map:

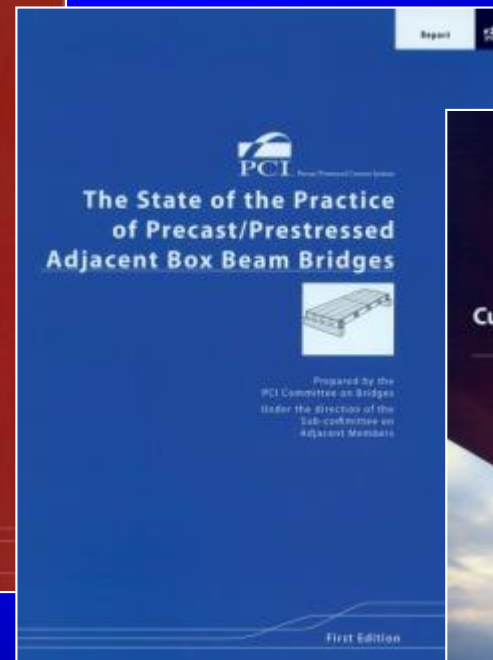
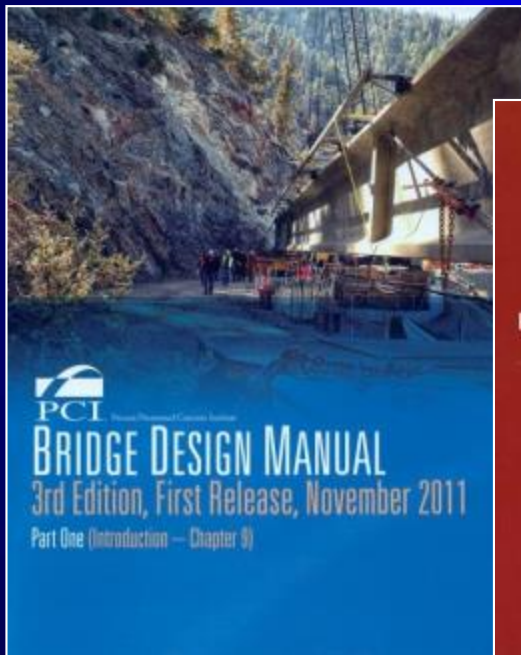
The Subcommittee will...

1. Stay informed on the current state of practice/art.
2. Identify, prioritize and prepare research needs statements (RNS).
3. Collaborate RNS with State DOTs, FHWA, and AASHTO groups.
4. Support research projects.



Industry ABC Resources

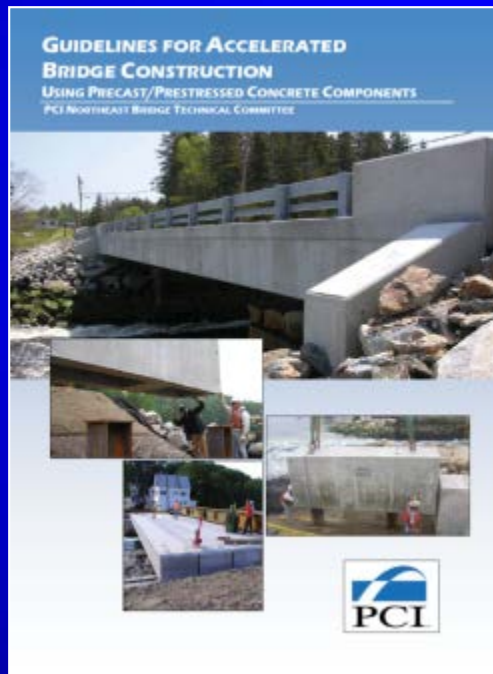
Precast/Prestressed Concrete Institute (PCI)
<http://www.pci.org>



Industry ABC Resources

PCI Northeast

<http://www.pcine.org> (Bridge Resources)



ABC University Transportation Center (ABC-UTC)

**USDOT Tier 1 UTC Award Announcement:
September 2013**

Consortium of Universities:

- Florida International University (FIU)
 - Atorod Azizinamini (lead)
- Iowa State University (ISU)
 - Brent Phares & Terry Wipf
- University of Nevada, Reno (UNR)
 - Saiid Saiidi

Accelerated Bridge Construction University Transportation Center (ABC-UTC) – <http://abc-utc.fiu.edu/>

The image shows a screenshot of a web browser displaying the homepage of the Accelerated Bridge Construction University Transportation Center (ABC-UTC). The browser's address bar shows the URL <http://abc-utc.fiu.edu/>. The website has a dark blue header with the ABC-UTC logo on the left and the FIU logo on the right. The main navigation menu includes links for Home, Research Projects, Education, Technology Transfer, Resources, Events, and News. The 'Home' link is circled in red. Below the navigation is a large banner featuring the ABC-UTC logo and logos for partner institutions: FIU (Florida International University), Iowa State University, and the University of Nevada, Reno. A search bar is located in the top right corner. On the left side, there is a vertical menu with links to 'About ABC-UTC', 'Center Partners', 'Center Administration', 'Key Researchers', 'Mentors', 'Students', and 'Steering Committee'. On the right side, there is a section for 'Upcoming Events' listing several events with dates and titles, such as 'SHRP2 R04 Regional Peer-to-Peer Exchange Workshop - Minneapolis, MN' and '2015 PCI Fall Committee Days and Membership Conference - Louisville, KY'. At the bottom, there is a form to 'Join us and learn more about ABC:' with fields for 'Your Name', 'Your E-mail', and a 'Submit' button. Below the form are partial views of other content sections, including 'ABC Conference' and 'About Us'.

http://abc-utc.fiu.edu/ ABC-UTC : Accelerated Brid... X

ABC
UTC

ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

FIU FLORIDA INTERNATIONAL UNIVERSITY

Home Research Projects Education Technology Transfer Resources Events News

About ABC-UTC
Center Partners
Center Administration
Key Researchers
Mentors
Students
Steering Committee

Search

ABC
UTC

FIU FLORIDA INTERNATIONAL UNIVERSITY
IOWA STATE UNIVERSITY
University of Nevada, Reno

Join us and learn more about ABC:

Your Name Your E-mail Submit

ABC Conference September 24, 2015 About Us

Upcoming Events

September 16 - 17, 2015
SHRP2 R04 Regional Peer-to-Peer Exchange Workshop - Minneapolis, MN

September 25, 2015
Call for Award Nominations - Extended Submission Deadline - 2015 National ABC Conference - Miami, FL

October 15 - 18, 2015
2015 PCI Fall Committee Days and Membership Conference - Louisville, KY

November 17 - 18, 2015
SHRP2 R04 Regional Peer-to-Peer Exchange

ABC Conference



2015 Accelerated Bridge Construction Conference

The 2015 National ABC Conference, co-sponsored by State DOTs, the Federal Highway Administration and industry partners, will be held on December 7-8, 2015 in Miami, Florida. Attendees are expected from Department of Transportation engineers and other bridge professionals.

[Read More.](#)

September 24, 2015



Oklahoma Department of Transportation ABC Bridge Replacement on SH-51 over Cottonwood Creek

by Randle White, P.E., Division Engineer, Field Division 8, Oklahoma DOT; and Jason Langhammer, P.E., Senior Project Manager, Garver

In 2014, the Oklahoma Department of Transportation completed its first fully accelerated bridge construction project on SH-51 over Cottonwood Creek. The old six-span 270-ft-long structurally deficient bridge over Cottonwood Creek was replaced with a widened three-span 26...

[Read More.](#)

About Us



Welcome

The ABC-UTC has assembled an experienced, knowledgeable, and engaged group of bridge academics and engineers who collectively will provide the transportation industry with the tools needed to effectively and economically utilize the principles of ABC to enhance mobility, and safety and produce safe, environmentally friendly, long-lasting bridges.

[Read More.](#)

November 17 - 18, 2015
SHRP2 R04 Regional Peer-to-Peer Exchange Workshop - Atlanta, GA

December 6 - 8, 2015
2015 National Accelerated Bridge Construction Conference - Miami, FL

December 14, 2015
Call for Award Nominations - Submission Deadline - NSBA 2016 Prize Bridge Competition

March 1 - 5, 2016
2016 PCI Convention and National Bridge Conference at The Precast Show - Nashville, TN

April 13 - 15, 2016
World Steel Bridge Symposium - Orlando, FL

2015 NATIONAL ACCELERATED BRIDGE CONSTRUCTION CONFERENCE

December 7 and 8, 2015

Workshops December 6, 2015
Hyatt Regency, Miami, Florida

<http://www.2015abc.fiu.edu/>



Join us and learn more about ABC:

2015 National Accelerated Bridge Construction Conference

The 2015 National Accelerated Bridge Construction Conference will be held on December 7 and 8, 2015, at the Hyatt Regency Hotel, in downtown Miami, Florida. The 2014 National Accelerated Bridge Construction

Reserve Now

Technology Transfer: Monthly Webinar

[Introduction](#)

[Monthly Webinar](#)

[Webinar Archives](#)

[Conferences](#)



The ABC Center at FIU has offered free monthly webinars since March 2011. The ABC-UTC is continuing this series and maintaining an archive of the past events. The intended audience of these webinars includes engineers and other bridge professionals with content ranging from design issues to construction and contracting. These webinars attract an average of 4,000 participants each month.

The archive of past webinars is being transitioned to the new website. Click "Webinar Archives" on the left vertical menu to access past webinars transitioned to date.

Thursday, September 24, 2015 (1:00 - 2:00 pm Eastern)

Oklahoma Department of Transportation ABC Bridge Replacement on SH-51 over Cottonwood Creek

Search

Upcoming Events

September 16 - 17, 2015
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to-Peer Exchange
Workshop - Minnea
MN**

September 25, 2015
**Call for Award Nom
- Extended Submiss
Deadline - 2015 Nat
ABC Conference - M**

October 15 - 18, 2015
**2015 PCI Fall Comm
Days and Membersh
Conference - Louisv**

November 17 - 18, 2015
**SHRP2 R04 Regional
to-Peer Exchange
Workshop - Atlanta**

December 6 - 8, 2015
**2015 National Acce
Bridge Constructio**

Accelerated Bridge Construction University Transportation Center (ABC-UTC)

The image shows a screenshot of a web browser displaying the ABC-UTC website. The browser's address bar shows the URL <http://abc-utc.fiu.edu/>. The website header features the ABC-UTC logo on the left, the text "ACCELERATED BRIDGE CONSTRUCTION UNIVERSITY TRANSPORTATION CENTER" in the center, and the FIU logo on the right. A navigation menu below the header includes "Home", "Research Projects" (circled in red), "Education", "Technology/Transfer", "Resources", "Events", and "News".

On the left side of the page, there is a vertical menu with the following items: "About ABC-UTC", "Center Partners", "Center Administration", "Key Researchers", "Mentors", "Students", and "Steering Committee".

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Deadline - 2015 National ABC Conference - Miami, FL
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2015 PCI Fall Committee Days and Membership Conference - Louisville, KY
- November 17 - 18, 2015
SHRP2 R04 Regional Peer-to-Peer Exchange

At the bottom of the page, there are partial views of sections for "ABC Conference" (September 24, 2015) and "About Us".



Research Projects

Development of Manual for Enhanced Service Life of ABC Projects

[▶ Link to latest QUARTERLY PROGRESS REPORT](#)

[▶ Link to OVERVIEW POSTER](#)

Background

The nationwide application of ABC in bridge design and construction is at its early stages. Nevertheless, a few ABC projects are decades old, and the number of ABC projects is rapidly increasing. It is essential to observe the performance of ABC projects in service, at the national level, and develop a manual that assists designers and owners in best design, construction and maintenance practices that are capable of enhancing service life of ABC bridges.

Objective

The main objective of this project is to develop a manual devoted to service life performance of ABC projects.

Scope

The development of the document will consider the ABC projects nationwide. It will include case studies, examples, design, inspection and maintenance information. It will be flexible and accommodating to the addition of new information as it becomes available. Tools will be developed to assist the user to navigate through the information and make the document user friendly. The general framework for the document will be similar to that described in the Guide for Design of Bridges for Service Life.



Projects at Florida International University

- **Development of Manual for Enhanced Service Life of ABC Projects**
- International Database of ABC Research
- Extending application of SDCL to ABC
- Compilation of ABC solutions
- Estimating total cost of bridge construction using ABC and conventional methods of construction

Projects at Iowa State University

[Research Projects](#)

[Research Facilities](#)

Accelerated Bridge Construction University Transportation Center (ABC-UTC)

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Technology Transfer: Monthly Webinar Archives

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Introduction

Monthly Webinar

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Thursday, August 20, 2015 (1:00 - 2:00 pm Eastern)

PennDOT Replacement of Route 581 Bridge during Weekend Closures

by Tom Macioce P.E., Chief Bridge Engineer, PennDOT; Harivadan Parikh P.E., District Bridge Engineer, PennDOT District 8.

Description: In June 2015 the Pennsylvania DOT replaced the three-span Route 581 Bridge in the borough of Lemoyne in Cumberland County. With 86,000 vehicles a day traveling across the bridge, ABC was used to limit closures to several weekends instead of the typical 1.5 years that would have been required to replace this bridge using conventional methods. The superstructure spans were...

[Read More](#)

Thursday, July 23, 2015 (1:00 - 2:00 pm Eastern)

Emerging ABC Connection Details for High Seismic Areas

by M. Saiid Saiidi Ph.D., P.E., Professor, University of Nevada, Reno; Sri Sritharan Ph.D., Professor, Iowa State University.

Description: Which connection details has research proven to work well for prefabricated

Upcoming Events

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MN

September 25, 2015
Call for Award Nom
- Extended Submiss
Deadline - 2015 Nat
ABC Conference - M

October 15 - 18, 2015
2015 PCI Fall Comm
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Conference - Louisv

November 17 - 18, 2015
SHRP2 R04 Regional
to-Peer Exchange



Technology Transfer: National ABC Conferences

Search

- Introduction
- Monthly Webinar
- Webinar Archives
- Conferences**

Dec 6 - 8, 2015

2015 National Accelerated Bridge Construction Conference - Miami, FL

Co-sponsored by 30 State DOTs, FHWA, TRB, NCBC, & NSBA.

Dec 3 - 5, 2014

2014 National Accelerated Bridge Construction Conference

Co-sponsored by 26 State DOTs, FHWA, TRB, NCBC, NSBA, IABMAS, & ASCE.

Link to 2014 proceedings

Upcoming Events

September 16 - 17, 2015 SHRP2 R04 Regional to-Peer Exchange Workshop - Minneapolis, MN

September 25, 2015 Call for Award Nominations - Extended Submission Deadline - 2015 National ABC Conference - Miami, FL

October 15 - 18, 2015 2015 PCI Fall Commemorative Days and Membership Conference - Louisville, KY

November 17 - 18, 2015 SHRP2 R04 Regional to-Peer Exchange Workshop - Minneapolis, MN

Accelerated Bridge Construction University Transportation Center (ABC-UTC)

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- November 17 - 18, 2015
SHRP2 R04 Regional Peer-to-Peer Exchange

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- Introduction
- State DOT Websites**
- SHRP2
- Implementation
- TRB ABC Subcommittee
- FHWA
- Industry
- Related Links

Resources: State DOT Websites

Iowa DOT

- Accelerated Bridge Construction
- Innovative Bridge Research and Construction/Deployment (IBRC/IBRD) Program

Massachusetts DOT

- Accelerated Bridge Program
- LRFD Bridge Manual, Part III - Prefabricated Elements

Oregon DOT

- Bridge Design & Drafting Manual, Section 3.24, ABC Guidelines

Texas DOT

- ABC online standards include prestressed decked slab beams, prestressed slab beams, prestressed box beams, precast bent caps, and prestressed partial-depth deck panels

Utah DOT

- "ABC is not separated anymore. It's just part of doing business." 2015 quote from Carmen Swanwick, Chief Structural Engineer, Utah DOT Structures Design and Detailing Manual (SDDM), Chapter 20 - Accelerated Bridge Construction

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Upcoming

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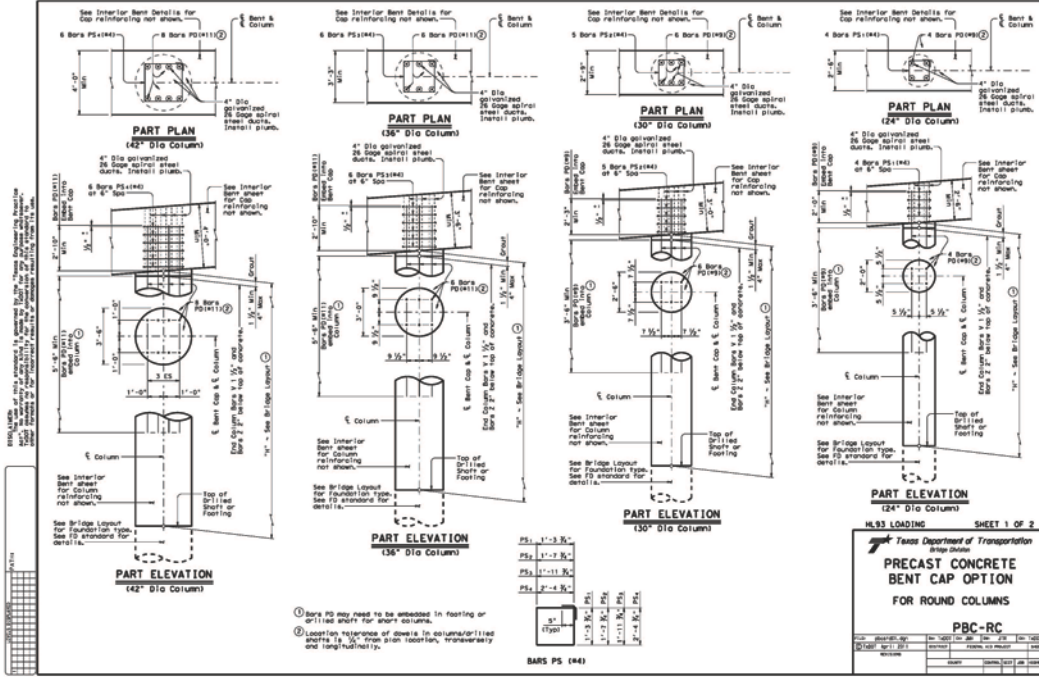
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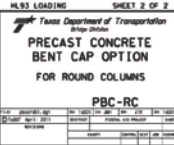
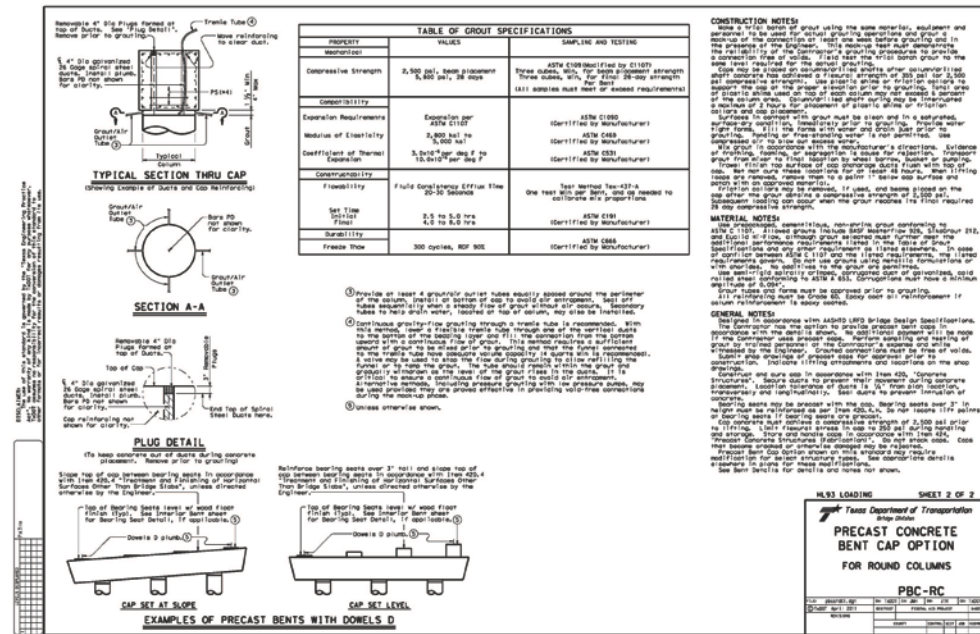
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TxDOT ABC Bridge Standards



Precast Concrete Bent Cap Option – posted on TxDOT bridge standards website



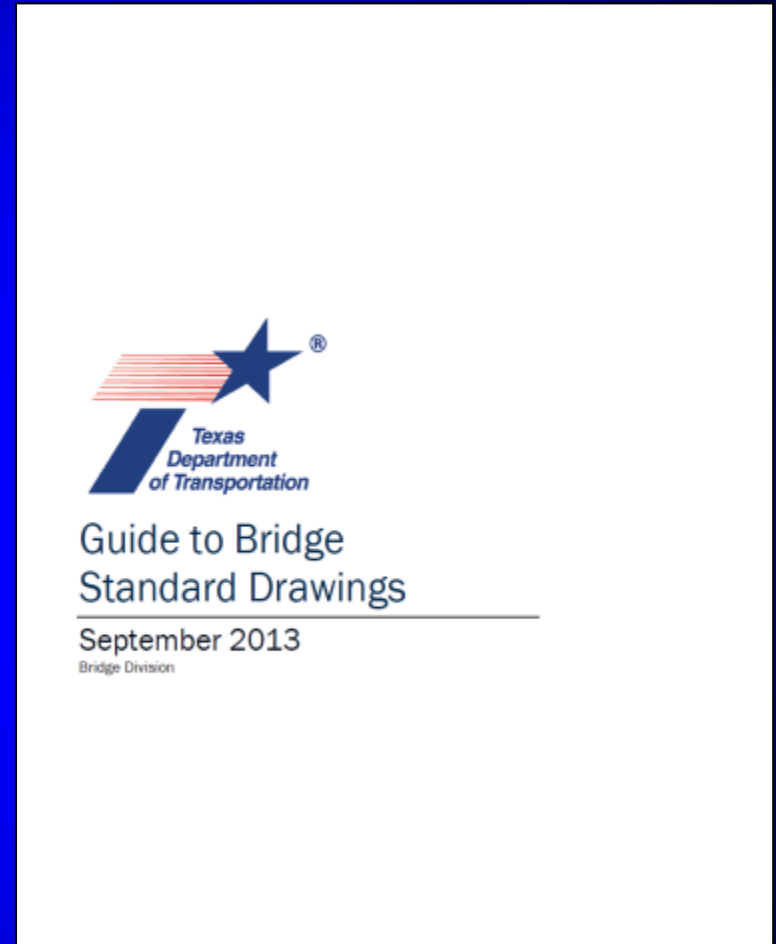
TxDOT

Bridge Standards

Guide to Bridge Standard Drawings includes:

Decked Slab Beam (ABC)

- 20-in. & 23-in. depth
- 6.5-ft, 7.5-ft, & 8-ft beam widths
- 24-ft, 28-ft, & 30-ft roadway widths
- 30-ft to 60-ft span lengths





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Resources: SHRP2 Implementation

SHRP2 implementation information is available on AASHTO's [SHRP2 Solutions website](#).

SHRP2 R04, "Innovative Bridge Designs for Rapid Renewal"

Regional Peer-to-Peer Exchange Workshops

The SHRP2 Solutions R04 Team is hosting two regional peer-to-peer exchange workshops in fall 2015. Owner agencies are invited to both days, with consultants and contractors invited to the second day.

- September 16-17, 2015 - Minneapolis, MN
- November 17-18, 2015 - Atlanta, GA

For additional information as it becomes available, check [AASHTO's R04 website](#), or contact Jennifer.Smoker@ch2m.com

- The **R04 Toolkit** describes standardized approaches to designing and constructing complete bridge systems for rapid renewal.
- For general information on the original research project, see [TRB's R04 web page](#).

SHRP2 R07, "Performance Specifications for Rapid Renewal"

- The [research final report and implementation guidelines](#) are available

Upcoming

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- FHWA
- Industry
- Related Links

Resources: TRB ABC Subcommittee

The Transportation Research Board (TRB) *ABC Subcommittee* functions under the TRB *AFF10 General Structures* parent committee.

- Membership includes representation from the following TRB committees:
 - AFF10, General Structures
 - AFF20, Steel Bridges
 - AFF30, Concrete Bridges
 - AFF50, Seismic Design and Performance of Bridges
 - AFH40, Construction of Bridges and Structures
 - AHD30, Structures Maintenance
 - AHD35, Bridge Management
- TRB ABC Subcommittee website: <http://www.trbaff103.com/>
- Information posted from 2015 TRB Annual Meeting's ABC paper session, workshop, and subcommittee meeting can be viewed by selecting "2015" from the "Annual Meetings" tab.
- You are invited to participate in the "rate the research topic ideas or RTI" that is posted under the "RTI" tab.
- You can download the National ABC Research spreadsheet under the "Research Projects" tab. The spreadsheet includes approximately 120 ABC related research projects related to ABC topics.
- To receive updates on the Subcommittee's activities, sign up as a "subcommittee friend" by

Search

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- FHWA**
- Industry
- Related Links

Resources: FHWA

FHWA ABC Contact: Benjamin Beerman, benjamin.beerman@dot.gov

Links to FHWA ABC Resources:

- [ABC Manual](#)
- [Connections Manual](#)
- [SPMT Manual](#)
- [Decision-Making Framework](#)
- [PBES Case Studies](#)
- [Highways for LIFE Summary Reports](#)

FHWA ABC website - "ABC is bridge construction that uses innovative planning, design, materials, and construction methods in a safe and cost-effective manner to reduce the onsite construction time that occurs when building new bridges or replacing and rehabilitating existing bridges." [More information ...](#)

Every Day Counts (EDC) - "EDC is designed to focus on a finite set of initiatives. Teams from FHWA work with state, local, and industry partners to deploy the initiatives and develop performance measures to gauge their success." [More information ...](#)

FHWA Incentive-Based Funding - Three incentive-based funding mechanisms are available for owner agencies who are looking to implement innovations such as prefabricated bridge elements and systems and other ABC related strategies into their program/projects

Search

Upcoming

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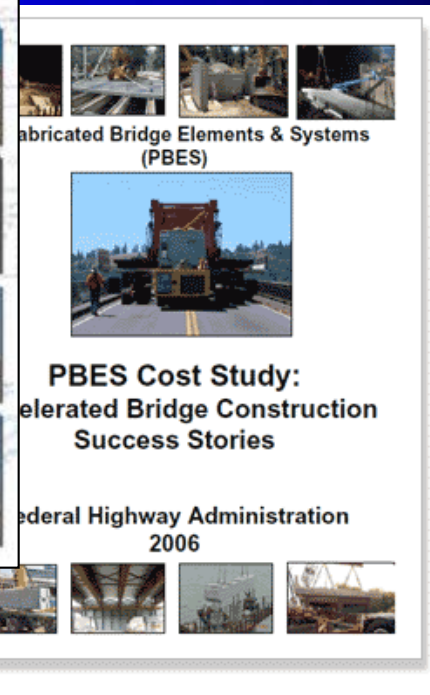
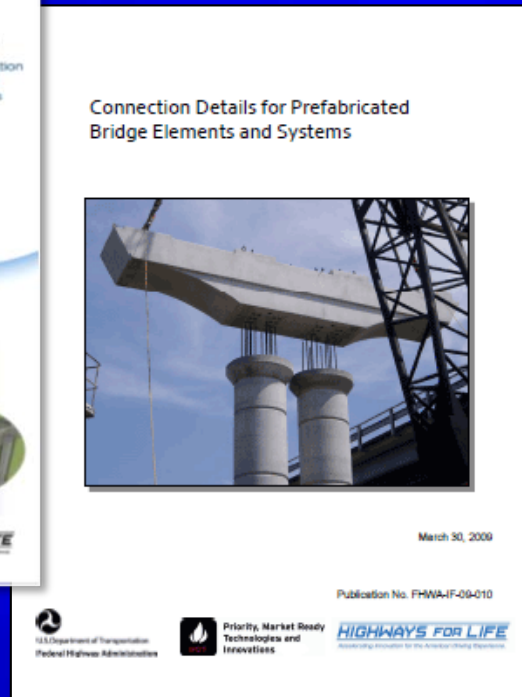
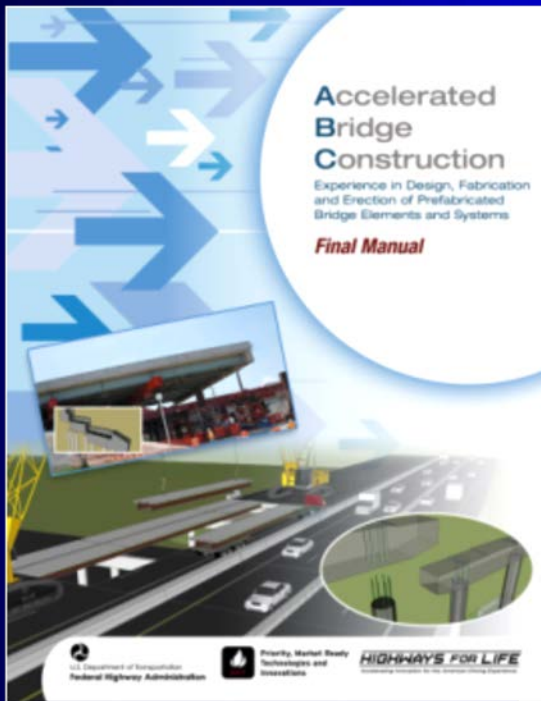
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FHWA ABC Resources

<http://abc-utc.fiu.edu/index.php/resources/fhwa>





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- TRB ABC Subcommittee
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- Industry**
- Related Links

Resources: Industry

Concrete Bridges

- National Concrete Bridge Council (NCBC)
- Precast/Prestressed Concrete Institute (PCI)
- PCI Northeast (Bridge Resources)

Steel Bridges

- National Steel Bridge Alliance (NSBA)
- Short Span Steel Bridge Alliance (SSSBA)

Composite Bridges

- American Composites Manufacturers Association (ACMA)
- Composites Product Suppliers

Bridge System Moves

- Self-Propelled Modular Transporter Contractors

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http://abc-utc.fiu.edu/ ABC-UTC : Accelerated Brid... X

ABC
UTC

ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

FIU FLORIDA INTERNATIONAL UNIVERSITY

Home Research Projects Education Technology Transfer Resources **Events** News

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FIU FLORIDA INTERNATIONAL UNIVERSITY
IOWA STATE UNIVERSITY
University of Nevada, Reno

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ABC Conference September 24, 2015 About Us

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ACCELERATED BRIDGE CONSTRUCTION UNIVERSITY TRANSPORTATION CENTER



- Home
- Research Projects
- Education
- Technology Transfer
- Resources
- Events
- News

All Events

National Events

International Events



Event : Sep 16 - 17, 2015

SHRP2 R04 Regional Peer-to-Peer Exchange Workshop - Minneapolis, MN

Sponsored by AASHTO, FHWA & TRB SHRP2 Program

Upcoming Events

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SHRP2 R04 Regional Peer-

Monthly Webinar : Sep 24



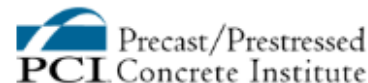
Oklahoma Department of Transportation ABC Bridge Replacement on SH-51 over Cottonwood Creek

Event : September 25, 2015



Call for Award Nominations - Extended Submission Deadline - 2015 National ABC Conference - Miami, FL

Event : Oct 15 - 18, 2015



2015 PCI Fall Committee Days and Membership Conference - Louisville, KY
Sponsored by the

Example ABC-UTC Research Projects

- FIU's Compilation of ABC Bridges, and International Database of ABC Research
- ISU's Development of Prefabricated Concrete Bridge Railings
- FIU's Compilation of Available Short- to Medium-Span ABC Systems
- FIU's Extending Application of Simple for Dead & Continuous for Live Load Steel Bridge System to ABC Applications in Seismic Regions- Phase I- Numerical Study
- FIU's Development of Manual for Enhanced Service Life of ABC

Compilation of ABC Solutions

Objective

To compile information on existing accelerated bridge technologies and present the information in a manner useful to designers

How to access the database?

The screenshot shows the website for the Accelerated Bridge Construction University Transportation Center (ABC-UTC) at Florida International University (FIU). The top navigation bar includes links for Home, Research Projects, Education, Technology Transfer (highlighted with a red box), Resources, Events, and News. On the left sidebar, there are links for Monthly Webinar, Webinar Archives, 2014 Conference, and ABC Databases (highlighted with a red box). The main content area is titled "ABC Databases" and contains two underlined links: "Project Database" and "Research Database". A large text overlay in the center of the page reads "To be available soon!".

On the current ABC-UTC server
Clicking on either database link will take to database server

How to access the database?

The screenshot shows the ABC-UTC website with the following elements:

- Header:** ABC-UTC logo, "ACCELERATED BRIDGE CONSTRUCTION UNIVERSITY TRANSPORTATION CENTER", and FIU Florida International University logo.
- Navigation:** Home, Research Projects, Education, Technology Transfer, Resources, Events, News.
- Search:** A search bar with a magnifying glass icon.
- Left Sidebar:** About ABC-UTC, Center Partners, Center Administration, Key Researchers, Mentors, Students, Steering Committee.
- Main Content:** A large ABC-UTC logo banner with partner logos (FIU, Iowa State University, University of Nevada, Reno).
- Right Sidebar:** "Upcoming Events" section with a search icon.

A red-bordered callout box containing two icons: a database cylinder icon labeled "Database" and a computer mouse icon labeled "Webinars". A red arrow points from the search icon in the website screenshot to this callout box.

On the current ABC-UTC server
Clicking on little icon will take you to Project Database

ABC Database

- Starting point was FHWA ABC Projects Database
- Created online database to host the information
- Created website and front end to:
 - Navigate database
 - Present database entries
 - Allow for user input

Navigating the Database

The screenshot shows a web browser displaying the ABC Bridge Project Locations page. The browser's address bar shows 'usctb.fiu.edu'. The page header features the ABC UTC logo on the left, the text 'ACCELERATED BRIDGE CONSTRUCTION UNIVERSITY TRANSPORTATION CENTER' in the center, and the FIU Florida International University logo on the right. A navigation menu below the header includes links for Home, Research Projects, Education, Technology Transfer, Resources, Events, and News. The main content area is titled 'ABC Bridge Project Locations' and contains a search bar with the placeholder text 'Search for bridges' and a blue 'Search' button. Below the search bar is a map of the United States with numerous blue pin icons indicating project locations. A text prompt above the map says 'Click on pin icons to view bridge details:'. Below the map, another text prompt says 'Click on states to view bridge results:'. At the bottom of the page, there is a list of states: Alabama, Arkansas, Connecticut, Florida, Alaska, California, Delaware, Georgia, Arizona, Colorado, District of Columbia, and Hawaii. On the right side of the page, there is a 'Featured Projects' section with the heading 'ABC Projects' and a list of three projects: '2010 - SC 703 Ben Sawyer', '2010 - 41st Street', and '2011 - Buffalo Creek'. Below this list is a blue 'Submit Project' button.

Project Database
Research Database

ABC
UTC

ACCELERATED BRIDGE CONSTRUCTION
UNIVERSITY TRANSPORTATION CENTER

FIU FLORIDA INTERNATIONAL UNIVERSITY

Home Research Projects Education Technology Transfer Resources Events News

ABC Bridge Project Locations

Search for bridges Search

Click on pin icons to view bridge details:

Click on states to view bridge results:

- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia
- Florida
- Georgia
- Hawaii

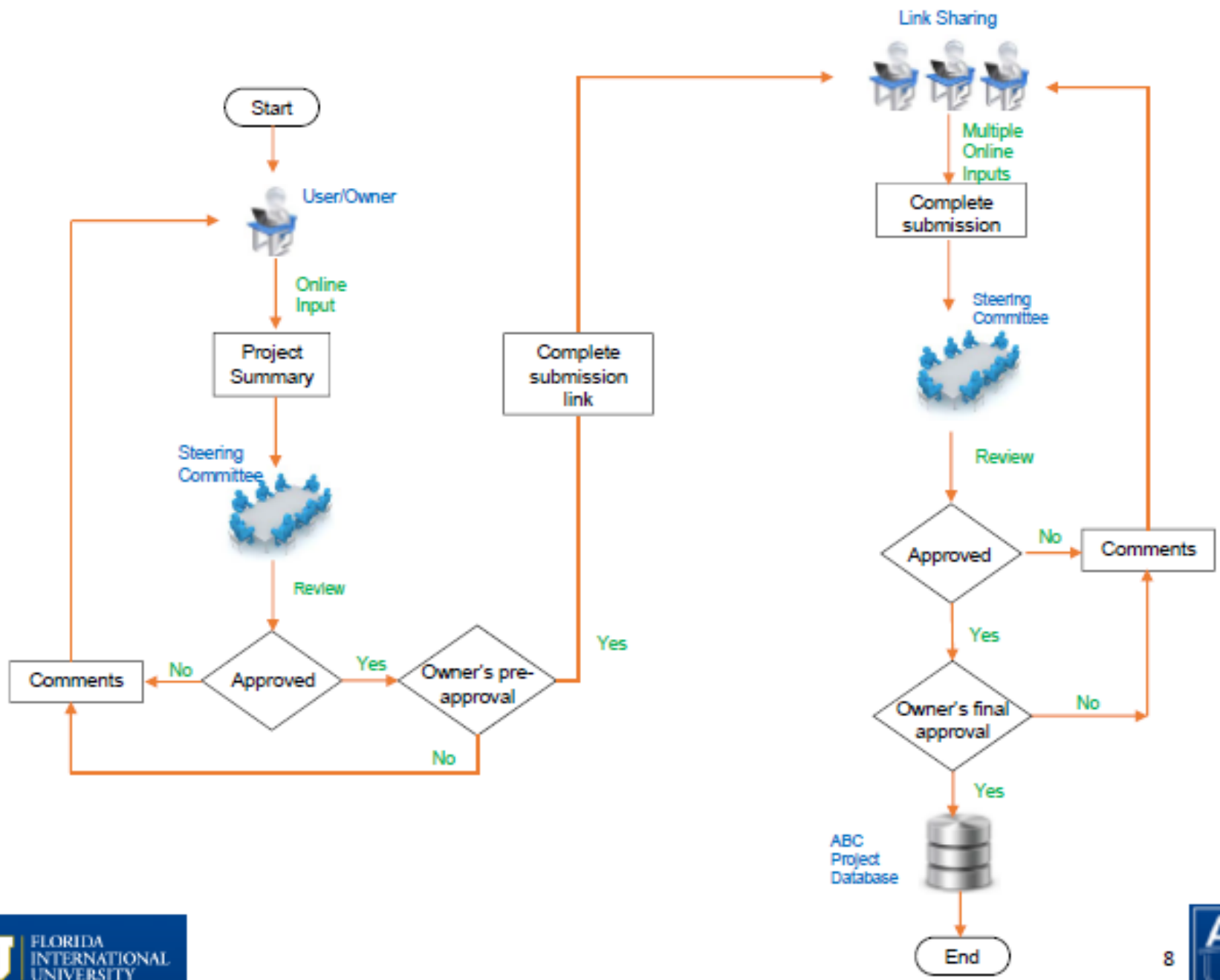
Featured Projects
ABC Projects

- 2010 - SC 703 Ben Sawyer
- 2010 - 41st Street
- 2011 - Buffalo Creek

Submit Project

Project Submission

- Develop means for project submittal from users
- Create system in which projects and documents can be uploaded
- Create system which allows for projects to be fully vetted before official entry into database



FIU's International Database of ABC Research

Objective

To develop a comprehensive database of published, ongoing and planned research related to ABC; linked to projects database



ABC Research Database

- Interfaces similar to the projects database are being created for ABC Research database

The screenshot displays the ABC Research Database website. The header includes the ABC UTC logo, the text 'ACCELERATED BRIDGE CONSTRUCTION UNIVERSITY TRANSPORTATION CENTER', and the FIU Florida International University logo. A navigation menu contains links for Home, Research Projects, Education, Technology Transfer, Resources, Events, and News.

The main content area is titled 'Bridge Locations' and features a search result for the project 'Application of Self-Consolidating Concrete and Rapid Construction in Bridges'. The project details include:

- Status: On-Going Projects
- Group: Materials
- Subject: SCC
- Project Length: 36 months
- Start Date: 1/2010
- Completion Date: 1/2015
- Budget: \$255,000

A large image of the bridge under construction is shown with a 'Click to enlarge' caption. A 'Back to search results' link is located above the image.

The 'Research Description' section states: 'The objectives of this research are to design the bridge to replace the existing one on Indian Gap Road over Camp Pleasant Branch in Franklin County using self-consolidating concrete and precast bridge components, construct the bridge, and evaluate.' Key words include 'Bridge construction; Bridge members; Design, Precast concrete; Self compacting concrete'. The 'Specific ABC Aspect of Project' is 'New materials in ABC construction'. 'Status/Notes' mention the start in 2010, completion in 2015, and interim reports available as of 2/4/2014, attributed to Issam Harik at the University of Kentucky.

Below the description are sections for 'Related Research' and 'Related Projects', each featuring a thumbnail image and a brief summary of a 2007 Madison County Bridge project.

On the right side of the page, there are two 'Featured Projects' sections. Each section contains placeholder text (Lorem ipsum) and a 'Submit Project' or 'Submit Research' button.

ISU's Development of Prefabricated Concrete Bridge Railings

Objective

To begin the process of developing crash-tested prefabricated bridge railings that have durable anchorage details

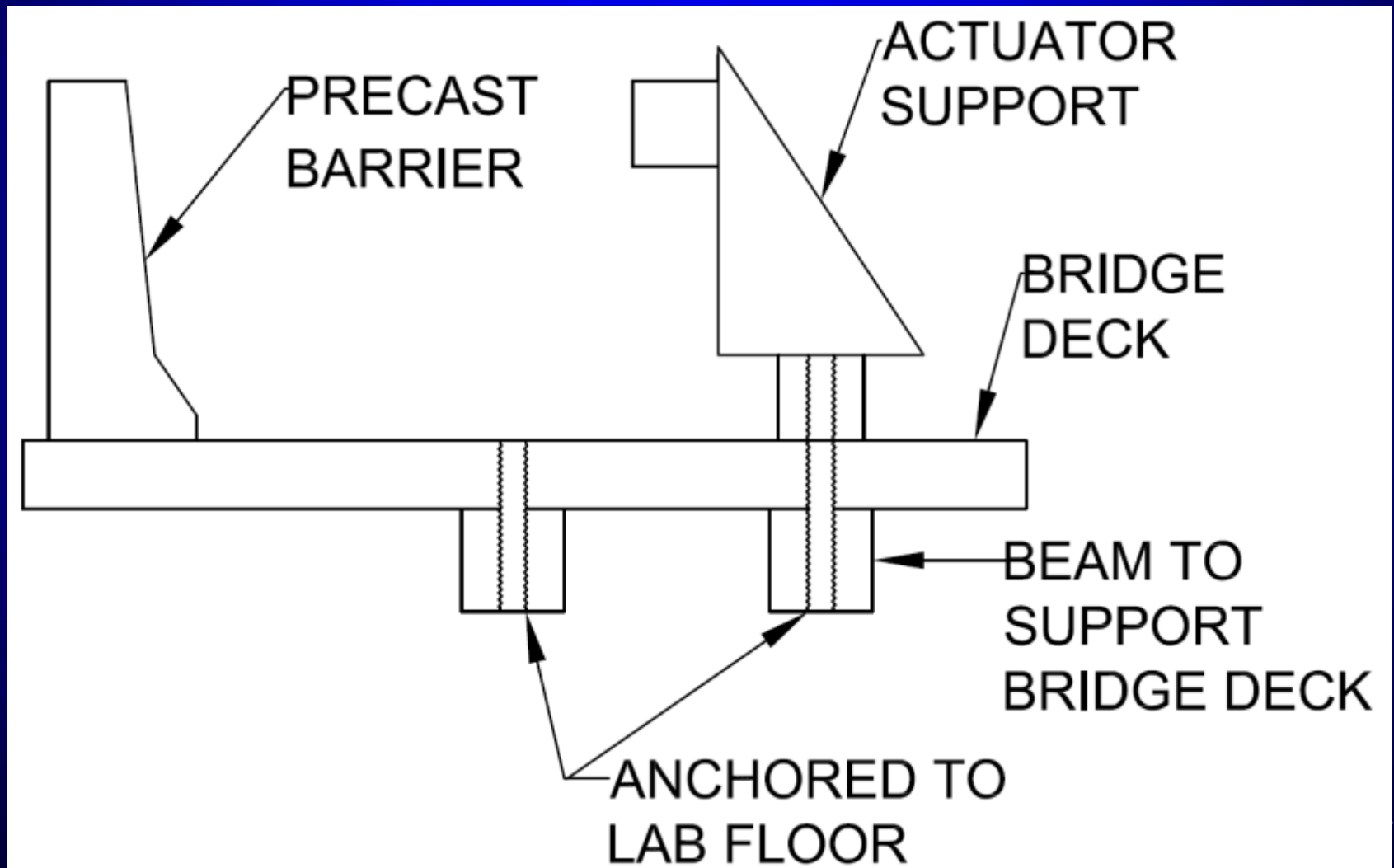
Note: A separate follow-on project will crash test bridge railings developed in this project

Prefabricated Bridge Railing Test Plan

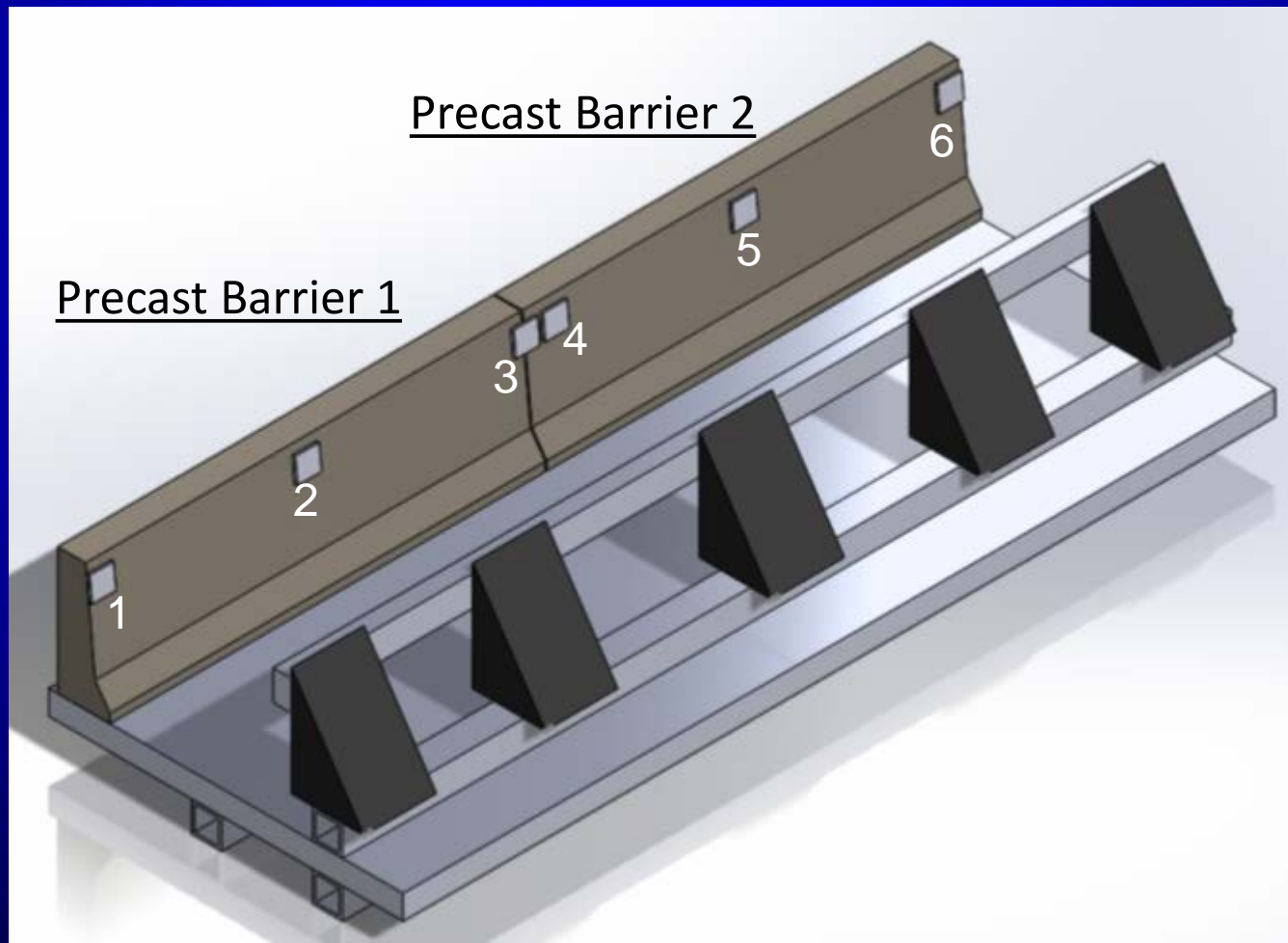
- Test plan will include quasi-static testing of two barrier connection concepts
- Hydraulic actuator will apply loads cyclically
- Include adequate instrumentation - linear variable differential transformers (LDVTs), strain gauges, and load cells
- Include ponding tests for durability



Lab Test Set-up



3D Model of Lab Set-up with Applied Load Locations

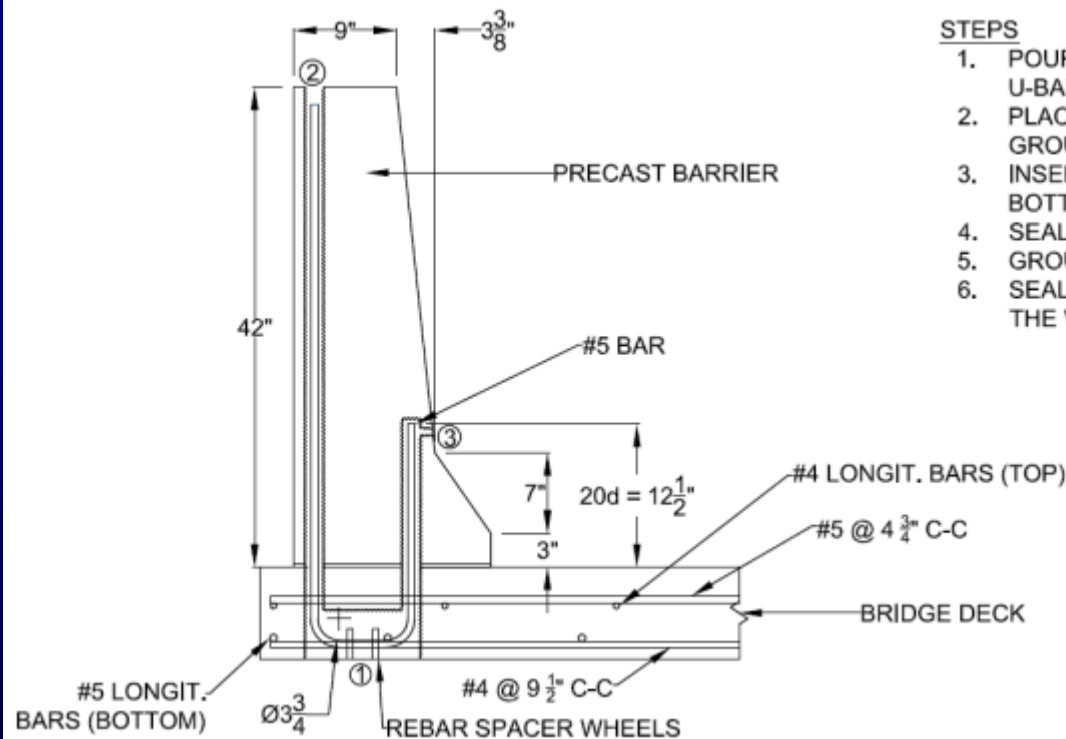


Construction and Test Sequence

- Two segments, each 12 feet in length
 - U-bar connection & stainless steel bar connection
 - Test each segment individually for design load (locations 2 and 5)
- Establish the connection between 2 barriers
- Test segments while connected
 - Apply 54 kip force at joint to measure force distribution (locations 3 and 4)
- Ensure that achieve selected failure mechanism (i.e., connection failure)

Precast Barrier 1

Connection using U-bar



STEPS

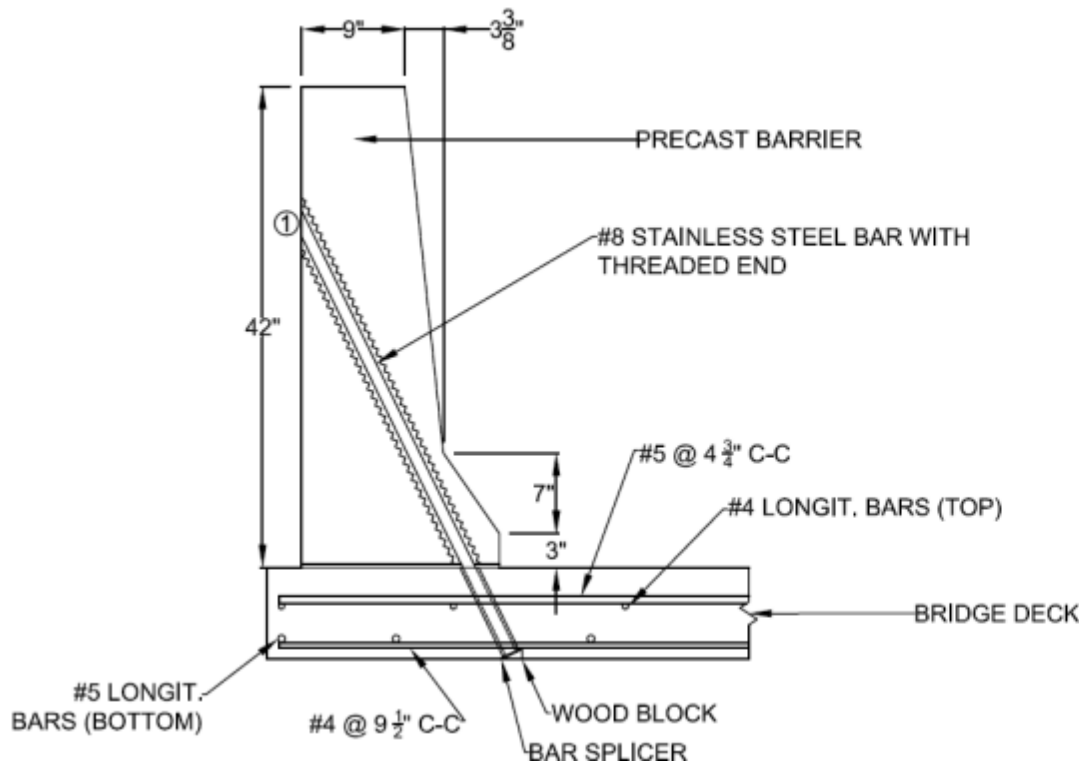
1. POUR CONCRETE DECK WITH ACCESS POCKETS FOR U-BAR INSERT
2. PLACE PRECAST CONCRETE BARRIER ON DECK WITH GROUT PAD BETWEEN DECK AND BARRIER
3. INSERT U-SHAPED REBAR WITH SPACER WHEELS FROM BOTTOM OF BRIDGE DECK
4. SEAL BOTTOM OF DECK POCKET
5. GROUT FROM INLET ② UNTIL IT COMES OUT OF OUTLET ③
6. SEAL OUTLET ③ AND POUR GROUT UNTIL IT FILLS ALL THE WAY TO THE TOP OF INLET ②

Rebar Spacer Wheel



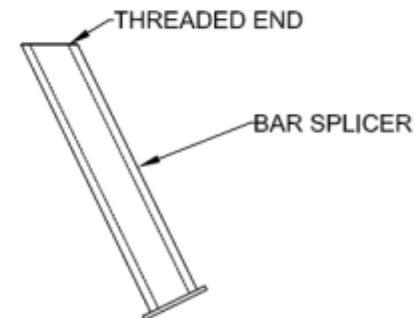
Precast Barrier 2

Connection using stainless steel bar with threaded end

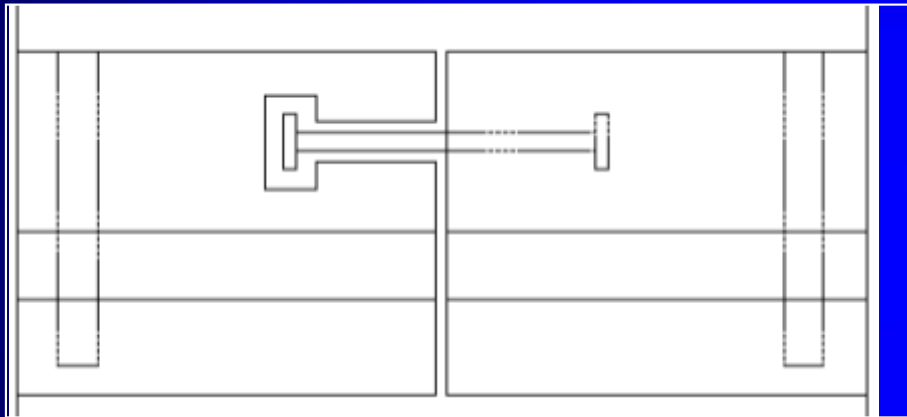


STEPS

1. POUR CONCRETE DECK WITH BAR SPLICER AND WOOD BLOCK TO POSITION BAR SPLICER
2. PLACE PRECAST CONCRETE BARRIER ON DECK WITH GROUT PAD BETWEEN DECK AND BARRIER
3. INSERT STAINLESS STEEL BAR WITH THREADED END INTO BARRIER AND BAR SPLICER
4. GROUT FROM INLET ①
5. SEAL OUTLET ①

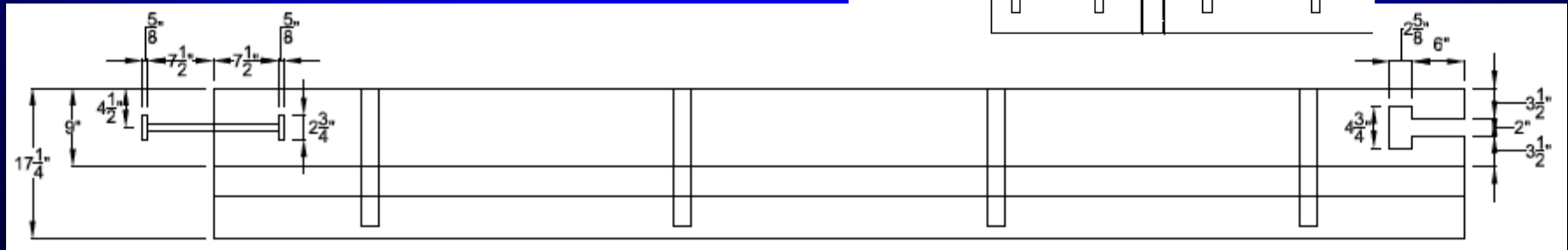
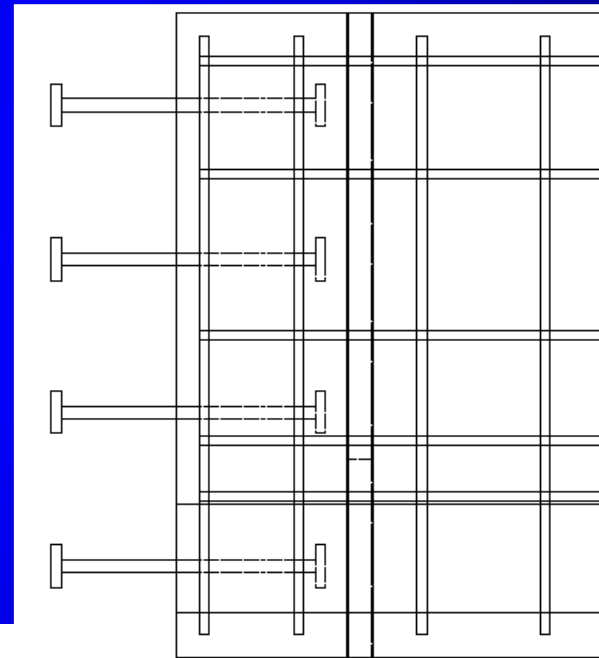


Barrier-to-Barrier Connection



PLAN VIEW OF BARRIER TO BARRIER CONNECTION

END SEGMENT ELEVATION



PLAN VIEW

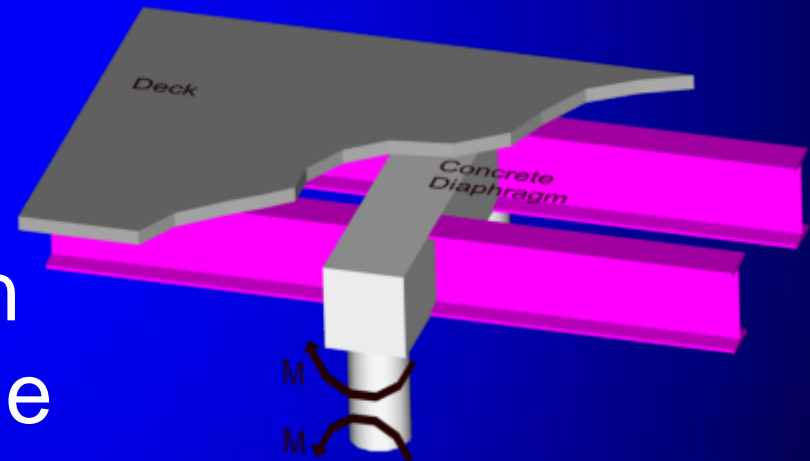
FIU's Compilation of Available Short to Medium Span ABC Systems

Objectives

- To compile information on existing ABC technologies that target the short- to medium-span range, approx. to 140 ft; including details suitable for ABC and using UHPC
- To present the information in a manner useful to designers; information will be incorporated into the ABC projects database

FIU's Extending Application of Simple for Dead and Continuous for Live Load Steel Bridge System to ABC Applications in Seismic Regions- Phase I- Numerical Study

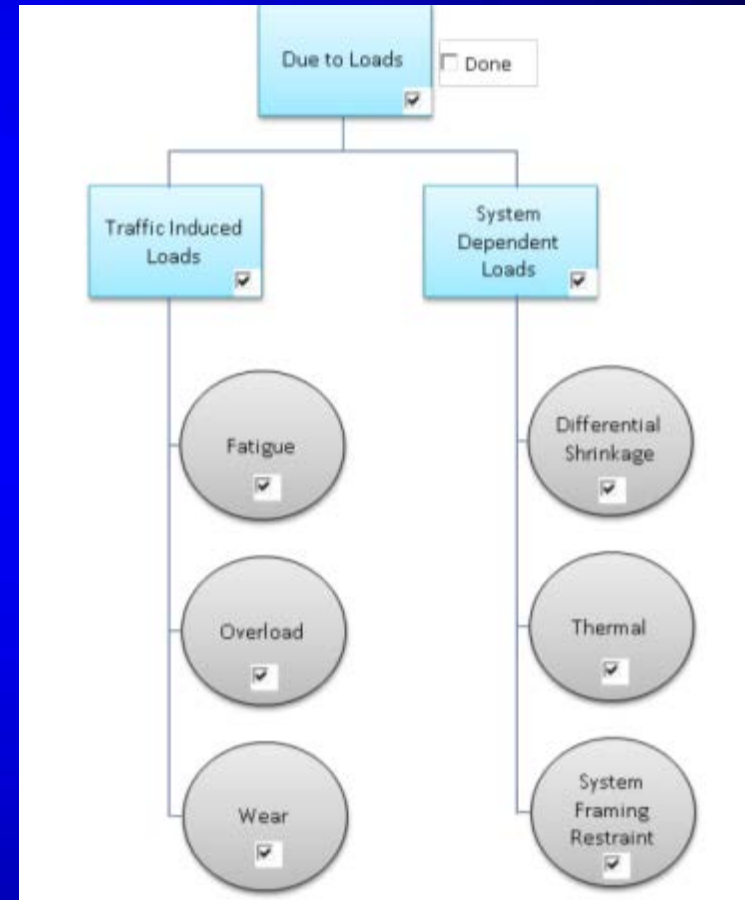
Objectives: To conduct combination experimental and numerical work to develop details and design provisions for extending the application of the SDCL bridge system to highly seismic areas



FIU's Development of Manual for Enhanced Service Life of ABC

Objective

To develop a manual devoted to service life design of ABC projects



ABC-UTC Upcoming Events

- Monthly webinar – Thurs., Sept. 24
 - Case Study: Oklahoma DOT's ABC Bridge Replacement on SH-51 over Cottonwood Creek
- 2015 In-depth web training – Tues., Nov. 10
 - Indiana/Kentucky Milton-Madison Lateral Slide
- 2015 National ABC Conference – Dec. 7-8
 - Miami, FL
 - Pre-conference Workshops – Dec. 6
 - Early Bird Registration Deadline: Oct. 9

ABC-UTC website: www.abc-utc.fiu.edu



Thank You

