



Program Progress Performance Report University Transportation Centers

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Research and Innovative Technology Administration

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Signature of Submitting Official:

Atorod Azizinamini

October 31, 2014
Date

ACCOMPLISHMENTS

What are the major goals and objectives of the program?

The broad goals and objectives of the Tier I Accelerated Bridge Construction University Transportation Center (ABC-UTC) are to advance the frontier of Accelerated Bridge Construction (ABC); develop new ABC knowledge; effectively transfer the state-of-the-art ABC knowledge to the profession; develop a next-generation ABC work force; and collaborate with the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), Departments of transportation (DOTs), other UTCs, and the transportation profession to make ABC the best solution for the nation's aging bridge infrastructure in line with U.S. DOT's strategic focus on State of Good Repair.

Specific goals and objectives of the ABC-UTC can be broken into three general categories:

Research

- Extend principles of ABC to the repair, replacement and preservation of bridges, including multi-hazards and seismic issues.
- Enhance the service life of bridges constructed using principles of ABC by emphasizing design for service life (at the design stage), preservation, and timely maintenance.
- In collaboration with other UTCs that will be funded, especially those that will concentrate on highway safety, develop traffic safety systems specifically for modular bridge construction for all traffic levels.
- Building on existing knowledge, develop the next generation of decision-making tools for better communication among stakeholders, which should assess the merits of various construction processes and visualize the entire life span of bridges in a seamless manner from birth to recycling.

Education and Workforce Development

- Become the educational focal point for advancing principles of ABC.
- Develop and nationally distribute K-12 educational materials related to bridge engineering, and ABC in particular, for educating and attracting future generations of transportation and sustainability engineers.
- Develop educational materials that could be used in academia at both undergraduate and graduate levels for explaining fundamental and advanced topics in ABC.
- Develop and deliver continuing education opportunities on ABC for practicing engineers across the country.
- Develop and deliver educational training related to ABC to construction workers and traffic safety personnel across the nation.

Technology Transfer

- Become a national repository and focal point for assisting federal, state, and local agencies on matters related to ABC.

- Educate the current and next generation of engineers on when and how to effectively use ABC technologies.
- Lower the cost of utilizing ABC technologies by conducting outreach activities at the local, regional, and national levels that include the dissemination of research results.
- Develop implementable tools that follow the form and function of AASHTO-type publications.

What was accomplished under these goals?

Four monthly meetings were held during the reporting period to track progress in different tasks. Progress in different tasks related to research, education and workforce development, and technology transfer was discussed during these monthly meetings between ABC-UTC directors, associate directors and key researchers.

Following is description of various tasks by three main categories that are research, workforce development, and technology transfer.

Research

ABC-UTC aims to carry out research in close association with federal and state agencies and bridge industry. During the reporting period, technical advisory committee (TAC) was established for research projects that were selected based on input of ABC-UTC steering committee, AASHTO T-4 and AASHTO T-3 Committees. Technical advisory committee consist of professionals from FHWA, state DOT and industry. These professionals were carefully selected for each research projects based on their experience that was closely related to the ABC-UTC research projects. Meetings were held with TAC to discuss ABC-UTC research projects.

Following table shows the list of research projects, technical advisory committee members for each project and progress made in the project during the reporting period.

Project #	Research Project Title	TAC Members	Progress (Apr-2014 to Sep-2014)
FIU-1	Compilation of all ABC research that is ongoing and completed Recommended by AASHTO T-4	Ahmad Abu-Hawash, Iowa DOT Ben Beerman, FHWA	Mock-ups and examples were developed to show templates for hosting database on ABC-UTC website. FHWA's database was used as starting point for this research project as per recommendation of Ben Beerman.
FIU-2	Compilation of ABC solutions	Ahmad Abu-Hawash, Iowa DOT Ben Beerman, FHWA	This project will use FHWA's database on ABC bridges as starting point. A memorandum of understanding (MOU) was drafted during the reporting period for transfer of data from FHWA to ABC-UTC. Framework to host and expand existing

			data was developed. As extension of this project a new bridge system that utilizes UHPC is also being developed.
FIU-3	Extending the application of simple for dead continuous for live load (SDCL) to seismic regions- Part 1: Numerical Study	Tom Ostrom, Caltrans Reza Farimani, Thornton Tomasetti BijanKhaleghi, Washington DOT Elmer Marx, Alaska DOT Ben Beerman, FHWA	Numerical analysis were carried out by subjecting three bridges, using SDCL system, to different earthquakes. Both integral and non-integral connections were considered in the numerical analysis. Preliminary results indicate that non-seismic details for SDCL system, currently in use, can be used in seismic region with few modifications.
FIU-4	Synthesis on calculating total public costs for short-term road closures to justify reasonable incentives/ disincentives Recommended by AASHTO T-4	Ben Beerman, FHWA Mary Lou Ralls Newman, Ralls Newman, LLC	A literature review on ABC cost estimation, public costs, and decision-making was conducted. A Framework for ABC decision-making and estimation of public costs was developed. Different methods for estimation of construction and user costs were evaluated and appropriate methods were identified.
FIU-5	Development of Manual for Enhanced Service Life of ABC Bridges	Bruce Johnson, Oregon DOT Ali Maher, Rutgers University Hamid Ghasemi, FHWA Carlos Duart, CDR Maguire	The general framework for developing a manual for design of bridges for service life and utilizing ABC philosophies is developed. Initial literature review and discussion with TAC indicated that closure pours are among the critical elements affecting the service life of ABC bridges. Twenty ABC projects were studied in detail and different closure pour details were identified. The main approach of this project is to identify the important details that are used in ABC projects and through inspection, comprehend their performance and identify the factors that affect their service life and develop solutions that could

			mitigate the factors reducing the service life. Attempts are being made to work with FHWA LTBPP.
ISU-1	Development of Crash-Tested Prefabricated Bridge Railings Recommended by AASHTO T-4	Ahmad Abu-Hawash, Iowa DOT Tim Fields, Connecticut DOT	
ISU-2	Extending the Application of ABC to Bridge Rehabilitation (synthesis first then developmental)	Ahmad Abu-Hawash, Iowa DOT Ben Beerman, FHWA	
ISU-3	Durability and strength of grouted sleeve couplers	Ahmad Abu-Hawash, Iowa DOT Elmer Marx, Alaska DOT	
UNR-1	Behavior and design of precast bridge cap beams with pocket connections	Ahmad Abu-Hawash, Iowa DOT BijanKhaleghi, Washington DOT Elmer Marx, Alaska DOT	Literature search was carried out and new sources of information were identified. Literature review was completed. Preparation of a preliminary synthesis report began.
UNR-2	Evaluation of Seismic Performance of Bridge Columns w/ Couplers and Development of Design Guidelines	BijanKhaleghi, Washington DOT Elmer Marx, Alaska DOT	Literature search was carried out and new sources of information were identified. Literature review on direct tension behavior of different mechanical splices was completed. A draft synthesis report was prepared for internal review.
UNR-3	Development and Seismic Evaluation of Pier Systems w/ Pocket Connections and Hollow PT/UHPC Columns	BijanKhaleghi, Washington DOT Elmer Marx, Alaska DOT	Literature search was carried out and new sources of information were identified. Literature review was completed. Suppliers of CFRP tendons in the US and abroad were contacted. Preliminary design of hollow column test model was completed. Extensive finite element modeling of different variations of the test model began. Preliminary shake table test setup was developed.

Education and Workforce Development

The following table lists different tasks related to workforce development, provides a brief description of each task, identifies the lead institution for each task, and states the progress made in each task during the reporting period.

Task #	Brief Description of Task	Lead Institution	Progress (Apr-2014 to Sep-2014)
WD-1	Student Education: Each ABC-UTC consortium member will be expected to mentor a minimum of one graduate student for each \$50,000 to \$75,000 in project work.	ALL (FIU, ISU, UNR)	In total, fifteen graduate students are working on ABC-UTC research projects. Nine graduates students at FIU, three at ISU and three at UNR.
WD-2	Increasing the number of research assistantship opportunities for graduate students.	ALL (FIU, ISU, UNR)	In Fall, 2014 FIU hired two new graduate student on assistantship.
WD-3	Upgrading course content in the areas of structural engineering and construction engineering/management to include modules on the use of ABC topics.	UNR	UNR developed an ABC module that will posted on ABC-UTC website.
WD-4	Developing online courses and making progress towards the development of fully online degree programs.	FIU	This task is on hold
WD-5	Development of a mentoring program where students are put in direct contact with industry representatives who are active in the field of accelerated bridge construction.	FIU, ISU, UNR	Following professionals from industry are mentoring ABC-UTC students. <ul style="list-style-type: none"> • Michael LaViolette, HDR • Mike Culmo, CME • Finn Hubbard, Fish & Associates • Reza Farimani, Thornton Tomasetti • Francesco Russo, Michael Baker Jr., Inc.
WD-6	Each graduate student will be required to give a technical presentation at the conclusion of their research study. These presentations will be delivered electronically as part of the ABC-UTC technology transfer activities.	ISU	This task will be completed at the end of research projects.
WD-7	Encourage one-on-one interaction with industry.	ISU Lead; ALL (FIU, ISU, UNR)	A poster session is scheduled during the 2014 National ABC conference on

			Thursday, December 8, 2014 from 5:40 p.m. to 7:30 p.m. Students are expected to have one-on-one interaction with industry professionals during the poster session.
WD-8	Internship Program- All three consortium members will develop an undergraduate research internship program.	UNR Lead; ALL (FIU, ISU, UNR)	FIU developed internship program in April, 2014. Starting from May 2014, FIU hired three undergraduate interns to work on different tasks related to workforce development, technology transfer and research.
WD-9	Educational Modules- Develop three educational modules, in the form of print and videos, for K-12 with focus on developing age-appropriate programs.	UNR	Scope of this task was changed based on the discussion with steering committee and partner universities. FIU has developed a plan to have a joint summer program at FIU in collaboration with NCTSPM at Georgia Tech.
WD-10	Summer Teacher Program- Each consortium member will develop a two-day-long summer camp for elementary, middle and high school teachers to familiarize them with basics of transportation engineering in general and principles of bridge engineering and ABC in particular.	UNR	No Progress- Scheduled for Summer 2015
WD-11	Online e-Zine Go- ISU will publish quarterly articles in the online “e-zine Go!” related to the ABC-UTC’s mission.	ISU	Two articles are already published by ISU and FIU. These articles can be found at the following links <ul style="list-style-type: none"> • http://www.go-explore-trans.org/new-series-the-abcs-of-putting-drivers-first-in-bridge-projects/ • http://www.go-explore-trans.org/the-many-faces-of-bridge-engineering/

			Third article will be published by UNR. A two year schedule for publishing articles is developed.
WD-12	Offer travel scholarship with emphasis on traditionally underrepresented students	All (FIU, ISU, UNR)	The 2014 National ABC Conference (www.2014abc.fiu.edu) includes 100 registration scholarships for students who wants to attend the conference
WD-13	Make presentations on transportation careers at major minority institutions and conferences.	All (FIU, ISU, UNR)	This task is being accomplished through presentations at FIU, which is designated minority institution.

Technology Transfer

The following table lists different tasks related to technology transfer, provides a brief description of each task, identifies the lead institution for each task, and states the progress made in each task.

Task #	Brief Description of Task	Lead Institution	Progress (Apr-2014 to Sep-2014)
T2-1	AASHTO Subcommittee on Bridges and Structures (SCOBS) Meeting: ABC-UTC Director and key research team members will be attending the annual AASHTO meetings and, where needed and possible, will brief the related committees on research findings by giving technical presentations.	All (FIU, ISU, UNR)	ABC-UTC presentations at June 22-26, 2014 SCOBS Annual Meeting in Columbus, Ohio: <ul style="list-style-type: none"> • T-3 (Seismic) by Saiidi • T-4 (Construction) by Mary Lou • T-11 (Research) by Atorod General Session by Mary Lou SCOBS is limiting General Session presentations from industry at future Annual Meetings <ul style="list-style-type: none"> • FIU/ISU/UNR will request presentation slots at Technical Committee meetings only
T2-2	National Committee Meetings: Each ABC-UTC consortium member will be expected to attend at least 3 meetings of national committees each year (other than annual AASHTO meetings) and give technical presentations.	All	FIU gave presentations on ABC-UTC progress to AISI Steel bridge task force.

			<p>UNR presented at following meetings during the reporting period.</p> <ul style="list-style-type: none"> • ACI Convention, Reno, NV (03/2014) • PCI Committee Days, Chicago, IL (04/2014) • 7th IABMAS, Shanghai, China (07/2014) • 10th US National Conf. on Earthquake Engineering, Anchorage, AK (07/2014)
T2-3	<p>Journal Publications: Each ABC-UTC consortium member will be expected to prepare and submit a minimum of two journal publications, in high impact journals, for each research project as lead.</p>	All	No report for this cycle.
T2-4	<p>Outreach: Each ABC-UTC consortium member will be expected to participate in a minimum of two outreach activities each year. Ideally one outreach activity would be geared toward a national audience and one would be geared toward regional audiences.</p>	UNR	<p>FIU's ABC session proposal was accepted at 2015 ASCE/SEI Structures Congress, Portland OR. Five presentations will be made by consortium members at the congress.</p>
T2-5	<p>ABC strategic plan: In collaboration with AASHTO T-4 Technical Committee on Construction, a strategic implementation plan will be developed to promote and support the use of ABC across the U.S.</p>	All	<p>ABC-UTC is in close communication with AASHTO T-4 and TRB ABC committee and FHWA. Through these activities, activities of ABC-UTC are complementary to other national programs.</p>
T2-6	<p>Collaboration with bridge groups: The research team will work with other bridge groups such as the FHWA Long-Term Bridge Performance Program.</p>	All	<p>A Memorandum of Understanding is currently under FIU review for "Compilation of ABC solutions" project. FIU is in collaboration discussions with SHRP2 and LTBP representatives for service life project. U.S. DOT's assistance will be very helpful in developing a close working relation LTBP.</p>

T2-7	<p>Provide bridge owners with tools to implement ABC as a standard practice: Research team will convene meetings of select practicing engineers and bridge owners to assist them in implementation of ABC as a standard practice.</p>	FIU	Nine workshops, covering different ABC topic, are organized by FIU at 2014 National ABC conference (http://2014abc.fiu.edu). For details of these nine workshops, please visit www.2014abc.fiu.edu
T2-8	<p>Supplier input: Suppliers that specialize in products suitable for making ABC more efficient will be consulted on their products and systems; as appropriate, ABC-UTC will assist suppliers in assembling and/or acting as an independent body that evaluates the products (similar to HITEC).</p>	All	No Progress
T2-9	<p>Data dissemination through partnership: Several existing resources will be utilized for data dissemination, such as a) DOT/RITA research clusters and b) NEEShub, which is established by the NSF George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES).</p>	All	No Progress
T2-10	<p>Offices of technology transfer: As appropriate, cooperative agreements will be developed with industries for eventual marketing of products developed through research studies conducted by the ABC-UTC. At the request from an individual researcher, industry partner or the ABC-UTC Director, it will be determined if there is a merit to develop a patent based on research outcomes.</p>	All	Currently a new bridge system is envisioned under one of the FIU research projects. FIU office of research will be contacted to develop a provisional patent application.
T2-11	<p>Three forms of publication: ABC-UTC publications will be of three forms, each serving a different purpose: (1) journal articles, (2) conference papers; and (3) research reports.</p>	All	No Progress
T2-12	<p>Technical briefs: Every ABC research project will have a one-page (front and back) technical brief of the pertinent details that will be sent out via e-news to a larger transportation community.</p>	All	Description of each ABC-UTC research project has been posted on ABC-UTC web site. www.abc-utc.fiu.edu
T2-13	<p>Dedicated website: Currently the FIU ABC Center has a website (www.abc.fiu.edu). With enhancements, this web site will become the official site of the ABC-UTC.</p>	All	A dedicated web site for the ABC-UTC is developed and is fully activated: <ul style="list-style-type: none"> ○ http://abc-utc.fiu.edu

			<ul style="list-style-type: none"> ○ "Content Management System" allows different ABC-UTC personnel to update website content ○ Menu: <ul style="list-style-type: none"> ● Home ● Research Projects ● Education (Workforce Development) ● Technology Transfer ● Resources ● Events ● News
T2-14	Periodic e-newsletter (ABC Talk): An online newsletter (ABC Talk) will be published to present the highlights of ABC-UTC activities. The availability of the newsletter will be communicated through resources available to AASHTO, FHWA, and TRB.	All	Work is initiated to develop the first annual highlight.
T2-15	Printed newsletter: Annually, a hard copy version of the select articles from e-newsletter (ABC Talk), summarizing the highlights of ABC-UTC activities, will be published	All	Work is initiated to develop an annual report
T2-15a	Webcasting and video Clips: Selected tests will be webcast, and video clips of critical parts of selected tests will be developed.	All	Work is initiated to broadcast select tests
T2-16	Social media: Researchers will actively participate in professional social media such as Facebook, Twitter and LinkedIn.	All	<p>FIU has created and actively maintaining ABC-UTC accounts following social media website.</p> <ul style="list-style-type: none"> ● LinkedIn ● Twitter ● YouTube
T2-17	Statewide or region-wide continuing education courses: Three short courses, each four hours long, will be developed: a short course on basic principles of ABC and overview (FIU), a short course on issues related to seismic (UNR), and a short course on use of principles of ABC in small communities (ISU). The materials for each course will be developed for presentation on the web to DOTs and	FIU	<p>Following topics are selected for three short courses:</p> <ul style="list-style-type: none"> ● ABC resources (FIU) ● Introduction to seismic design of ABC (UNR)

	consulting engineers across the country. The course materials will be archived for future use.		<ul style="list-style-type: none"> • ABC for lower volume roads (ISU)
T2-18	In-depth web conference training: Specific featured presentation topics from the planned monthly webinars will be expanded to 3- to 4-hour in-depth web conference trainings to assist practitioners in developing a better understanding of the specific topics.	FIU	<p>FIU in collaboration with director of technology transfer scheduled first In-Depth webinar that will be held in November 2014. Following are details of the webinar.</p> <ul style="list-style-type: none"> • 4-hour format: 11am-3pm Eastern • Six 40-minute modules included live Q&A • \$95 registration fee per site for all six modules
T2-19	Monthly ABC webinars: The current FIU ABC center monthly webinars, attracting 3000 to 5000 participants, will be continued. Webinars will be archived for subsequent viewing.	FIU	<p>Monthly webinars are continued. Six webinar were conducted during the past six months of the reporting period. Each webinar attracted between 850 and 1060 registered sites. Most of the sites included more than one participant. Our estimate is that on average, about 4000 bridge professional have listened to these monthly webinars. During these webinars we share outline of ABC-UTC activities.</p>
T2-20	Annual national conference: In coordination with FHWA, state DOTs, and industry, a national ABC conference will be organized each year.	FIU	<p>Organizational work for 2014 National ABC conference (http://2014abc.fiu.edu/) was continued in the reporting period. The conference portion of the event includes more than 160 technical presentations</p>

			to be given in 30 sessions by more than 280 speakers. Twenty Five States have Co-Sponsored the conference. Travel Scholarships are being developed to assist the State DOT employees to attend the conference. Nine workshops are scheduled for day before the conference.
T2-21	Annual workshop: An annual 1.5-day technical workshop on ABC topics of current concern will be held at FIU. FIU held its first such ABC workshop in December 2012 with more than 40 attendees. There will be a registration fee and the event will be self-supporting.	FIU	Nine workshops, covering different ABC topic, are organized by FIU at 2014 National ABC conference (http://2014abc.fiu.edu). Initial development of a UNR UTC-ABC-Seismic workshop has begun.
T2-23	Assessment and Evaluation Tool: Initially develop the tool, determine the goal of the activity, and identify the criteria. For each activity, populate the tool. See EDC “national and state implementation goals” and SHRP2 “Evaluation of Benefits.”	FIU	Different models are being assessed for evaluation of various tasks within ABC-UTC

What opportunities for training and professional development has the program provided?

Please see the tables above for details. Following are highlights of information provided in the tables listed above

- 2014 National ABC conference
- Educational modules being developed
- Nine, four hours long, workshops that are organized in conjunction with 2014 National ABC Conference
- Monthly webinars were continued
- In-depth webinars is scheduled for November 2014.
- ABC sessions are organized at several major conferences

How have the results been disseminated?

The results will be disseminated by followings:

- 2014 National ABC conference
- Educational modules
- Nine four hours long workshops that are organized in conjunction with 2014 National ABC Conference
- Monthly webinars
- In-depth webinars
- ABC sessions at several major conferences

What do you plan to do during the next reporting period to accomplish the goals and objectives?

During next reporting period following tasks will be emphasized

- 2014 National ABC Conference
- Moving ahead with conduct of research projects
- Identifying the research topics for second incremental funding that was received in March 2014.
- Development of 2nd in-depth webinar
- Development of educational modules
- Continuing with monthly free webinars

PRODUCTS

Publications, conference papers, and presentations

FIU, gives bi-annual presentation to AISI steel bridge task force.

UNR presented at following meetings during the reporting period.

- ACI Convention, Reno, NV (03/2014)
- PCI Committee Days, Chicago, IL (04/2014)
- 7th IABMAS, Shanghai, China (07/2014)
- 10th US National Conf. on Earthquake Engineering, Anchorage, AK (07/2014)

Website(s) or other Internet site(s)

ABC-UTC website is further developed to describe ABC-UTC center activities. Following features of the website (<http://abc-utc.fiu.edu>) were developed during the reporting period.

- "Content Management System" was installed that allows different ABC-UTC personnel to update content of the website

- Main menu of the website include followings:
 - Home
 - Research Projects
 - Education (Workforce Development)
 - Technology Transfer
 - Resources
 - Events
 - News

ABC-UTC is conducting the 2014 National Accelerated Bridge Construction conference in Miami, Florida on December 4-5, 2014. Twenty Six States have Co-Sponsored the conference. Conference has its own dedicated web site.

Visit ABC Conference Website (<http://2014abc.fiu.edu/>) for more details.

Technologies or techniques

Nothing to Report

Inventions, patent applications, licenses

FIU is working on following two innovative ideas for which patent application will be filed:

- Sandwich Folded Girder System
- Innovative connection for ABC Bridges.

Other products

Nothing to Report

PARTICIPANTS & COLLABORATING ORGANIZATIONS

ABC-UTC Participants at FIU

Name	Atorod Azizinamini, Ph.D.
Program/Project Role	ABC-UTC Director
Number of hours worked during the reporting period	Approximately 400 hrs.
Contribution to Program/Project	Responsible for oversight and governance of ABC-UTC
Funding Support	FIU, FDOT, UTC
Collaborated with individual in foreign country	N.A.
Country(ies) of foreign collaborator	N.A.
Travelled to foreign country	N.A.
If traveled to foreign country(ies),	N.A.

duration of stay	
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Name	Mary Lou Ralls, P.E.
Program/Project Role	ABC-UTC Technology Transfer Director
Number of hours worked during the reporting period	Approximately 200 hrs.
Contribution to Program/Project	Responsible for oversight of ABC-UTC technology transfer and assistance to ABC-UTC Director as needed
Funding Support	UTC, AASHTO, TTI
Collaborated with individual in foreign country	N.A.
Country(ies) of foreign collaborator	N.A.
Travelled to foreign country	N.A.
If traveled to foreign country(ies), duration of stay	N.A.

Name	Jawad Gull, Ph.D.
Program/Project Role	Assistant Director ABC-UTC
Number of hours worked during the reporting period	Approximately 520 hrs.
Contribution to Program/Project	Responsible for assisting on different ABC-UTC tasks.
Funding Support	ABC-UTC
Collaborated with individual in foreign country	N.A.
Country(ies) of foreign collaborator	N.A.
Travelled to foreign country	N.A.
If traveled to foreign country(ies), duration of stay	N.A.

Name	Ali Mostafavi
Program/Project Role	ABC-UTC – Co-PI on a research project
Number of hours worked during the reporting period	Approximately 120 hours
Contribution to Program/Project	Co-PI on the Public Cost Estimation Project
Funding Support	ABC-UTC
Collaborated with individual in foreign country	N.A
Country(ies) of foreign collaborator	N.A
Travelled to foreign country	N.A
If traveled to foreign country(ies), duration of stay	N.A

Name	David Garber
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Program/Project Role	ABC-UTC – Co-PI on a research project
Number of hours worked during the reporting period	Approximately 100 hours
Contribution to Program/Project	Responsible for Project #FIU-1 and assisting with other center activities.
Funding Support	ABC-UTC and FIU
Collaborated with individual in foreign country	N.A
Country(ies) of foreign collaborator	N.A
Travelled to foreign country	N.A
If traveled to foreign country(ies), duration of stay	N.A

Name	Mohammad Hadi
Program/Project Role	ABC-UTC – Co-PI on a research project
Number of hours worked during the reporting period	60
Contribution to Program/Project	Development of the framework
Funding Support	
Collaborated with individual in foreign country	N.A
Country(ies) of foreign collaborator	N.A
Travelled to foreign country	N.A
If traveled to foreign country(ies), duration of stay	N.A

Name	Albert Gan
Program/Project Role	ABC-UTC – Co-PI on a research project
Number of hours worked during the reporting period	30
Contribution to Program/Project	Design, Supervision, and Coordination of ABC-UTC Homepage, 2014 ABC-UTC Conference Website, and ABC Seminar Certification Process Automation.
Funding Support	Volunteer
Collaborated with individual in foreign country	N.A
Country(ies) of foreign collaborator	N.A
Travelled to foreign country	N.A
If traveled to foreign country(ies), duration of stay	N.A

Name	David Garber
Program/Project Role	ABC-UTC – Co-PI on a research project
Number of hours worked during the reporting period	Approximately 100 hours

Contribution to Program/Project	Responsible for Project #FIU-1 and assisting with other center activities.
Funding Support	ABC-UTC and FIU
Collaborated with individual in foreign country	N.A
Country(ies) of foreign collaborator	N.A
Travelled to foreign country	N.A
If traveled to foreign country(ies), duration of stay	N.A

Name	Atiosis Blanco
Program/Project Role	Web Developer on ABC-UTC website
Number of hours worked during the reporting period	400
Contribution to Program/Project	Development of ABC-UTC Homepage and 2014 ABC-UTC Conference Website
Funding Support	ABC-UTC
Collaborated with individual in foreign country	N.A
Country(ies) of foreign collaborator	N.A
Travelled to foreign country	N.A
If traveled to foreign country(ies), duration of stay	N.A

Name	Haifang Wang
Program/Project Role	Web Developer on ABC-UTC website
Number of hours worked during the reporting period	300
Contribution to Program/Project	<ul style="list-style-type: none"> • Development of Abstract Submission and Review System for 2014 ABC Conference. • Development of Paper and Conference Material Submission system for 2014 ABC Conference. • Automation of ABC Seminar Registration Certification Process.
Funding Support	ABC-UTC
Collaborated with individual in foreign country	N.A
Country(ies) of foreign collaborator	N.A
Travelled to foreign country	N.A
If traveled to foreign country(ies), duration of stay	N.A

ABC-UTC Participants at ISU

Name	Brent Phares
Program/Project Role	ABC-UTC Co-Director
Number of hours worked during the reporting period (Apr-2014 to Sep-2014)	
Contribution to Program/Project	
Funding Support	
Collaborated with individual in foreign country	No
Country(ies) of foreign collaborator	NA
Travelled to foreign country	No
If traveled to foreign country(ies), duration of stay	NA

ABC-UTC Participants at UNR

Name	M. SaiidSaiidi
Program/Project Role	ABC-UTC Co-Director
Number of hours worked during the reporting period	110
Contribution to Program/Project	Management of ABC-UTC-Seismic projects and workforce development/outreach at UNR.
Funding Support	ABC-UTC, Caltrans, WashDOT
Collaborated with individual in foreign country	No
Country(ies) of foreign collaborator	NA
Travelled to foreign country	No
If traveled to foreign country(ies), duration of stay	NA

Name	Ahmad Itani
Program/Project Role	ABC-UTC-Seismic Co-PI at UNR
Number of hours worked during the reporting period (Apr-2014 to Sep-2014)	60
Contribution to Program/Project	Help manage ABC-UTC-Seismic projects and workforce development/outreach at UNR.
Funding Support	ABC-UTC, Caltrans
Collaborated with individual in foreign country	No
Country(ies) of foreign collaborator	NA
Travelled to foreign country	No
If traveled to foreign country(ies), duration of stay	NA

Industry Partners and Collaborators

ABC Center Executive Board

- Atorod Azizinamini, Florida International University
- Mary Lou Ralls, Ralls Newman, LLC, Former State Bridge Engineer, State of Texas
- Kevin Thompson, URS, Former State Bridge Engineer California
- JugeshKapur, Burns & McDonnell, Former State Bridge Engineer, Washington State
- Ben Beerman, Federal Highway Administration

ABC-UTC Steering Committee Members

- AtorodAzizinamini, Florida International University
- Mary Lou Ralls, Ralls Newman, LLC, Former State Bridge Engineer, State of Texas
- Kevin Thompson, URS, Former State Bridge Engineer California
- JugeshKapur, Burns & McDonnell, Former State Bridge Engineer, Washington State
- Ben Beerman, Federal Highway Administration
- Carmen Swanwick, AASHTO SCOBS T-4, Chair, Utah DOT
- Paul Liles, AASHTO SCOBS T-4 Vice Chair, Georgia DOT
- Ahmad Abu-Hawash, Iowa DOT
- Nancy Daubenberger, Minnesota DOT
- ShoukryElnahal, Delaware River & Bay Authority
- Bruce Johnson, Oregon DOT
- BijanKhaleghi, Washington State DOT
- Elmer Marx, Alaska DOT&PF
- Tom Ostrom, California DOT
- Robert Robertson, Florida DOT **(New)**
- Monica Starnes, Transportation Research Board
- Wayne Symonds, Vermont Agency of Transportation
- Maury Tayarani, MassDOT

Federal Highway Administration

- Ben Beerman, Resource Center
- Phil Yen, Office of Infrastructure

Industrial and Government partners

- John Busel, American Composites Manufacturers Association (ACMA)
- Reid Castrodale, Lightweight concrete rep.
- Randy Cox, American Segmental Bridge Institute (ASBI)
- Jerry DiMaggio, Applied Research Associates, Inc.
- Bill Duguay, Associated General Contractors of America (AGC), rep.; J.D. Abrams, LP
- Mike Engestrom, Small Span Steel Bridge Alliance (SSSBA)
- Mal Kerley, NXL Construction Services, Inc.

- Danielle Kleinhans, National Concrete Bridge Council (NCBC), rep.
- Bill McEleney, National Steel Bridge Alliance (NSBA)
- William Nickas, Precast/Prestressed Concrete Institute (PCI)
- Eliza Partington, FIGG

Collaborators from Partner Universities

- SaiidSaiid, University of Nevada, Reno
- Brent Phares, Iowa State
- Ahmad Itani, University of Nevada, Reno
- Terry Wipf, Iowa State University

Faculty and Staff at Florida International University

- Mohammad Hadi, Associate Professor
- Albert Gan, Professor
- Seung Jae Lee, Assistant Professor
- David Garber, Assistant Professor
- Xia Jin, Assistant professor
- Hesham Ali, Professor of Practice
- Ali Mostafavi , Assistant Professor
- WalliedOrabi , Assistant Professor
- Aaron Yakel, Research Associate
- Jawad Gull, Research Associate
- AlirezaMohammadi, Graduate Student
- Huy Pham , Graduate Student
- RaminTaghinezhad, Graduate Student
- MohamadrezaShafieifar, Graduate Student
- Haifeng Wang, Senior Software Engineer
- AtiosisBlanco, Specialist Computer Research

International Members of the ABC Center

- Taek-RyongSeong, RIST - South Korea
- Chan-Hee Park, RIST - South Korea

IMPACT

What is the impact on the development of the principal discipline(s) of the program?

The ABC-UTC is taking a national lead in ABC area and has established a very good working relation with AASHTO T-4 that is responsible for developing the national roadmap for State DOTs for implementing ABC. The Director of ABC-UTC was also elected to be liaison between the newly formed TRB ABC committee and ABC-UTC. These connections and activities are allowing ABC-UTC to better fill the knowledge gap, especially in the research and workforce development areas. ABC-UTC has also made major accomplishments in developing a close working relationship with State DOTs. Twenty Six States have Co-sponsored the 2014 National ABC Conference. The State DOT engineers of these 26 States work very closely with ABC-UTC. At this time, the plans call for having this conference on an annual basis. The connection created with State DOT bridge engineers will greatly facilitate the implementation of ABC-UTC work.

What is the impact on other disciplines?

ABC-UTC has identified research areas that will help the ABC cause and that falls outside the mission of ABC-UTC. In coming months we will be contacting other UTC for developing collaborative work in these areas.

What is the impact on physical, institutional, and information resources at the university or other partner institutions?

The establishment of ABC-UTC has allowed obtaining many additional resources for the faculties active in ABC areas at FIU and partner universities. The three institutions work closely on many activities and this is proving to be a great opportunities for the students to collaborate.

What is the impact on technology transfer?

The ABC-UTC monthly webinars are proving to be the most effective means of transferring the knowledge to the profession. Having more than 4000 bridge professional participate in these monthly webinars are unparalleled. The 2014 National ABC conference is co-sponsored by 26 state who will actively participate in this event. These activities are providing opportunities for effective communications with State DOTs and bridge professionals, making the task of Technology transfer much easier.

What is the impact on society beyond science and technology?

The major goal of ABC-UTC is to make the ABC the method of choice for bridge replacement and retrofit. This in turn will improve the mobility and save the society in many different ways.

CHANGES/PROBLEMS

Changes that have a significant impact on expenditures

No changes

Actual or anticipated problems or delays and actions or plans to resolve them

No changes

Changes that have a significant impact on expenditures

No changes

Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards

No changes

Change of primary performance site location from that originally proposed

No changes

SPECIAL REPORTING REQUIREMENTS

Financial report and documents will be sent by Depart of Research at Florida International University

Completed by:

Florida International University: Atorod Azizinamini

Iowa State University:

University of Nevada, Reno: