

# UTCA

## University Transportation Center for Alabama

The University of Alabama, The University of Alabama at Birmingham, and  
The University of Alabama in Huntsville

### **A Review of the Center's Activities in 2012**

*1/1/2012 – 12/31/2012*

#### **I. Center Mission and Theme**

The UTCA mission contributes to the overall mission of the US Department of Transportation (USDOT). Specifically, the UTCA seeks

To advance technology and expertise in the multiple disciplines that comprise transportation through the mechanisms of education, research, and technology transfer while serving as a university-based center of excellence (*2006 UTCA Strategic Plan*, p. 12)

The UTCA theme – *Management of Safety of Transportation Systems* – reflects the transportation needs of Alabama and the expertise of The University of Alabama System faculty. In allocating UTCA funding, the Executive Committee and Board of Advisors give priority to programs and projects that closely follow this theme.

## II. Active Center Projects

These are projects the center is involved with regardless of funding source or even if the project is funded.

### a. Projects started in 2012

Project ID	Project Title	Status	Faculty	Campus	Award Amount	Initial Start Date
12101	ALDOT ITS Strategic Vision	UTC	Jones, S.	UA	36,543	1/1/2012
12202	Improving Bridge Load Rating Accuracy	UTC	Salama, T.	UAB	37,268	1/1/2012
12302	Developing Sustainable Transportation Performance Measures for ALDOT	UTC	Toutanji, H.	UAH	37,778	1/1/2012
12401	Natural Gas Encasement for Highway Crossings	Awarded	Lindly, J.	UA	128,428	6/19/2012
12402	Safety & Operational Evaluation of Adaptive Traffic Signal Control	Awarded	Jones, S.	UA	439,769	1/1/2012
12403	Technical Assistance, Liaison and Coordination Services for Hiway Safety Research and Implem. Prog.	Awarded	Turner, D.	UA	47,005	1/1/2012
12404	Bridge Rail Safety Analysis	Awarded	Jones, S.	UA	129,485	3/23/2012
12405	Financial Impact Analysis for Full Reciprocity Plan	Rejected	Lou, Y.	UA	84,902	6/1/2012
12406	Comparative Analysis of Dynamic Pricing Strategies for Managed Lanes (2012-089)	Awarded	Lou, Y.	UA	59,541	8/15/2012
12407	Wisconsin DOT "Crash and Analysis Mapping Phase III	Awarded	Graettinger, A.	UA	118,641	1/1/2012
12408	Revision of Observation Sites for 2012 AL Occupant Restraint Survey Design	Awarded	Lou, Y.	UA	2,364	7/1/2012
12409	Life Cycle Cost in ALDOT Infrastructure Projects	Awarded	Lindly, J.	UA	227,297	6/26/2012
12410	ALDOT Economic Sustainability	Awarded	Batson, R.	UA	50,384	8/16/2012
12411	Revision of the Traffic Signal Design Guide and Timing Manual	Awarded	Jones, S.	UA	45,179	10/19/2012
12412	Travel Time Assessment of Adaptive Traffic Signal Control Systems	Awarded	Jones, S.	UA	160,262	10/11/2012
12413	Operational analysis of Diverging diamond Interchanges	Submitted	Jones, S.	UA - Sub	56,429	4/1/2012
12414	Red Light Running Camera Implementation Guide	Awarded	Jones, S.	UA	22,449	11/1/2012
12415	Alabama Traffic Data Collection Analysis	Awarded	Jones, S.	UA	1,499,841	11/28/2012
12416	Culvert Wing Tab Design Loads	Submitted	Richardson, J.	UA	190,488	10/1/2012

**\$3,374,053**

## b. Projects continued from previous years

Project ID	Project Title	Status	Faculty	Campus	Award Amount	End Date
09402	UTCA Research Forum	Ongoing	Lindly, J.	UA	10,000	9/30/2012
09403	Development of Access Management Criteria	Ongoing	Jones, S.	UA	217,960	8/31/2012
10401	Pilot Car Driver Certification Program	Ongoing	Lindly, J.	UA	113,222	8/30/2013
10404	Scoping Study for Implementation of the Highway Safety Manual in Alabama	Ongoing	Turner, D.	UA	301,279	9/30/2012
11103	Role of Transit Service Providers in Land Development	Ongoing	Lou, Y.	UA	58,133	6/30/2012
11106	Alabama Transportation Strategic Vision	Ongoing	Jones, S.	UA	142,342	12/31/2012
11108	Impact of Nighttime Construction on Work Quality	Ongoing	Grau, D.	UA	62,918	7/31/2012
11202	Effect of Increasing Truck Weight on Bridges	Ongoing	Waldron, C.	UAB	66,816	9/30/2012
11305	Analysis of Rural Public Transit in Alabama	Ongoing	Anderson, M.	UAH	76,368	8/31/2012
11402	Contraflow Evacuation Planning for I-65 in Alabama	Ongoing	Lou, Y.	UA	109,214	10/31/2012
11403	Revenue Enhancement Alternatives for the Al. Dept. of Transportation	Ongoing	Lindly, J.	UA	132,739	7/31/2012

**\$1,290,991**

### c. Projects ending in 2012

Project ID	Project Title	Status	Faculty	Campus	Award Amt.	End Date
09402	UTCA Research Forum	Complete	Lindly, J.	UA	10,000	9/30/2012
09403	Development of Access Management Criteria	Complete	Jones, S.	UA	217,960	8/31/2012
10404	Scoping Study for Implementation of the Highway Safety Manual in AI	Complete	Turner, D.	UA	301,279	9/30/2012
11103	Role of Transit Service Providers in Land Development	Complete	Lou, Y.	UA	58,133	6/30/2012
11106	Alabama Transportation Strategic Vision	Complete	Jones, S.	UA	142,342	12/31/2012
11108	Impact of Nighttime Construction on Work Quality	Complete	Grau, D.	UA	62,918	7/31/2012
11202	Effect of Increasing Truck Weight on Bridges	Complete	Waldron, C.	UAB	66,816	9/30/2012
11206	Impacts of Transit in a Complete Streets Context	Complete	Sisiopiku, V.	UAB	70,298	2/15/2012
11305	Analysis of Rural Public Transit in Alabama	Complete	Anderson, M.	UAH	76,368	8/31/2012
11306	Student Funding to Attend TRB Conference 2011	Complete	Anderson, M.	UAH	30,002	2/28/2012
11402	Contraflow Evacuation Planning for I-65 in Alabama	Complete	Lou, Y.	UA	109,214	10/31/2012
11403	Revenue Enhancement Alternatives for the ALDOT	Complete	Lindly, J.	UA	132,739	7/31/2012
12101	ALDOT ITS Strategic Vision	Complete	Jones, S.	UA	36,543	12/31/2012
12202	Improving Bridge Load Rating Accuracy	Complete	Salama, T.	UAB	37,268	12/31/2012
12302	Developing Sustainable Transportation Performance Measures for ALDOT	Complete	Toutanji, H.	UAH	37,778	12/31/2012
12408	Revision of Observation Sites for 2012 AL Occupant Restraint Survey Design	Complete	Lou, Y.	UA	2,364	7/15/2012

**\$1,392,022** -

### III. Projects in Development

The list below shows transportation research projects for which proposals have been submitted or awarded through UTCA in 2013.

Project ID	Pre-Proposal Title	PI	Budget	Proposed Start Date	Proposed End Date	Status
13401	Rail Highway At-Grade Crossing Prioritization and Ranking Program Analysis	Lou 50%, Jones 50%	234,419	1/1/2013	8/15/2014	Awarded
13402	Development of the ALDOT Roundabout Design and Operations Manual	Jones	307,618	1/1/2013	12/31/2014	Awarded
13403	Short Term, Quick Turnaround Services to Facilitate Safety Research and Implementation	Turner 33%, Jones 33%, Lou 33%	59,494	1/28/2013	12/31/2013	Awarded
13404	Guidance for the Development and Application of Crash Modification Factors	Lou	49,994	4/1/2013	9/30/2015	rejected
13405	Developing a Frame Work for Sustainability Screening of Transit-Oriented Developing Projects	Jones	104,830	8/16/2013	2/15/2015	submitted
13406	Guidebook for Selecting and Implementing Sustainable Highway Construction Practices	Grau 50%, Wang 50%	185,081	5/1/2013	4/31/15	submitted
13407	Engineering Consulting Services	Giannini, E	3,000	6/1/13	8/31/13	Awarded
14401	Comparative Evaluation of Concrete Bridge Deck Sealers	Giannini 95%, Lindly 5%	61,895	1/1/14	8/31/14	submitted
N/A	National Center for Rural Highway Safety Innovation (we are co/proposers with Montana State University)	Lindly	900,000	10/1/2013	9/30/2015	submitted
N/A	Prospectus for a Regional Center in USDOT Region 4 (we are co/proposers with University of Tennessee and others)	Lindly	156,000	10/1/2013	9/30/2015	submitted
N/A	NCHRP Synthesis 20-05/Topic 45-07	Lindly	35,000	10/1/2013	9/30/2014	inprogress
N/A	Wet Weather Safety Analysis Tool	Tootle	320,000	8/15/2013	8/14/2015	inprogress

## **IV. Center Participants**

### **a. Administration**

The UTCA headquarters is located in the Bevill Building on The University of Alabama campus. Each campus (UA, UAB, and UAH) has a branch office operating under the direction of an associate director. The executive director and associate directors form the Executive Committee, which provides guidance and direction for Center activities. Faculty members engaged in UTCA projects work in their own offices on their own campuses.

The six individuals listed below are continuously assigned to the UTCA, all on a part-time basis.

**Dr. Jay K. Lindly, Executive Director**

Department of Civil, Construction, and Environmental Engineering  
The University of Alabama  
Tuscaloosa, AL

**Dr. Michael Hardin, Associate Director**

College of Commerce and Business Administration  
The University of Alabama  
Tuscaloosa, AL

**Dr. Fouad H. Fouad, Associate Director**

Department of Civil, Construction, and Environmental Engineering  
The University of Alabama at Birmingham  
Birmingham, AL

**Dr. Houssam Toutanji, Associate Director**

Department of Civil and Environmental Engineering  
The University of Alabama in Huntsville  
Huntsville, AL

**Mrs. Connie Harris, Administrative Secretary and**

**Mr. Joseph Walsh, Editorial Assistant**

Department of Civil, Construction, and Environmental Engineering  
The University of Alabama  
Tuscaloosa, AL

## b. UA Faculty Working on UTCA Projects/Activities in 2012

Faculty	Dept.	Project ID	Project Title	PI	Fund Source
Batson, R.	CCE	12410	ALDOT Economic Sustainability	X	ALDOT
Back, W.E.	CCE	11108	Impact of Nighttime Construction on Work Quality		UTCA
Back, W.E.	CCE	12409	Life Cycle Cost in ALDOT Infrastructure Projects		ALDOT
Cover, J.	ELFS	12410	ALDOT Economic Sustainability		ALDOT
Fonseca, D.	ME	11402	Contraflow Evacuation Planning for I-65 in Alabama		ALDOT
Fridley, K.	CCE	12409	Life Cycle Cost in ALDOT Infrastructure Projects		ALDOT
Grau, D.	CCE	11108	Impact of Nighttime Construction on Work Quality	X	UTCA
Graettinger, A.	CCE	12401	Natural Gas Encasement for Highway Crossings		ALDOT
Graettinger, A.	CCE	12407	Wisconsin DOT - Crash and Analysis Mapping Phase III	X	WDOT
Johnson, P.	CCE	12401	Natural Gas Encasement for Highway Crossings		ALDOT
Jones, S.	CCE	09403	Development of Access Mgt. Criteria	X	ALDOT
Jones, S.	CCE	11103	Role of Transit Service Providers in Land Development		UTCA
Jones, S.	CCE	11106	Alabama Public Transportation Strategic Vision	X	UTCA
Jones, S.	CCE	12101	ALDOT ITS Strategic Vision	X	ALDOT
Jones, S.	CCE	12402	Safety & Operational Evaluation of Adaptive Traffic Signal Control	X	ALDOT
Jones, S.	CCE	12404	Bridge Rail Safety Analysis	X	ALDOT
Jones, S.	CCE	12411	Revision of the Traffic Signal Design Guide and Timing Manual	X	ALDOT
Jones, S.	CCE	12412	Travel Time Assessment of Adaptive Traffic Signal Control Systems	X	ALDOT
Jones, S.	CCE	12414	Red Light Running Camera Implementation Guide	X	ALDOT
Jones, S.	CCE	12415	Alabama Traffic Data Collection Analysis	X	ALDOT
Lindly, J.	CCE	10401	Pilot Car Driver Certification Program	X	ALDOT
Lindly, J.	CCE	11103	Role of Transit Service Providers in Land Development		UTCA
Lindly, J.	CCE	11106	Alabama Public Transportation Strategic Vision		UTCA
Lindly, J.	CCE	11403	Revenue Enhancement Alternatives for ALDOT	X	ALDOT
Lindly, J.	CCE	12401	Natural Gas Encasement for Highway Crossings	X	ALDOT
Lindly, J.	CCE	12409	Life Cycle Cost in ALDOT Infrastructure Projects	X	ALDOT
Lindly, J.	CCE	12414	Red Light Running Camera Implementation Guide		ALDOT

## UA Faculty Working on UTCA Projects – continued from page 7

Faculty	Dept.	Project ID	Project Title	PI	Fund Source
Lou, Y.	CCE	11103	Role of Transit Service Providers in Land Development	X	UTCA
Lou, Y.	CCE	11106	Alabama Public Transportation Strategic Vision		UTCA
Lou, Y.	CCE	11402	Contraflow Evacuation Planning for I-65 in Alabama	X	ALDOT
Lou, Y.	CCE	11403	Revenue Enhancement Alternatives for ALDOT		ALDOT
Lou, Y.	CCE	12101	ALDOT ITS Strategic Vision		ALDOT
Lou, Y.	CCE	12404	Bridge Rail Safety Analysis		ALDOT
Lou, Y.	CCE	12406	Comparative Analysis of Dynamic Pricing Strategies for Managed Lanes (2012-089)	X	STRIDE
Lou, Y.	CCE	12408	Revision of Observation Sites for 2012 AL Occupant Restraint Survey Design	X	ADPH
Moynihan, G.	CCE	11402	Contraflow Evacuation Planning for I-65 in Alabama		ALDOT
Turner, D.	CCE	09403	Development of Access Mgt. Criteria		ALDOT
Turner, D.	CCE	12403	Liaison and Coordination Services for Highway Safety Research and Implementation Programs	X	ALDOT



**c. UA Research Scientists/Post-Doctoral Associates Working on UTCA Projects/Activities in 2012**

Research Eng/ Post Doc	Dept.	Project ID	Project Title	Fund Source
Addy, S.	CBER	11403	Revenue Enhancement Alternatives for ALDOT	ALDOT
Gurupackiam, S.	CCE	11402	Contraflow Evacuation Planning for I-65 in Alabama	ALDOT
Gurupackiam, S.	CCE	12101	ALDOT ITS Strategic Vision	ALDOT
Gurupackiam, S.	CCE	12402	Safety & Operational Evaluation of Adaptive Traffic Signal Control	ALDOT
Ijaz, A.	CBER	11403	Revenue Enhancement Alternatives for ALDOT	ALDOT
Ijaz, A.	CBER	12410	ALDOT Economic Sustainability	ALDOT
Tedla, E.	CCE	12402	Safety & Operational Evaluation of Adaptive Traffic Signal Control	ALDOT
Tedla, E.	CCE	12411	Revision of the Traffic Signal Design Guide and Timing Manual	ALDOT
Tedla, E.	CCE	12414	Red Light Running Camera Implementation Guide	ALDOT

#### d. UA Graduate Students Working on UTCA Projects/Activities in 2012

GRA	Dept.	Project ID	Project Title	Fund Source
Adanu, E. K.	CCE	12101	ALDOT ITS Strategic Vision	ALDOT
Biswas, S.	CCE	12407	Wisconsin DOT - Crash and Analysis Mapping Phase III	WDOT
Cochran, C.	CCE	12410	ALDOT Economic Sustainability	ALDOT
Green, F.	CCE	11103	Role of Transit Service Providers in Land Development	UTCA
Green, F.	CCE	11402	Contraflow Evacuation Planning for I-65 in Alabama	ALDOT
Lidbe, A.	CCE	11403	Revenue Enhancement Alternatives for ALDOT	ALDOT
Lidbe, A.	CCE	12406	Comparative Analysis of Dynamic Pricing Strategies for Managed Lanes (2012-089)	STRIDE
Lidbe, A.	CCE	12408	Revision of Observation Sites for 2012 AL Occupant Restraint Survey Design	ADPH
McElvy, R.	CCE	11108	Impact of Nighttime Construction on Work Quality	UTCA
Mehta, G.	CCE	11402	Contraflow Evacuation Planning for I-65 in Alabama	ALDOT
Mehta, G.	CCE	11403	Revenue Enhancement Alternatives for ALDOT	ALDOT
Mehta, G.	CCE	12404	Bridge Rail Safety Analysis	ALDOT
Miralinaghi, M.	CCE	11403	Revenue Enhancement Alternatives for ALDOT	ALDOT
Peiheng, L.	CCE	11402	Contraflow Evacuation Planning for I-65 in Alabama	ALDOT
Sherer, M.	CCE	12401	Natural Gas Encasement for Highway Crossings	ALDOT
Stone, W.	CCE	12407	Wisconsin DOT - Crash and Analysis Mapping Phase III	WDOT

**e. UA Undergraduate Students Working on UTCA Projects/Activities in 2012**

<b>Undergrad</b>	<b>Dept.</b>	<b>Project ID</b>	<b>Project Title</b>	<b>Fund Source</b>
Dye, D.	CCE	12402	Safety & Operational Evaluation of Adaptive Traffic Signal Control	ALDOT
Dye, D.	CCE	09403	Development of Access Mgt. Criteria	ALDOT
Farrell, S.	CCE	12407	Wisconsin DOT - Crash and Analysis Mapping Phase III	WDOT
Johnson, K.	CCE	12401	Natural Gas Encasement for Highway Crossings	ALDOT
Lynch, D.	CCE	12402	Safety & Operational Evaluation of Adaptive Traffic Signal Control	ALDOT
Perkins, L.	CCE	12409	Life Cycle Cost in ALDOT Infrastructure Projects	ALDOT
Purkey, A.	CCE	12407	Wisconsin DOT - Crash and Analysis Mapping Phase III	WDOT

## V. Internal Collaborations

UTCA is housed in the Department of Civil, Construction, and Environmental Engineering (CCE) at UA. The table below indicates other units (including other non-transportation civil engineering faculty) that participated in UTCA projects during 2012. The table below also includes UTCA faculty that were Co-PI's in other departments.

Project ID	Project Title	PI/Co-Pis	Dept.	Title
11108	Impact of Nighttime Construction on Work Quality	Back, W.E.	CCE	Director of Construction Engineering and Management
11108	Impact of Nighttime Construction on Work Quality	Grau, D.	CCE	Asst. Professor, Civil, Construction and Env. Eng.
11402	Contraflow Evacuation Planning for I-65 in Alabama	Fonseca, D.	ME	Assoc. Professor, Mechanical Engineering
11402	Contraflow Evacuation Planning for I-65 in Alabama	Lou, Y.	CCE	
11402	Contraflow Evacuation Planning for I-65 in Alabama	Moynihan, G.	CCE	Assistant Director, Alabama Industrial Assessment Center
11403	Revenue Enhancement Alternatives for ALDOT	Lindly, J.	CCE	Director, University Transportation Center for AI (UTCA)
11403	Revenue Enhancement Alternatives for ALDOT	Lou, Y.	CCE	Asst. Professor, Civil, Construction and Env. Eng./UTCA
11403	Revenue Enhancement Alternatives for ALDOT	Addy, S.	CBER	Director of Center for Business and Economic Research (CBER)
11403	Revenue Enhancement Alternatives for ALDOT	Ijaz, A.	CBER	
12401	Natural Gas Encasement for Highway Crossings	Graettinger, A.	CCE	Assoc. Professor, Civil, Construction & Env. Eng.
12401	Natural Gas Encasement for Highway Crossings	Johnson, P	CCE	Assoc. Professor, Civil, Construction & Env. Eng.
12401	Natural Gas Encasement for Highway Crossings	Lindly, J.	CCE	Director, University Transportation Center for AI (UTCA)
12407	Wisconsin DOT - Crash and Analysis Mapping Phase III	Graettinger, A.	CCE	Assoc. Professor, Civil, Construction & Env. Eng.
12409	Life Cycle Cost in ALDOT Infrastructure Projects	Back, W.E.	CCE	Director of Construction Engineering and Management
12409	Life Cycle Cost in ALDOT Infrastructure Projects	Fridley, K	CCE	Department Head of Civil, Construction & Env. Eng.
12409	Life Cycle Cost in ALDOT Infrastructure Projects	Lindly, J.	CCE	Director, University Transportation Center for AI (UTCA)
12410	ALDOT Economic Sustainability	Batson, R.	CCE	Professor, Civil, Construction and Env. Eng.
12410	ALDOT Economic Sustainability	Cochran, C.	CCE	GRA Student, Civil, Construction
12410	ALDOT Economic Sustainability	Cover, J.	ELFS	
12410	ALDOT Economic Sustainability	Ijaz, A.	CBER	
CAPS	Evaluation of the AI Ticketing Aggressive Cars and Trucks (TACT)	Parrish, A	CS, CAPS	Director of Center for Advanced Public Safety (CAPS)
		Brown, D.	CS, CAPS	Deputy Director of CAPS
		Jones, S.	CCE	

## VI. External Collaborations

The table below indicates individuals and entities outside UA that participated in UTCA projects during 2012.

Project ID	Project Title	Participants	Organizations
09403	Development of Access Management Criteria	Jones, S.	Alabama Dept. of Transportation, funding
10401	Pilot Car Driver Certification Program	Lindly, J.	Alabama Dept. of Transportation, funding
10404	Scoping Study for Implementation of the Highway Safety Manual in Alabama	Turner, D.	Alabama Dept. of Transportation, funding
11103	Role of Transit Service Providers in Land Development	Lou, Y.	US Dept. of Transportation, funding
11106	Alabama Transportation Strategic Vision	Jones, S.	US Dept. of Transportation, funding & UAB - subcontract
11108	Impact of Nighttime Construction on Work Quality	Grau, D.	US Dept. of Transportation, funding
11202	Effect of Increasing Truck Weight on Bridges	Waldron, C.	UAB - PI & US Dept. of Transportation, funding
11305	Analysis of Rural Public Transit in Alabama	Anderson, M.	UAH - PI & US Dept. of Transportation, funding
11402	Contraflow Evacuation Planning for I-65 in Alabama	Lou, Y.	Alabama Dept. of Transportation, funding
11403	Revenue Enhancement Alternatives for the Alabama Department of Transportation	Lindly, J.	Alabama Dept. of Transportation, funding
12101	ALDOT ITS Strategic Vision	Jones, S.	US Dept. of Transportation, funding
12202	Improving Bridge Load Rating Accuracy	Salama, T.	UAB - PI & US Dept. of Transportation, funding
12302	Developing Sustainable Transportation Performance Measures for ALDOT	Toutanji, H.	UAH - PI & US Dept. of Transportation, funding
12401	Natural Gas Encasement for Highway Crossings	Lindly, J.	Alabama Dept. of Transportation, funding
12402	Safety & Operational Evaluation of Adaptive Traffic Signal Control	Jones, S.	Alabama Dept. of Transportation, funding & UAB, subcontract & Southern Traffic Services - FL, sub
12403	Liaison and Coordination Services for Highway Safety Research and Implem. Prog.	Turner, D.	Alabama Dept. of Transportation, funding
12404	Bridge Rail Safety Analysis	Jones, S.	Alabama Dept. of Transportation, funding
12406	Comparative Analysis of Dynamic Pricing Strategies for Managed Lanes (2012-089)	Lou, Y.	University of Florida, funding
12407	Wisconsin DOT & Crash and Analysis Mapping Phase III	Graettinger, A.	Wisconsin Dept. of Transportation, funding
12408	Revision of Observation Sites for 2012 AL Occupant Restraint Survey Design	Lou, Y.	Alabama Dept of Public Health, funding
12409	Life Cycle Cost in ALDOT Infrastructure Projects	Lindly, J.	Alabama Dept. of Transportation, funding
12410	ALDOT Economic Sustainability	Batson, R.	Alabama Dept. of Transportation, funding
12411	Revision of the Traffic Signal Design Guide and Timing Manual	Jones, S.	Alabama Dept. of Transportation, funding & UAB - UA Sub with UAB

## External Collaborations – continued from page 13

Project ID	Project Title	Participants	Organizations
12412	Travel Time Assessment of Adaptive Traffic Signal Control Systems	Jones, S.	Alabama Dept. of Transportation, funding & Southern Lighting & Traffic - GA - Sub
12414	Red Light Running Camera Implementation Guide	Jones, S.	Alabama Dept. of Transportation, funding & Alabama Dept. of Transportation, funding &
12415	Alabama Traffic Data Collection Analysis	Jones, S.	Southern Traffic Services - FL - Sub

## VII. Grants/Contracts Submitted

The information contained in the following chart was obtained through the Office for Sponsored Programs at UA for calendar year 2012.

UTCA Project #	OSP Proposal #	Project Title	PI	Co. PI	Co. PI	Agency	Submitted Date	Award Amount
12401	12-0204	Natural Gas Encasement for Highway Crossings	Lindly, J.	Graettinger, A.		ALDOT	1/20/2012	128,428
12402	12-0182	Safety & Operational Evaluation of Adaptive Traffic Signal Control	Jones, S.	Gurupackiam, S		ALDOT	1/10/2012	585,648
12403	12-0183	Liaison and Coordination Services for Hiway Safety Research and Implem. Prog.	Turner, D.			ALDOT	1/4/2012	47,005
12404	12-0341	Bridge Rail Safety Analysis	Jones, S.	Yingyan, L		ALDOT	3/15/2012	129,485
12405	12-0427	Financial Impact Analysis for Full Reciprocity Plan	Lou, Y.	Lindly, J.	Ijaz, Ahmad	Oregon DOT	4/5/2012	84,902
12406	12-0471	Comparative Analysis of Dynamic Pricing Strategies for Managed Lanes (2012-089)	Lou, Y.			Univ. of FL	5/11/2012	59,541
12408	12-0517	Revision of Observation Sites for 2012 AL Occupant Restraint Survey Design	Lou, Y.			ADPH	6/20/2012	2,364
12409	12-0571	Life Cycle Cost in ALDOT Infrastructure Projects	Lindly, J.	Fridley, K.	Back, E.	ALDOT	7/31/2012	227,297
12410	12-0665	ALDOT Economic Sustainability	Batson, R.	Cover, J.		ALDOT	9/11/2012	50,384
12411	13-0001	Revision of the Traffic Signal Design Guide and Timing Manual	Jones, S.	Tedla, E.		ALDOT	10/1/2012	45,179
12412	13-0007	Travel Time Assessment of Adaptive Traffic Signal Control Systems	Jones, S.			ALDOT	10/11/2012	160,262
12414	13-0008	Red Light Running Camera Implementation Guide	Jones, S.	Lindly, J.	Tedla, E.	ALDOT	10/1/2012	22,449
12415	13-0046	Alabama Traffic Data Collection Analysis	Jones, S.			ALDOT	10/25/2012	1,499,841
12416	12-0627	Culvert Wing Tab Design Loads	Richardson, J.	Graettinger, A.	Dao, T.	ALDOT	8/15/2012	190,488
13401	13-0021	Rail Highway At-Grade Crossing Prioritization and Ranking Program Analysis	Lou, Y.	Jones, S.		ALDOT	10/25/2012	234,419
13402	13-0075	Development of the ALDOT Roundabout Design and Operations Manual	Jones, S.	Tedla, E.		ALDOT	11/14/2012	307,618
13406	13-0078	Guidebook for Selecting and Implementing Sustainable Highway Construction Practices	Grau, D.	Wang, J.		Univ. of Idaho	11/14/2012	185,081
								<b>\$3,960,391</b>

## VIII. Grants/Contracts Awarded

Section VIII shows externally funded contracts and grants awarded in 2012. This \$2.93M total is in addition to funding that UTCA has received annually from USDOT.

UTCA Project #	OSP Proposal #	Project Title	PI	Co. PI	Co. PI	Agency	Start Date	End Date	Award Amount
12401	12-0204	Natural Gas Encasement for Highway Crossings	Lindly, J.	Graettinger		ALDOT	6/19/2012	8/30/2013	128,428
12402	12-0182	Safety & Operational Evaluation of Adaptive Traffic Signal Control	Jones, S.	Gurupackiam		ALDOT	1/1/2012	12/31/2012	439,769
12403	12-0183	Liaison and Coordination Services for Hiway Safety Research and Implem. Prog.	Turner, D.			ALDOT	1/1/2012	12/31/2013	47,005
12404	12-0341	Bridge Rail Safety Analysis	Jones, S.	Yingyan, L.		ALDOT	3/23/2012	12/31/2013	129,485
12406	12-0471	Comparative Analysis of Dynamic Pricing Strategies for Managed Lanes	Lou, Y.			Univ of FL	8/15/2012	11/15/2013	59,541
12407	11-0583	Wisconsin DOT & Crash and Analysis Mapping Phase III	Graettinger, A.			WI DOT	1/1/2012	8/31/2013	118,641
12408	12-0517	Revision of Observation Sites for 2012 AL Occupant Restraint Survey Design	Lou, Y.			ADPH	7/1/2012	9/30/2012	2,364
12409	12-0571	Life Cycle Cost in ALDOT Infrastructure Projects	Lindly, J.	Fridley, K.	Back, E.	ALDOT	6/26/2012	1/31/2013	227,297
12410	12-0665	ALDOT Economic Sustainability	Batson, R.	Cover, J.		ALDOT	8/16/2012	1/31/2013	50,384
12411	13-0001	Revision of the Traffic Signal Design Guide and Timing Manual	Jones, S.	Tedla, E.		ALDOT	10/19/2012	9/30/2013	45,179
12412	13-0007	Travel Time Assessment of Adaptive Traffic Signal Control Systems	Jones, S.			ALDOT	10/11/2012	9/30/2013	160,262
12414	13-0008	Red Light Running Camera Implementation Guide	Jones, S.	Lindly, J.	Tedla, E.	ALDOT	11/1/2012	2/28/2013	22,449
12415	13-0046	Alabama Traffic Data Collection Analysis	Jones, S.			ALDOT	11/28/2012	9/30/2013	1,499,841
									<b>\$2,930,645</b>



## IX. Grants/Contracts In-Force (Multi-year, externally-funded projects still active)

Section IX shows externally funded contracts that began in 2012 or that began prior to 2012 and were still active in 2012.

UTCA Project #	OSP Proposal #	Project Title	PI	Co. PI	Co. PI	Agency	Start Date	End Date	Award Amount
09402	09-0669	UTCA Research Forum	Lindly, J.			USDOT	9/24/2009	9/30/2012	10,000
09403	08-0549	Development of Access Management Criteria	Jones, S.			ALDOT	11/18/2009	8/31/2012	217,960
10401	09-0583	Pilot Car Driver Certification Program	Lindly, J.			ALDOT	4/8/2010	8/30/2013	113,222
10404	10-0673	Scoping Study for Implementation of the Highway Safety Manual in Alabama	Turner, D.	Jones, S.	Lou, Y.	ALDOT	10/21/2010	9/30/2012	301,279
				Brown, D.	Smith, R.				
11402	11-0440	Contraflow Evacuation Planning for I-65 in Alabama	Lou, Y.	Fonseca, D.	Moynihan, G.	ALDOT	8/15/2011	10/31/2012	109,214
11403	11-0494	Revenue Enhancement Alternatives for the Alabama Department of Transportation	Lindly, J.	Lou, Y.	Addy, S.	ALDOT	9/1/2011	7/31/2012	132,739
				Ijaz, A.					
12401	12-0204	Natural Gas Encasement for Highway Crossings	Lindly, J.	Graettinger		ALDOT	6/19/2012	8/30/2013	128,428
12402	12-0182	Safety & Operational Evaluation of Adaptive Traffic Signal Control	Jones, S.	Gurupackiam		ALDOT	1/1/2012	12/31/2012	439,769
12403	12-0183	Technical Assistance, Liaison and Coordination Services for Hiway Safety Research and Implem. Prog.	Turner, D.			ALDOT	1/1/2012	12/31/2013	47,005
12404	12-0341	Bridge Rail Safety Analysis	Jones, S.	Lou, Y.		ALDOT	3/23/2012	12/31/2013	129,485
12406	12-0471	Comparative Analysis of Dynamic Pricing Strategies for Managed Lanes (2012-089)	Lou, Y.			U of FL	8/15/2012	11/15/2013	59,541
12407	11-0583	Wisconsin DOT & Crash and Analysis Mapping Phase III	Graettinger, A.			WI DOT	1/11/2012	8/31/2013	118,641
12409	12-0571	Life Cycle Cost in ALDOT Infrastructure Projects	Lindly, J.	Fridley, K.	Back, E.	ALDOT	6/26/2012	1/31/2013	227,297
12410	12-0665	ALDOT Economic Sustainability	Batson, R.	Cover, J.		ALDOT	8/16/2012	1/31/2013	50,384
12411	13-0001	Revision of the Traffic Signal Design Guide and Timing Manual	Jones, S.	Tedla, E.		ALDOT	10/19/2012	9/30/2013	45,179
12412	13-0007	Travel Time Assessment of Adaptive Traffic Signal Control Systems	Jones, S.			ALDOT	10/11/2012	9/30/2013	160,262
12414	13-0008	Red Light Running Camera Implementation Guide	Jones, S.	Lindly, J.	Tedla, E.	ALDOT	11/1/2012	2/28/2013	22,449
12415	13-0046	Alabama Traffic Data Collection Analysis	Jones, S.			ALDOT	11/28/2012	9/30/2013	1,499,841
									\$3,812,695

## X. Publications

List the transportation research papers published in refereed journals and/or conference proceedings that resulted from projects funded by UTCA. Please list only those papers published in the calendar year 2012.

Gurupackiam, S., Jones, S., and Wang, P. “Sensitivity Analysis of Key Input Parameters in Microscopic Simulation of Under Saturated and Saturated Traffic Signals using SimTraffic and CORSIM.” *Journal of Civil Engineering and Architecture* Volume 6, No. 6, June 2012, pp. 651-664.

Gurupackiam, S. and Jones, S. “An Investigation of Lane Changing Parameters on an Urban Arterial for Different Traffic Congestion Levels.” *Advanced Studies In Transportation*, December 2012, pp. 31-45.

Gurupackiam, S. and Jones, S. “Empirical Study of Lane Changing and Control Adherence in Urban Street under Recurrent and Non-Recurrent Congestion.” *International Journal for Traffic and Transport Engineering*, December 2012, Vol.2, (4). pp. 306-422.

Jones, S., Lindly, J. and Wilkes, M., “Review of Escort Car Certification Programs.” *ITE Journal*, Volume 82, Issue 9, September 2012.

Kulshrestha, A., Lou, Y. and Yin, Y. (2012) “Pick-up Locations and Bus Allocation for Transit-based Evacuation Planning with Demand Uncertainty.” *Journal of Advanced Transportation* (accepted, doi:10.1002/atr.1221).

Kulshrestha, A., Lou, Y. and Yin, Y. (2012) “Pick-up Locations and Bus Allocation for Transit-based Evacuation Planning with Demand Uncertainty.” *Transportation Research Board 91st Annual Meeting Compendium of Papers DVD*, Paper No. 12-2941, Washington D.C., USA.

Mehta, G. and Lou, Y. (2012) “Safety Performance Function Calibration and Development for the State of Alabama: Two-lane Two-way Rural Roads and Four-lane Divided Highways.” *Transportation Research Record: Journal of the Transportation Research Board* (accepted).

Sisiopiku, V.P., Kallem B.R., and Sullivan A. (2012). “Qualification of Non-Recurring Congestion Using GPS Data.” *Journal of Modern Traffic and Transportation Engineering Research (MTTER)*, Vol. 1, Issue 2, pp. 54-60.

Uddin, N., Zhao, H., and Obrien, E., 2011 “Use of Weigh-In-Motion (WIM) Data for Site-Specific LRFR Bridge Rating.” *Proceedings of the 6th International Conference on Weigh-In-Motion ICWIM6*, Dallas, Texas (April 4-7, 2012).

## **Publications – continued from page 18**

Wang, P., Jones, S., and Yang, Q. “A Novel Conditional Cell transmission Model for Oversaturated Arterials.” *Journal of Central South University*. Volume 19, No. 5, 2012.

Zhao, H and Uddin, N. “Weigh-in-Motion (WIM) Data for Site-Specific LRFR Live Load Factor Calibration.” *18th International Association for Bridge and Structural Engineering (IABSE) Congress on Innovative Infrastructures toward Human Urbanism, Seoul, Korea, September 19-21, 2012*

Zuo, Q.H., L.E. Deganis, G. Wang (2012), “Elastic Waves and Damage Quantification in Brittle Material with Evolving Damage.” *Journal of Physics D: Applied Physics*. Vol. 45, 145302, pp. 1-8.

## XI. Presentations

List the transportation research papers presented at academic/professional meetings that resulted from projects funded by UTCA. Please list only those papers presented in the calendar year 2012.

Denny, S.J., McManus, B.M., Walters, M., Stavrinou, D. (2012, July). *Distracted Driving Impacts Merging Onto an Interstate for Teen and Young Adult Drivers*. Poster presented at the 2012 UAB Summer Undergraduate Research Expo, University of Alabama at Birmingham, Birmingham, AL. [First place prize for student poster competition]

Lindly, J.K., *Utility Training for DOTs*. 2012 AASHTO Subcommittee on Right of Way and Utilities Conference, Portland, OR, May 2, 2012.

Lou, Y., *Pick-up Locations and Bus Allocation for Transit-based Evacuation Planning with Demand Uncertainty*. Transportation Research Board 91st Annual Meeting, Washington D.C., January 2012, Poster.

Lou, Y., *Calibration Efforts and SPF Development in Alabama*. NCHRP 17-50 Lead State Initiative for Implementing the Highway Safety Manual, Baltimore, MD, August, 2012.

Lou, Y., *Determination of the Onset and Duration of Contraflow Operations under Uncertainties*. Institute for Operations Research and the Management Sciences Annual Meeting, Phoenix, AZ, October 2012.

Turner, Daniel S., *Summary of the UTC Spotlight Conference on Improving Roadway Safety Programs through University-Agency Partnerships*, Meeting of Transportation Centers, RITA, Washington, DC, January 22, 2012.

Turner, Daniel S., *Highlights from the UTC Spotlight Conference Improving Roadway Safety Programs Through University-Agency Partnerships*. Transportation Research Board Annual Meeting, Washington, DC, January 24, 2012

Turner, Daniel S., *Licensure of Professional Engineers*. Transportation Research Board Annual Meeting, January 23, 2012.

Turner, Daniel S., *Historical Perspective: Engineers, Attorneys and Tort Liability*. Transportation Research Board Annual Meeting, January 23, 2012.

Turner, Daniel S., *History of Engineering and Surveying in Alabama*. Southern Zone, National Council of Examiners for Engineering and Surveying, April 19, 2012

## **Presentations - continued from page 20**

Walters, M., McManus, B.M., Denny, S.J., Kim, S., Stavrinou, D. (2012, July). *Self-Reported Risky Driving Behavior Predicts Greater Speed While Merging*. Poster presented at the 2012 UAB Summer Undergraduate Research Expo, University of Alabama at Birmingham, Birmingham, AL. [First place prize for student poster competition]

Yates, D. and Waldron, C., *Effect of Increasing Truck Weight on Bridges*. 2012 ASCE Alabama Section, Summer Meeting, August 1-3, 2012, Orange Beach, AL

## **XII. Patents**

None.

## **XIII. Short Courses Presented**

List the transportation seminars, symposia, distance learning classes, etc. you conducted in the calendar year 2012 that resulted from projects funded by UTCA.

Turner, Daniel S., "Transportation Leadership Development Workshop," Raleigh, NC, January 5-6, 2012

Turner, Daniel S., "Transportation Leadership Development Workshop," Lexington, KY, April 17-18, 2012

Turner, Daniel S., "Transportation Leadership Development Workshop," Nashville, TN, September 26-28, 2012

## **XIV. Outreach Activities**

Refers to editorial boards of other groups that UTCA personnel served on, any institutes UTCA puts on for underprivileged school and/or high school students, and other outreach activities not previously listed.

*Drs. Lindly, Jones, and Lou teach transportation courses and advise transportation graduate students, in addition to carrying out research. Dr. Turner, who retired in December 2009, has ended his formal teaching and advising duties but continues to be an active member in the community of transportation professionals. The outreach activities of these four individuals are highlighted in this section.*

## **Outreach Activities – continued from page 21**

**Dr. Jay Lindly** directly participated in outreach in several ways:

- Member, Transportation Research Board Committee AFB70, Utilities
- Member, TRB Panel 44-11 for oversight of NCHRP Project “Managing Utilities on Highway Right-of-Way”.
- Member, Alabama Every Day Counts Innovative Initiative, Federal Highway Administration: Alabama Division
- Invited speaker at the 2012 AASHTO Subcommittee on Right of Way and Utilities Conference on the topic of Utility Training for DOTs, May 2, 2012.
- Paper reviewer for TRB Annual Meeting 2012

**Dr. Daniel Turner** was also active:

- Chair, Alabama Board of Licensure for Professional Engineers and Land Surveyors
- Secretary-Treasurer, Southern Zone, National Council for Examination of Engineers and Surveyors
- National Associate of the National Research Council of the National Academies
- Executive Board, Operations and Preservation Group, Transportation Research Board
- Member, Roadway Safety Committee Performance Committee, Transportation Research Board
- Member, Operational Effects of Geometrics Committee, Transportation Research Board
- Legislative and Policy Committee, Institute of Transportation Engineers
- Leadership Development Committee, Institute of Transportation Engineers
- Member, Task Committee on Technologist Credentialing, American Society of Civil Engineers
- Member, Foundation Board of Directors, American Society of Civil Engineers
- Presenter and Emcee, Alabama Road Builders Hall of Fame Induction Banquet, April 11, 2012

**Dr. Steven Jones** has engaged the community of transportation professionals worldwide:

- Transportation Research Board (TRB) Representative for the University of Alabama
- Contributing Editor, ASCE Journal of Professional Issues in Engineering Education and Practice
- University of Alabama ITE Student Chapter Faculty Advisor, 2009 – present
- Paper reviewer for TRB Annual Meetings, 2002 – 2011
- Paper reviewer for the ASCE Journal of Transportation Engineering
- Member & Communications Coordinator, TRB Technology Transfer Committee (ABG30)
- Member, ASCE Transportation & Development Institute Committee on Sustainability and Environment
- Member, ASCE Transportation & Development Institute Public Transportation Committee

## Outreach Activities – continued from page 22

### Dr. Steven Jones - continued

- Friend, TRB Transportation in the Developing Countries Committee (ABE90)
- Friend, TRB Transportation and Sustainability Committee (ADD40)
- Friend, TRB Transportation and Land Development Committee (ADD30)
- Co-Chair of the Conference Planning Committee for the ASCE 3<sup>rd</sup> *International Conference on Urban Transportation System* to be held in Paris, FR in November 2013.
- Member of the Scientific Review Committee for the ASCE *Green Streets and Highways Conference* to be held in Austin, TX in October 2013.
- Presented transportation research results at the headquarters of the African Union in Ethiopia in October 2012.

### Dr. Yingyan Lou also engaged in outreach activities around the world:

- Member, Committee on Transportation Network Modeling (ADB30), Transportation Research Board (2012-present)
- Member, Committee on Highway Safety Performance (ANB25), Transportation Research Board (2012-present)
- Member, Committee on User Information Systems (AND20), Transportation Research Board (2011-present)
- Member, American Society for Engineering Education (2012 – present)
- Member, Institute for Operations Research and Management Sciences (2006 – present)
- Member, Transportation Research Board (2008 – present)
- Editorial Board Member, *International Journal of Applied Management Science*, 2009 – present
- Area Editor, *Proceedings of the International Conference of Chinese Transportation Professionals* (published by ASCE), 2011 – 2012
- Reviewer for multiple journals, *ASCE Journal of Transportation Engineering*, *ASCE Journal of Urban Planning and Development* (Special issue on “Challenges in Transportation Planning for Asian Cities”), *Automatica*, *Computer-Aided Civil and Infrastructure Engineering*, *European Journal of Transportation and Infrastructure Research*, *IEEE Transactions on Intelligent Transportation Systems*, *IET Intelligent Transport Systems*, *International Journal of ITS Research*, *International Journal of Sustainable Transport*, *International Journal of Transportation* (Special issue on “Urban Mobility and Modal Shift towards Public Transport”), *Journal of Advanced Transportation*, *Journal of Intelligent Transportation Systems*, *Journal of systems Science and Systems Engineering*, *Journal of Transportation Safety and Security*, *Network Spatial and Economics*, *Transport Policy*, *Transportation* (Special issue on “Transit Planning, Operation and Management in Densely Populated Areas”), *Transportation Research Part A*, *Transportation Research Part B*, *Transportation Research Part C*, and *Transportation Research Part E*.
- Reviewer for multiple conferences, *Transportation Research Board Annual Meeting 2010 – 2013*, *International IEEE conference on Intelligent Transportation Systems 2007 – 2012*, *The 14th International HOV, HOT and Managed Lanes Conference*, 2012

## **Outreach Activities – continued from page 23**

**Dr. Yingyan Lou** - continued

- Proposal Reviewer for National Center for Intermodal Transportation for Economic Competitiveness and University of California Transportation Center.
- Technical Committee Member, The 14th International HOV, HOT and Managed Lanes Conference, Oakland, CA, June 2012

## **XV. Honors and Awards**

None

## **XVI. Minutes of Center Meetings**

N/A

## **XVII. Other Information**

UTCA's final funding as a Title III University Transportation Center (UTC) through the US Department of Transportation ended December 31, 2012. The UTC funds had been shared among UA, UAB, and UAH through a program of competitively-funded research proposals, with the Center (and national reporting responsibilities) being housed in the Civil, Construction, and Environmental Engineering Department at UA. Recognizing that UTCA was authorized through the Board of Trustees as a three-campus center, transportation faculty members on the UA campus believe that the end of UTC funding offers an opportunity to re-fashion UTCA as a single-campus center located at UA and hope that the UA administration will work to establish UTCA as a free-standing Center on this campus.

Re-configuring UTCA as a one-campus center is supported by current and anticipated transportation funding on the UA campus. In calendar-year 2012, new externally-funded contracts to UTCA to UA researchers totaled \$2.9M (this figure does not include any UTC funding). UA is currently in the second year of a two-year, \$2M umbrella agreement with the Alabama Department of Transportation (ALDOT). We are in discussions with ALDOT for a three-year, \$7.5M extension of the umbrella agreement (the \$7.5M figure is one being proposed by ALDOT).



## **Other Information – continued from page 24**

In addition to ALDOT funding, UTC has written proposals in 2013 to several national funding sources:

- The Department of Housing and Urban Development
- The National Cooperative Highway Research Program
- The US DOT (through UTC proposals as part of a team headed by Montana State University and as part of a team headed by the University of Tennessee)

2012 marked the highest level of new, external funding in UTCA's history. 2013 has started well and holds the promise of exceeding 2012's external funding totals. UTCA also appears well-positioned for strong research funding in future years.