

2016 RESEARCH WORKSHOP PROBLEM STATEMENT LIST

Date Updated: 21-Mar-16

GROUP: 1 MATERIALS & PAVEMENTS

Subject Leader: Scott Andrus

Research Contact: David Stevens

<u>Prob No.</u>	<u>Problem Title</u>	<u>Submitted By</u>	<u>Suggested Champion</u>	<u>Approx Duration</u>	<u>UDOT Cost</u>	<u>Other/Matching Funds</u>	<u>Total Cost</u>
16.01.01	Field Data for Low Temperature Cracking	Pedro Romero	Howard Anderson, Scott Andrus, Steve Anderson, Lonnie Merchant	18 months	\$60,000	\$30,000	\$90,000
16.01.02	Cold In Place Recycle Emulsion Qualification with the Forced Cone Penetration Test	Kevin VanFrank	Howard Anderson, Scott Andrus	9 months	\$30,000	\$0	\$30,000
16.01.03	SemiCircular Bending Test Phase III Existing Mix Valadation	Kevin VanFrank	Howard Anderson, Scott Andrus	9 months	\$60,000	\$0	\$60,000
16.01.04	SemiCircular Bending Ruggedness Study	Tim Biel	Howard Anderson, Scott Andrus	1 year	\$60,000	\$0	\$60,000
16.01.05	Improvement of Asphalt Recycle	Yanguo Ma	TBD	4 months	\$20,000	\$0	\$20,000
16.01.06	Photoluminescent Markings Development	Yanguo Ma	TBD	6 months	\$30,000	\$0	\$30,000
16.01.07	Inverted Base Pavement - Pooled Fund Participation	Jason Richins	Scott Andrus, Jason Richins & Georgia DOT	4 years	\$50,000	\$200,000	\$250,000
16.01.08	Review and Specification for Shrinkage Cracks of Bridge Decks Phase II	Amanda Bordelon	Bryan Lee, Scott Strader, or Tom Hales	2 years	\$60,000	TBD	
16.01.09	Development of Highly Modified Asphalt (HiMA)	Prabhat Gupta	Howard Anderson, Scott Andrus	6 months	\$30,000	\$0	\$30,000
16.01.10	UDOT Concrete Sustainability Calculator	Marc Maguire	Bryan Lee, Tom Hales	1 year	\$37,000	\$0	\$37,000
16.01.11	Feasibility of Instrumenting and Monitoring Designated Roadway Sections in Utah	David Stevens	Lonnie Marchant	6 months	\$30,000	\$0	\$30,000
16.01.12	Performance Tests for Asphalt Emulsions	Roy Ulibarri & Howard Anderson	Roy Ulibarri	18 months	\$50,000	\$0	\$50,000
16.02.01	Concrete Barriers with Self-Consolidating Concrete and Glass FRP Bars	Chris Pantelides	Lloyd Neeley	1 year	\$50,000	\$0	\$50,000
16.04.02	Efficiency of Nox Air Pollution Reduction with TIO2 Coatings	Amanda Bordelon	Jason Richins	2 years	\$60,000	\$0	\$60,000

2016 RESEARCH WORKSHOP PROBLEM STATEMENT LIST

Date Updated: 21-Mar-16

GROUP: 2 MAINTENANCE

Subject Leader: Lloyd Neeley

Research Contact: Jason Richins

<u>Prob No.</u>	<u>Problem Title</u>	<u>Submitted By</u>	<u>Suggested Champion</u>	<u>Approx Duration</u>	<u>UDOT Cost</u>	<u>Other/Matching Funds</u>	<u>Total Cost</u>
16.02.01	Concrete Barriers with Self-Consolidating Concrete and Glass FRP Bars	Chris Pantelides	Lloyd Neeley	1 year	\$50,000	\$0	\$50,000
16.02.02	Mobile Data Collection Device	Reuel Alder	TBD	? months	\$0	\$0	\$0
16.02.03	Recommended Snow Plow Blade Use due to Various Factors	Eric Chaston	Todd Richins, Jack Mason, Roger Frantz	1 year	\$0	\$0	\$0
16.02.04	Filter Systems to Produce Industrial Use Water for UDOT Maintenance Stations	Kevin Griffin	Kevin Griffin	9 months	\$100,000	\$0	\$100,000
16.02.05	A Data Fusion Approach for Extracting Highway Maintenance Features	Ziqi Song	Rukhsana Lindsey	1 year	\$50,000	\$50,000	\$100,000
16.02.06	High Asphalt Content Patching	Garlon Maxwell	Rukhsana Lindsey	1 year	\$30,000	\$10,000	\$40,000
16.02.07	Snow Plow Equipment Lighting - Best Practice Recommendation	Jason Richins	Brandon Klenk	6 months	\$8,000	\$0	\$8,000

2016 RESEARCH WORKSHOP PROBLEM STATEMENT LIST

Date Updated: 21-Mar-16

GROUP: 3 TRAFFIC MANAGEMENT & SAFETY

Subject Leader: Robert Miles
 Research Contact: Cameron Kergaye

<u>Prob No.</u>	<u>Problem Title</u>	<u>Submitted By</u>	<u>Suggested Champion</u>	<u>Approx Duration</u>	<u>UDOT Cost</u>	<u>Other/Matching Funds</u>	<u>Total Cost</u>
16.03.01	Smart Work Zones using End of Queue Detection Warning Systems	Troy C. Torgersen	TBD	? months	\$0	\$0	\$0
16.03.02	Developing a Method to Identify Horizontal Curves Segments with Worst Crash Histories Using the HAF Algorithm	Mitsuru Saito & Grant G. Schultz	Scott Jones	18 months	\$60,000	\$0	\$60,000
16.03.03	Effects of Converting Express Lanes from Restricted to Continuous Access on Safety and Operation	Mitsuru Saito & Grant G. Schultz	Rob Clayton	18 months	\$69,000	\$0	\$69,000
16.03.04	Analysis of Left-turn Warrants in Utah	Grant G. Schultz & Mitsuru Saito	Mark Taylor/Jesse Sweeten	16 months	\$60,000	\$0	\$60,000
16.03.05	Data Based Testing & Decision Process for Traffic Signal Steel Replacement	Mark Taylor	Mark Taylor/Jesse Sweeten	16 months	\$60,000	\$0	\$60,000
16.03.06	Connected Vehicle Dilemma Zone Awareness	Daniel Fagnant	Blaine Leonard, Scott Jones	14 months	\$50,000	\$40,000	\$90,000
16.03.07	Assessing Prevalance and Countermeasures for Motorcycle Crashes in Utah	Daniel Fagnant	Scott Jones	16 months	\$50,000	\$40,000	\$90,000
16.03.08	Index of Model Ordinances Promoting Pedestrian Safety	Shaunna K. Burbidge	Robert Miles	15 months	\$45,000	\$0	\$45,000
16.03.09	Pedestrian Safety Toolbox for Elected Officials	Shaunna K. Burbidge	Robert Miles	12 months	\$20,000	\$0	\$20,000
16.03.10	Risk Assessment of Non-Motorized Access to Rail Transit Stations	Shaunna K. Burbidge	Robert Miles	15 months	\$95,000	\$0	\$95,000
16.03.11	Utilizing Vehicle-To-Infrastructure Connectivity For Increased Safety	Spencer Taylor	TBD	5 months	\$15,000	\$0	\$15,000
16.03.12	Evaluation of InSync Adaptive Traffic Control on Fort Union Boulevard	Milan Zlatkovic, Steve Laner and Joe Perrin	TBD	? months	\$75,000	TBD	TBD
16.03.13	Roadway and Roadside-Related Crash Causes in Urban Areas	Milan Zlatkovic	TBD	? months	\$20,000	TBD	TBD
16.03.14	Decreasing Road Fatilites by Using Flashlight Signs in Specific Areas	Yanguo Ma	TBD	12 months	\$45,000	\$0	\$45,000
16.03.15	Traffic Ticker	Darcy Bullock	TBD	? months	\$100,000	\$0	\$100,000

2016 RESEARCH WORKSHOP PROBLEM STATEMENT LIST

Date Updated: 21-Mar-16

GROUP: 4 PRECONSTRUCTION

Subject Leader: Jim Golden

Research Contact: Tom Hales

<u>Prob No.</u>	<u>Problem Title</u>	<u>Submitted By</u>	<u>Suggested Champion</u>	<u>Approx Duration</u>	<u>UDOT Cost</u>	<u>Other/Matching Funds</u>	<u>Total Cost</u>
16.04.01	Project Management in Transportation Engineering - National Best Practices	Jim Golden	Jim Golden	6 months	\$25,000	\$0	\$25,000
16.04.02	Efficiency of Nox Air Pollution Reduction with TIO2 Coatings	Amanda Bordelon	Jason Richins	2 years	\$60,000	\$0	\$60,000
16.04.03	Investigation of iPhone APP "Traffic Control on the Fly"	Sara Colosimo	Rob Wight, PJ Roubinet, Shawn Lambert	? months	\$0	\$10,000	\$10,000

2016 RESEARCH WORKSHOP PROBLEM STATEMENT LIST

Date Updated: 21-Mar-16

GROUP: 5 PLANNING

Subject Leader: Jeff Harris
 Research Contact: Kevin Nichol

<u>Prob No.</u>	<u>Problem Title</u>	<u>Submitted By</u>	<u>Suggested Champion</u>	<u>Approx Duration</u>	<u>UDOT Cost</u>	<u>Other/Matching Funds</u>	<u>Total Cost</u>
16.05.01	Analysis of Bicycle Infrastructure in Utah	Grant G. Schultz and Shaunna Burbidge	Jeff Harris/Angelo Papastamos	16 months	\$60,000	\$0	\$60,000
16.05.02	Trip and Parking Generation by TODs Phase II	Reid Ewing	Jeff Harris	11 months	\$36,000	\$30,000	\$66,000
16.05.03	Does Compact Development Increase or Reduce Traffic Congestion?	Reid Ewing	TBD	7 months	\$20,000	\$30,000	\$50,000
16.05.04	Scenario Planning for Automated Vehicles	Daniel Fagnant	Jeff Harris/Angelo Papastamos	16 months	\$50,000	\$40,000	\$90,000
16.05.05	Incorporating Reliability Performance Measures into Transportation Planning	Cathy Liu	Jeff Harris	16 months	\$30,000	\$30,000	\$60,000
16.05.06	Improving Long-term Passing Lane Needs Identification on Rural Utah Highway	Charles Allen	Walt Steinworth	7 months	\$50,000	\$0	\$50,000
16.05.07	Using EERPAT to Model Disruptive Technologies in Utah	Kordel Braley	Jeff Harris, Walt Steinworth (Jon Larsen—WFRC)	10 months	\$50,000	\$0	\$50,000
16.05.08	Coping with Traffic: How Different Residential Locations Affect Personal Travel and Emissions	Douglas Eisinger	Jeff Harris	12 months	\$50,000	\$34,000	\$84,000

2016 RESEARCH WORKSHOP PROBLEM STATEMENT LIST

Date Updated: 21-Mar-16

GROUP: 6 PUBLIC TRANSPORTATION

Subject Leader: Hal Johnson

Research Contact: Tim Boschert

<u>Prob No.</u>	<u>Problem Title</u>	<u>Submitted By</u>	<u>Suggested Champion</u>	<u>Approx Duration</u>	<u>UDOT Cost</u>	<u>Other/Matching Funds</u>	<u>Total Cost</u>
16.06.01	Strategic Planning and Design for Electric Bus Systems	Ran Wei	TBD	12 months	\$30,000	\$20,000	\$50,000
16.06.02	An Intrastate Passenger Rail System for Utah Using Existing Tracks	Mike Christensen	Jeff Harris	6 months	\$25,000	\$0	\$25,000
16.06.03	Analysis of a Connector-Feeder Shared Autonomous Vehicle System	Daniel Fagnant	G.J. LaBounty (UTA), Jeff Harris (UDOT)	16 months	\$50,000	\$40,000	\$90,000
16.06.04	Understanding Transit Ridership: Using Regression Analysis to Generate Ridership Forecasts for Better Performance Measurement of Transit Agencies	Torrey Lyons	TBD	4 months	\$10,000	\$5,000	\$15,000
16.06.05	Quantifying Effects of Spatial Coverage and Temporal Frequency of Transit Service on Ridership	Reid Ewing	Hal Johnson	10 months	\$20,000	\$20,000	\$40,000
16.06.06	Optimal Deployment of Wireless Charging Facilities for an Electric Bus System	Ziqi Song	Jeff Harris	12 months	\$50,000	\$50,000	\$100,000
16.06.07	Development of Methodologies and Algorithms for Adaptive Transit Signal Priority	Milan Zlatkovic	TBD	1 year	\$30,000	TBD	TBD
16.06.08	Traffic Impact Analysis of Downtown SLC Streetcar Deployment	Milan Zlatkovic	TBD	1 year	\$60,000	TBD	TBD
16.06.09	Return on Investment for Bus Stop Investments	Keith Bartholomew & Heidi Goedhart	Jeff Harris & Jake Splan (UTA)	16 months	\$40,000	\$40,518	\$80,518
16.06.10	Economic Viability and Architecture Optimization of Wireless Power Transfer for Public Trans.	Jason Quinn	Hal Johnson	1 year	\$50,000	\$70,000	\$120,000
16.06.11	The Effect of Air Quality on Transit Ridership Patterns and Associated Vehicle Emissions	John Lin	Hal Johnson	16 months	\$20,000	\$25,000	\$45,000
16.06.12	Electric Bus Advanced Battery Management System	Regan Zane	Hal Johnson	13 months	\$50,000	\$70,000	\$120,000