

2019 UDOT Research Workshop Problem Statements List

Date Updated:

Feb. 25, 2019

**Group 1 - Materials and Pavements**

Number	Name	Written by	Organization	Email	Champion	Email	Approx. Duration	UDOT Cost	Other Funds	Total Cost
19.01.01	Forensic Investigation of the Value Added to the Pavement Section Using Geogrids - Phase 2	Evert Lawton	UU	<a href="mailto:lawton@civil.utah.edu">lawton@civil.utah.edu</a>	Steven Anderson	<a href="mailto:stevenanderson@utah.gov">stevenanderson@utah.gov</a>	12 months	\$50,000	\$40,000	\$90,000
19.01.02	Warm-Mix Asphalt Pavement for Utah Airports	Craig Ide	UDOT	<a href="mailto:cide@utah.gov">cide@utah.gov</a>	Craig Ide	<a href="mailto:cide@utah.gov">cide@utah.gov</a>	18 months	\$50,000	\$500,000	\$550,000
19.01.03	Measurement of Air Voids in Utah Pumped Concretes	Marc Maguire	USU	<a href="mailto:m.maguire@usu.edu">m.maguire@usu.edu</a>	Bryan Lee	<a href="mailto:bryanlee@utah.gov">bryanlee@utah.gov</a>	12 months	\$30,000		\$30,000
19.01.04	Maturity Measurements in Rapid Setting Concretes	Marc Maguire	USU	<a href="mailto:m.maguire@usu.edu">m.maguire@usu.edu</a>	Bryan Lee	<a href="mailto:bryanlee@utah.gov">bryanlee@utah.gov</a>	12 months	\$50,000		\$50,000
19.01.05	Thresholds for Intermediate Temperature Cracking Using Flexibility Index	Pedro Romero	UU	<a href="mailto:pedro_romero@utah.edu">pedro_romero@utah.edu</a>	Howard Anderson	<a href="mailto:handerson@utah.gov">handerson@utah.gov</a>	12 months	\$40,000	\$20,000	\$60,000
19.01.06	IRI Reduction by Various Methods	Garlon Maxwell	Diamond Road	<a href="mailto:gmaxwell@diamondroad.com">gmaxwell@diamondroad.com</a>	Jason Simmons	<a href="mailto:jasonsimmons@utah.gov">jasonsimmons@utah.gov</a>	12 months	\$3,000	\$3,000	\$6,000

**Group 2 - Maintenance**

Number	Name	Written by	Organization	Email	Champion	Email	Approx. Duration	UDOT Cost	Other Funds	Total Cost
19.02.01	ESRI Insights Phase II: The War Room	Ryan Ferrin	UDOT	<a href="mailto:lawton@civil.utah.edu">lawton@civil.utah.edu</a>	Steven Anderson	<a href="mailto:stevenanderson@utah.gov">stevenanderson@utah.gov</a>	12 months	\$50,000	\$40,000	\$90,000
19.02.02	Brine Pond Filtration	Tim Ularich	UDOT	<a href="mailto:timularich@utah.gov">timularich@utah.gov</a>	CJ Connor	<a href="mailto:cconnor@utah.gov">cconnor@utah.gov</a>	8 months	\$65,000		\$65,000
19.02.03	Analytical Framework for Life Cycle and Performance Assessment of the Equipment Programs	Cathy Liu	UU	<a href="mailto:cathy.liu@utah.edu">cathy.liu@utah.edu</a>	Tim Ularich	<a href="mailto:timularich@utah.gov">timularich@utah.gov</a>	15 months	\$40,000	\$40,000	\$80,000
19.02.04	Field Testing of a Precast Panel Pavement Section with Embedded Electrical Charging	M. Halling	USU	<a href="mailto:marv.halling@usu.edu">marv.halling@usu.edu</a>	Tim Ularich	<a href="mailto:timularich@utah.gov">timularich@utah.gov</a>	18 months	\$50,000	\$50,000	\$100,000
19.02.05	Using Virtual and Augmented Reality for Maintenance Inspection Activities	Cathy Liu	UU	<a href="mailto:cathy.liu@utah.edu">cathy.liu@utah.edu</a>	Tim Ularich	<a href="mailto:timularich@utah.gov">timularich@utah.gov</a>	18 months	\$50,000	\$50,000	\$100,000

**Group 3 - Traffic Management & Safety**

Number	Name	Written by	Organization	Email	Champion	Email	Approx. Duration	UDOT Cost	Other Funds	Total Cost
19.03.01	Utilizing Machine Learning to Cross-check Traffic Data and Understand Urban Mobility	Xianfeng Terry Yang	UU	<a href="mailto:x.yang@utah.edu">x.yang@utah.edu</a>	Kelly Burns	<a href="mailto:kburns@utah.gov">kburns@utah.gov</a>	18 months	\$50,000	\$40,000	\$90,000
19.03.02	Evaluating Ramp Meter Delay in Utah	Grant Schultz	BYU	<a href="mailto:gschultz@byu.edu">gschultz@byu.edu</a>	Jamie Mackey	<a href="mailto:jamiemackey@utah.gov">jamiemackey@utah.gov</a>	18 months	\$65,000		\$65,000
19.03.03	Analysis of Motorcycle Crashes on Utah's Highways	Grant Schultz	BYU	<a href="mailto:gschultz@byu.edu">gschultz@byu.edu</a>	Jeff Lewis	<a href="mailto:jefflewis@utah.gov">jefflewis@utah.gov</a>	16 months	\$50,000		\$50,000
19.03.04	Public Perception of the Collection and Use of Connected and Autonomous (CAV) Vehicle Data	Michelle Mekker	USU	<a href="mailto:michelle.mekker@usu.edu">michelle.mekker@usu.edu</a>	Lisa Miller	<a href="mailto:lisamiller@utah.gov">lisamiller@utah.gov</a>	12 months	\$50,000		\$50,000
19.03.05	Analysis of Performance Measures of UDOT's Traffic Incident Management Program: Phase II	Grant Schultz	BYU	<a href="mailto:gschultz@byu.edu">gschultz@byu.edu</a>	John Leonard	<a href="mailto:jleonard@utah.gov">jleonard@utah.gov</a>	18 months	\$75,000		\$75,000
19.03.06	Evaluating the Safety Impacts of Access Connections on State Highways	Grant Schultz	BYU	<a href="mailto:gschultz@byu.edu">gschultz@byu.edu</a>	Jeff Lewis	<a href="mailto:jefflewis@utah.gov">jefflewis@utah.gov</a>	18 months	\$70,000		\$70,000
19.03.07	Infrared thermography for ice/snow detection at high speed intersections	Xuan Zhu	UU	<a href="mailto:xuan.peter.zhu@utah.edu">xuan.peter.zhu@utah.edu</a>	Jeff Williams	<a href="mailto:jeffwilliams@utah.gov">jeffwilliams@utah.gov</a>	12 months	\$50,000		\$50,000
19.03.08	Analysis of the Effectiveness of DSRC on Snow Plow Operations in Utah	Grant Schultz	BYU	<a href="mailto:gschultz@byu.edu">gschultz@byu.edu</a>	Peter Jager	<a href="mailto:pjager@utah.gov">pjager@utah.gov</a>	18 months	\$70,000		\$70,000
19.03.09	Analysis of Express Lanes in Utah	Grant Schultz	BYU	<a href="mailto:gschultz@byu.edu">gschultz@byu.edu</a>	Mark Parry	<a href="mailto:moparry@utah.gov">moparry@utah.gov</a>	16 months	\$70,000		\$70,000
19.03.10	Benefit / Cost Analysis of Using DSRC for Snow Plow Truck Preemption	Xianfeng Terry Yang	UU	<a href="mailto:x.yang@utah.edu">x.yang@utah.edu</a>	Blaine Leonard	<a href="mailto:bleonard@utah.gov">bleonard@utah.gov</a>	18 months	\$50,000	\$40,000	\$90,000
19.03.11	Prepare Utah for Demonstrating Connected Automated Vehicles on Arterials	Xianfeng Terry Yang	UU	<a href="mailto:x.yang@utah.edu">x.yang@utah.edu</a>	Blaine Leonard	<a href="mailto:bleonard@utah.gov">bleonard@utah.gov</a>	18 months	\$50,000	\$40,000	\$90,000

19.03.12	Fast and Reliable Prediction of Pedestrian Crossing Intention and Movement at Intersections	Ziqi Song	USU	<a href="mailto:ziqi.song@usu.edu">ziqi.song@usu.edu</a>	Blaine Leonard	<a href="mailto:bleonard@utah.gov">bleonard@utah.gov</a>	12 months	\$50,000	\$50,000	\$100,000
19.03.13	Connected and Autonomous Vehicles: Potential impacts on air-quality	Torrey Lyons	UU	<a href="mailto:torrey.lyons@gmail.com">torrey.lyons@gmail.com</a>	Blaine Leonard	<a href="mailto:bleonard@utah.gov">bleonard@utah.gov</a>	12 months	\$30,000	\$10,000	\$40,000
19.03.14	Gauging the Effectiveness of Safe Routes to School Projects	Shaunna Burbidge	Active Planning	<a href="mailto:burbidge@walkbik.eplan.com">burbidge@walkbik.eplan.com</a>	Travis Evans	<a href="mailto:travispevans@utah.gov">travispevans@utah.gov</a>	12 months	\$33,500		\$33,500
19.03.15	Rural Trail Crossing Treatments	Shaunna Burbidge	Active Planning	<a href="mailto:burbidge@walkbik.eplan.com">burbidge@walkbik.eplan.com</a>	Travis Evans	<a href="mailto:travispevans@utah.gov">travispevans@utah.gov</a>	12 months	\$40,000		\$40,000
19.03.16	Safety in numbers? Developing improved safety predictive methods for pedestrian crashes at signalized intersections in Utah using push button-based measures of exposure	Patrick Singleton	USU	<a href="mailto:patrick.singleton@usu.edu">patrick.singleton@usu.edu</a>	Travis Evans	<a href="mailto:travispevans@utah.gov">travispevans@utah.gov</a>	12 months	\$50,000		\$50,000
19.03.17	Investigating bicyclist safety at roundabouts	Patrick Singleton	USU	<a href="mailto:patrick.singleton@usu.edu">patrick.singleton@usu.edu</a>	Travis Evans	<a href="mailto:travispevans@utah.gov">travispevans@utah.gov</a>	18 months	\$50,000	\$50,000	\$100,000
19.03.18	Systemic analysis of bicycle and pedestrian safety in Utah	Patrick Singleton	USU	<a href="mailto:patrick.singleton@usu.edu">patrick.singleton@usu.edu</a>	Travis Evans	<a href="mailto:travispevans@utah.gov">travispevans@utah.gov</a>	18 months	\$60,000		\$60,000
19.03.19	Travel Behavior and Perceptions Among Young Drivers	Shaunna Burbidge	Active Planning	<a href="mailto:burbidge@walkbik.eplan.com">burbidge@walkbik.eplan.com</a>	Travis Evans	<a href="mailto:travispevans@utah.gov">travispevans@utah.gov</a>	12 months	\$55,000		\$55,000
19.03.20	Crash Analysis and Development of Surrogate Measures of Safety using Raw Detector and Signal Data	Juan Medina	UU	<a href="mailto:juan.c.medina@utah.edu">juan.c.medina@utah.edu</a>	Jeff Lewis	<a href="mailto:jefflewis@utah.gov">jefflewis@utah.gov</a>	12 months	\$30,000	\$30,000	\$60,000
19.03.21	At the Intersection of Pedestrian Safety and UAS	Brent Chamberlain	USU	<a href="mailto:brent.chamberlain@usu.edu">brent.chamberlain@usu.edu</a>	Clint Harper	<a href="mailto:charper@utah.gov">charper@utah.gov</a>	16 months	\$40,000	\$35,000	\$75,000
19.03.22	Methodology for evaluating intersection safety and operational performance with left-turn phasing	Xianfeng Terry Yang	UU	<a href="mailto:x.yang@utah.edu">x.yang@utah.edu</a>	Glenn Blackwelder	<a href="mailto:gblackwelder@utah.gov">gblackwelder@utah.gov</a>	12 months	\$50,000		\$50,000
19.03.23	Non-destructive Evaluation and Numerical Modelling of Unrated Installed Crash Barriers	Andrew Sorensen	USU	<a href="mailto:andrew.sorensen@usu.edu">andrew.sorensen@usu.edu</a>	Robert Miles	<a href="mailto:robertmiles@utah.gov">robertmiles@utah.gov</a>	12 months	\$60,000		\$60,000
19.03.24	National Practices for Setting Speed Limits - A Synthesis of Current Practice	Grant Schultz	BYU	<a href="mailto:gschultz@byu.edu">gschultz@byu.edu</a>	Robert Miles	<a href="mailto:robertmiles@utah.gov">robertmiles@utah.gov</a>	16 months	\$40,000		\$40,000
19.03.25	Safety and Characteristics of Micro-mobility Users	Torrey Lyons	UU	<a href="mailto:torrey.lyons@gmail.com">torrey.lyons@gmail.com</a>	Travis Evans	<a href="mailto:travispevans@utah.gov">travispevans@utah.gov</a>	12 months	\$40,000	\$10,000	\$50,000

**Group 4 - Structures & Geotechnical**

Number	Name	Written by	Organization	Email	Champion	Email	Approx. Duration	UDOT Cost	Other Funds	Total Cost
19.04.01	Improved Detailing Practices and Specifications for Grouted Splice Couplers	Chris Pantelides	UU	<a href="mailto:c.pantelides@utah.edu">c.pantelides@utah.edu</a>	James Corney	<a href="mailto:jcorney@utah.gov">jcorney@utah.gov</a>	12 months	\$50,000	\$40,000	\$90,000
19.04.02	Probabilistic Liquefaction Assessment in Gravels Using DPT Testing.	Kyle Rollins	BYU	<a href="mailto:rollinsk@byu.edu">rollinsk@byu.edu</a>	Jim Higbee	<a href="mailto:jhigbee@utah.gov">jhigbee@utah.gov</a>	12 months	\$25,000	\$25,000	\$50,000
19.04.03	Infrared Thermography for Concrete Bridge Deck Condition Evaluation Exploiting Machine Learning	Xuan Zhu	UU	<a href="mailto:xuan.peter.zhu@utah.edu">xuan.peter.zhu@utah.edu</a>	James Corney	<a href="mailto:jcorney@utah.gov">jcorney@utah.gov</a>	12 months	\$50,000		\$50,000
19.04.04	Nephi Bridge Deck Treatment Comparison	Matt Mikulich	UU	<a href="mailto:u0920622@utah.edu">u0920622@utah.edu</a>	Becky Nix	<a href="mailto:bnix@utah.gov">bnix@utah.gov</a>	12 months	\$0		\$0
19.04.05	Evaluation of ABC Grouted Coupler Connected Bridge Piers Subject to Vehicular Impact	Andrew Sorensen	USU	<a href="mailto:andrew.sorensen@usu.edu">andrew.sorensen@usu.edu</a>	Rhett Arnell	<a href="mailto:rarnell@utah.gov">rarnell@utah.gov</a>	12 months	\$55,500	\$60,000	\$115,500
19.04.06	Loading and Wetting-Induced Settlement of Bridge Approach Embankments	Evert Lawton	UU	<a href="mailto:lawton@civil.utah.edu">lawton@civil.utah.edu</a>	Grant Gummow	<a href="mailto:ggummow@utah.gov">ggummow@utah.gov</a>	12 months	\$50,000	\$40,000	\$90,000
19.04.07	Chloride Ion Ingress in Concrete Bridge Decks Containing Lightweight Aggregate	Spencer Guthrie	BYU	<a href="mailto:guthrie@byu.edu">guthrie@byu.edu</a>	Thad Pinkerton	<a href="mailto:tpinkerton@utah.gov">tpinkerton@utah.gov</a>	18 months	\$40,000		\$40,000
19.04.08	Influence of Cracking on Chloride Ion Ingress in Concrete Bridge Decks and Parapets	Spencer Guthrie	BYU	<a href="mailto:guthrie@byu.edu">guthrie@byu.edu</a>	James Corney	<a href="mailto:jcorney@utah.gov">jcorney@utah.gov</a>	12 months	\$40,000		\$40,000
19.04.09	Multi-State Transportation Pooled Fund Study: A New Universal Consequences-Based Liquefaction Hazard Analysis Framework for All CPT-Compatible Soils	Kevin Franke	BYU	<a href="mailto:kevin.franke@byu.edu">kevin.franke@byu.edu</a>	Grant Gummow	<a href="mailto:ggummow@utah.gov">ggummow@utah.gov</a>	72 months	\$126,000	\$1,124,000	\$1,250,000

**Group 5 - Planning**

Number	Name	Written by	Organization	Email	Champion	Email	Approx. Duration	UDOT Cost	Other Funds	Total Cost
19.05.01	Street Network Connectivity, Traffic Congestion, and Traffic Safety	Reid Ewing	UU	<a href="mailto:ewing@arch.utah.edu">ewing@arch.utah.edu</a>	Jordan Backman	<a href="mailto:jbackman@utah.gov">jbackman@utah.gov</a>	12 months	\$30,000	\$10,000	\$40,000
19.05.02	The Impact of the Mobility as a Service Mode on Transit Access	R. Chamberlin	RSG	<a href="mailto:rchamberlin@rsginc.com">rchamberlin@rsginc.com</a>	Richard Brockmyer	<a href="mailto:rbrockmyer@utah.gov">rbrockmyer@utah.gov</a>	12 months	\$50,000	\$50,000	\$100,000
19.05.03	Forecasting Travel Reliability	R. Chamberlin	RSG	<a href="mailto:rchamberlin@rsginc.com">rchamberlin@rsginc.com</a>	Richard Brockmyer	<a href="mailto:rbrockmyer@utah.gov">rbrockmyer@utah.gov</a>	10 months	\$50,000		\$50,000
19.05.04	Utilizing archived traffic signal performance measures for pedestrian planning & analysis – Phase II: Extending pedestrian volume estimation capabilities to unsignalized intersections	Patrick Singleton	USU	<a href="mailto:patrick.singleton@usu.edu">patrick.singleton@usu.edu</a>	Heidi Goedhart	<a href="mailto:hgoedhart@utah.gov">hgoedhart@utah.gov</a>	18 months	\$50,000		\$50,000
19.05.05	The Adoption and Impacts of Ride-Sourcing Services on Travel Behavior	Sadegh Sabouri	UU	<a href="mailto:sadegh.sabouri@utah.edu">sadegh.sabouri@utah.edu</a>	Richard Brockmyer	<a href="mailto:rbrockmyer@utah.gov">rbrockmyer@utah.gov</a>	12 months	\$30,000		\$30,000
19.05.06	Transportation—health impact modeling and scenario planning for Utah	Patrick Singleton	USU	<a href="mailto:patrick.singleton@usu.edu">patrick.singleton@usu.edu</a>	Angelo Papastamos	<a href="mailto:apapastamos@utah.gov">apapastamos@utah.gov</a>	13 months	\$50,000	\$7,500	\$57,500
19.05.07	Motorized Non-Motorists?: Motor assisted scooters and small motor vehicles	Shaunna Burbidge	Active Planning	<a href="mailto:burbidge@walkbikeplan.com">burbidge@walkbikeplan.com</a>	Angelo Papastamos	<a href="mailto:apapastamos@utah.gov">apapastamos@utah.gov</a>	12 months	\$24,000		\$24,000
19.05.08	Bridging the Data Gap: Addressing non-compliant pedestrian behavior	Shaunna Burbidge	Active Planning	<a href="mailto:burbidge@walkbikeplan.com">burbidge@walkbikeplan.com</a>	Heidi Goedhart	<a href="mailto:hgoedhart@utah.gov">hgoedhart@utah.gov</a>	12 months	\$64,000		\$64,000
19.05.09	Affordable Housing as a Travel Demand Management Strategy	Reid Ewing	UU	<a href="mailto:ewing@arch.utah.edu">ewing@arch.utah.edu</a>	Angelo Papastamos	<a href="mailto:apapastamos@utah.gov">apapastamos@utah.gov</a>	12 months	\$80,000	\$40,000	\$120,000
19.05.10	Mobility of the Disabled Community	Shaunna Burbidge	Active Planning	<a href="mailto:burbidge@walkbikeplan.com">burbidge@walkbikeplan.com</a>	Heidi Goedhart	<a href="mailto:hgoedhart@utah.gov">hgoedhart@utah.gov</a>	12 months	\$40,000		\$40,000
19.05.11	UAS-based survey and visualization of backcountry airstrip sites in Utah	Keunhyun Park	USU	<a href="mailto:keunhyun.park@usu.edu">keunhyun.park@usu.edu</a>	Clint Harper	<a href="mailto:charper@utah.gov">charper@utah.gov</a>	18 months	\$50,000		\$50,000

**Group 6 - Performance Management/Data Analytics**

Number	Name	Written by	Organization	Email	Champion	Email	Approx. Duration	UDOT Cost	Other Funds	Total Cost
19.06.01	Assessing Close-Range Photogrammetry as an Alternative for LiDAR Technology at different UDOT Divisions	Abbas Rashidi	UU	<a href="mailto:abbas.rashidi@utah.edu">abbas.rashidi@utah.edu</a>	Abdul Wakil	<a href="mailto:awakil@utah.gov">awakil@utah.gov</a>	12 months	\$30,000	\$10,000	\$40,000
19.06.02	A synthesis of passive third-party datasets used for transportation planning	Gregory Macfarlane	BYU	<a href="mailto:gregmacfarlane@byu.edu">gregmacfarlane@byu.edu</a>	Adam Radel	<a href="mailto:aradel@utah.gov">aradel@utah.gov</a>	18 months	\$25,000		\$25,000
19.06.03	Assessing How Proposed Construction Projects Contribute to UDOT's Optimize Mobility Goal	R. Chamberlin	RSG	<a href="mailto:rchamberlin@rsginc.com">rchamberlin@rsginc.com</a>	Rudy Alder	<a href="mailto:ralder@utah.gov">ralder@utah.gov</a>	12 months	\$50,000	\$25,000	\$75,000

**Group 7 - Public Transportation**

Number	Name	Written by	Organization	Email	Champion	Email	Approx. Duration	UDOT Cost	Other Funds	Total Cost
19.07.01	Modeling the demand and operating characteristics for wheelchair-accessible, on-demand mobility services	Gregory Macfarlane	BYU	<a href="mailto:gregmacfarlane@byu.edu">gregmacfarlane@byu.edu</a>	Kerry Doane	<a href="mailto:kdoane@rideuta.com">kdoane@rideuta.com</a>	15 months	\$40,000		\$40,000
19.07.02	Effect of Light-Rail Transit on Traffic in a Travel Corridor: An update	Torrey Lyons	UU	<a href="mailto:Torrey.lyons@gmail.com">Torrey.lyons@gmail.com</a>	Hal Johnson	<a href="mailto:hjohnson@rideuta.com">hjohnson@rideuta.com</a>	12 months	\$30,000		\$30,000
19.07.03	Quantifying potential impacts of free UTA fares on regional air quality	Martin Buchert	UU	<a href="mailto:martin.buchert@utah.edu">martin.buchert@utah.edu</a>	Matt Sibul	<a href="mailto:msibul@rideuta.com">msibul@rideuta.com</a>	8 months	\$30,000		\$30,000
19.07.04	The impact of the Hive Pass and how to increase its adoption across UTA's service area	Daniel Mendoza	UU	<a href="mailto:daniel.mendoza@utah.edu">daniel.mendoza@utah.edu</a>	Matt Sibul	<a href="mailto:msibul@rideuta.com">msibul@rideuta.com</a>	18 months	\$30,000	\$30,000	\$60,000