Truth in Testimony Disclosure Form

In accordance with Rule XI, clause 2(g)(5)*, of the *Rules of the House of Representatives*, witnesses are asked to disclose the following information. Please complete this form electronically by filling in the provided blanks.

Committee: Science, Space, and Technology

Subcommittee: Research and Technology

Hearing Date: July 11, 2019

Hearing Title :

Bumper to Bumper: The Need for a National Surface Transportation Agenda

Witness Name: Darcy Bullock

Position/Title: Lyles Family Professor of Civil Engineering, Director Joint Transportation Research Program, Purdue University

Witness Type: ○ Governmental ● Non-governmental

Are you representing yourself or an organization? ○ Self ● Organization

If you are representing an organization, please list what entity or entities you are representing:

Joint Transportation Research Program
Purdue University

If you are a <u>non-governmental witness,</u> please list any federal grants, cooperative aggrements, or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you or the organization(s) you represent at this hearing received in the current calendar year and previous two calendar years. Include the source and amount of each grant, cooperative aggreement, or contract. *If necessary, attach additional sheet(s) to provide more information.*

See Attachment - Pages 1-6

If you are a <u>non-governmental witness,</u> please list any contracts or payments originating with a foreign government and related to the hearing's subject matter that you or the organization(s) you represent at this hearing received in the current year and previous two calendar years. Include the amount and country of origin of each contract or payment. *If necessary, attach additional sheet(s) to provide more information.*

None

The Joint Transportation Research Program (JTRP) is funded by the U.S. Department of Transportation's Federal Highway Administration (FHWA) through the Indiana Department of Transportation (INDOT).

JTRP AWARDS				
	CY 2017	CY 2018	CY 2019 (Jan.-Jun.)	Grand Total
Bullock JTRP Awards	1,447,951	1,995,450	828,724	4,272,124
JTRP Awards to Other Investigators	5,568,644	4,137,667	2,447,989	12,154,299
TOTAL JTRP AWARDS	**$7,016,595**	**$6,133,116**	**$3,276,712**	**$16,426,423**

Bullock JTRP Awards				
Title	CY 2017	CY 2018	CY 2019 (Jan.-Jun.)	Grand Total
JTRP Administration	475,000	495,000	475,000	1,445,000
Apt Capital Expenditure Account		261,629	25,000	286,629
2018 Transportation Research Board (TRB) Annual Meeting Activities	33,951			33,951
Connected Corridor Implementation	275,000			275,000
SPR 4251 - Probe Data to Support Research and Implementation	584,000			584,000
SPR-4252 Forensic Investigations	80,000			80,000
SPR-4215 Rumble Stripes and Pavement Markings Delineation .		79,083		79,083
Weigh in Motion Implementation and Data Quality Control for Asset Damage Reduction		194,983		194,983
Telematics and Utilization Analysis for INDOT Mowing Operations		35,000		35,000
Development of Automated Incident Detection System Using Existing ATMS CCTV		108,426		108,426
Back of Queue Warning and Critical Information Delivery to Motorists		110,786		110,786
Enhanced Traffic Signal Performance Measures		230,000	63,000	293,000
Evaluating Reserve Strength of Girder Bridges due to Bridge Rail Load Shedding		119,046		119,046
Extraction of Vehicle "CAN bus" Data for Enhanced Winter Roadway Condition Monitoring		361,497		361,497
2019 Transportation Research Board Annual Meeting Activities			69,696	69,696
SPR-4322 Development of an Intelligent Snowplow Truck that Integrates Telematics Technology, Roadway Sensors, and Connected Technology.			196,028	196,028
Bullock JTRP Awards Subtotal	**$1,447,951**	**$1,995,450**	**$828,724**	**$4,272,124**

JTRP Awards to Other Investigators				
Title	2017	2018	2019 (Jan.-Jun.)	Grand Total
North Central Superpave Center SPR-2042	135,000	25,000	50,000	210,000
INDOT Road Network Screening for Safety Needs	65,000			65,000
Steel Bridge Research, Inspection, Training and Education Engineering Center (S-BRITE)	240,000	320,000	80,000	640,000
SPR-3857 Assessment of pipe fill heights	107,173		66,286	173,459
Development of an Automated Winter Road Condition Analysis and Prediction System	95,631			95,631
Investigating the Need for HMA Drainage Layers	40,258			40,258
Economic Development Impact of Corridor Improvements-SPR 3912	207,875			207,875
The Assessment of Legal and Proposed New Permit Loads on Bridge Rating and Posting Policies to Comply with The Latest AASHTO and MBE Guidelines	15,115			15,115
SPR-4002 Risk-based specification for construction		69,555		69,555
Development of Subgrade Stabilization and Slab Undersealing Solutions for PCC Pavements Restoration and Repairs SPR-4004		97,821		97,821
Evaluating opportunities to enhance the Hoosier State Train ridership through a survey of riders' opinions	(35,000)			(35,000)
Maximum Allowable Deflection by Light Weight Deflectometer and Its Calibration and Verification	5,000			5,000
Building, Evaluating, and Improving LiDAR-based Traffic Scanner Prototypes for Implementation to INDOT Practice (Expansion, Phase III)		125,000		125,000
Phase II Experimental Study of the Load Response of large Diameter Closed-ended and Open-ended Pipe Piles Installed in Alluvial Soil	70,000			70,000
LiDAR-Based Mobile Mapping System for Lane Width Evaluation and Reporting in Work Zones		248,272		248,272
Synthesis Study: Overview of Readily Available Culvert Inspection Technologies	68,527			68,527
Performance Balanced Mix Design for Indiana's Asphalt Pavements	242,591			242,591
Continued Support of the Mobile Infrastructure Materials Testing Laboratory	14,500			14,500
SPR-4156: Capital Program Cost Optimization through Contract Aggregation Process	98,347			98,347
INDOT Highway Lighting Support Services	110,000	25,000		135,000
Pack Rust Identification and Mitigation Strategies for Steel Bridges	124,992			124,992
Repair and Strengthening of Bridges in Indiana Using Fiber Reinforced Polymer (FRP)	265,000			265,000

JTRP Awards to Other Investigators (cont'd)				
Title	2017	2018	2019 (Jan.-Jun.)	Grand Total
Investigation of design alternatives for the subbase of concrete pavements	248,781			248,781
Updating Asset Risk and Vulnerability Assessment for INDOT	149,637			149,637
Subgrade Stabilization Alternatives	276,513			276,513
Outsourcing of Laboratory Testing and Inspection Activities at State Highway Agencies: Synthesis of Current Practices	80,500			80,500
Quality Assurance Procedures for Chip Seal Operations Using Macrotexture Metrics	67,390			67,390
SPR-4158-Implementation of LEAN Business Processes for INDOT Maintenance (Training and Tracking Process Improvements)	51,581			51,581
Verification of Bridge Foundation Design Assumptions and Calculations	269,928		20,000	289,928
Synthesis of Autonomous Vehicle Legislation	26,710			26,710
Programming of Road Projects During The Construction Season Considering Network Connectivity	196,000			196,000
SPR 4162 Incorporating economic resilience into INDOT's transportation decision-making	249,433			249,433
Blast Furnace Slag Usage and Guidance for Indiana	49,598			49,598
Ohio River Bridge, PRB, Project After Action Review of Procurement Models	225,000	(125,000)		100,000
Updating Driveway and General Permit Manuals	74,000			74,000
SPR-4216: Statistical Analysis of Safety Improvements and Integration into Project Design Process	67,568			67,568
SPR-4217: Speed Management in Small Cities and Towns - Guidelines for Indiana	128,240			128,240
SPR-4219: SNIP Light	118,894			118,894
INDOT Research Program Benefit Cost Analysis- Return on Investment	30,000	25,000		55,000
Determining the Optimal Traffic Opening Timing through an In-Situ NDT Method for Concrete Early Age Properties Monitoring	160,000			160,000
Performance of Right-turn lane designs at intersections	162,403			162,403
Real Life Experience with Major Pavement Types	150,832			150,832
SPR-4228: Developing a Business Ecosystem around Autonomous Vehicle Infrastructure in Indiana	80,000			80,000
Implementing the Superpave 5 Asphalt Mixture Design Method and Refining the INDOT Ndesign Table, Lift Thickness, and Mixture Compactability	93,114			93,114
Structural Evaluation of Full Depth Flexible Pavement Using APT	200,000			200,000
Seismic Evaluation of Indiana Bridge Network and Current Bridge Database for Asset Management	375,000			375,000

JTRP Awards to Other Investigators (cont'd)				
Title	2017	2018	2019 (Jan.-Jun.)	Grand Total
Cost-Effectiveness of Converting Signalized Arterials to Free-Flow Facilities	167,513			167,513
SPR 4223: Link-Slabs Details and Materials		56,675		56,675
Post-Fire Assessment of Prestressed Concrete Bridges in Indiana		255,000		255,000
Determining Concrete Patch Locations other than Visual		250,000		250,000
4229 - Cost Effectiveness of Constructing Minimal Shelter to Store IDNTO Equipment (Weather Protection)		50,000		50,000
SPR-4215 Rumble Stripes and Pavement Markings Delineation		79,083		79,083
4203 - Synthesis Study: Facilities (Enterprise Development, Sponsorship/Privatization)		50,000		50,000
Short Course on Highway Capacity Analysis		20,000		20,000
MEPDG Traffic Load Spectra for Local, Minor Arterial, Major Collector, and Minor Collector Roads		175,000		175,000
Implementing the Strut-and-Tie Method for the Design of Bridge Components		90,000		90,000
Telematics and Utilization Analysis for INDOT Mowing Operations		35,000		35,000
INDOT Permit Manual Development Project		76,224		76,224
Investigation of Durability and Performance of High Friction Surface Treatment		154,975		154,975
Self-healing Cementitious Composites (SCHCC) with Ultra-high Ductility for Pavement and Bridge Construction		257,061		257,061
Feasibility Study and Design of On-Road Electric Vehicle Charging Technologies.		314,992		314,992
Evaluation of Our Current and Other Available Anti-Icing/De-Icing Products Under Controlled Environmental Conditions to Test Effectiveness		100,000		100,000
Legal and Permit Loads Evaluation for Indiana Bridges		109,346		109,346
Development of an Integrated Unmanned Aerial Systems (UAS) Validation Center		25,000	225,000	250,000
SPR-4302: Using Emerging and Extraordinary Data Sources as Means to Improve Traffic Safety		145,383		145,383
Improved Reliability of FWD Tests Results and Correlation with Resilient Modulus		225,640		225,640
Investigation of Strategic Deployment Opportunities for UAS		89,143		89,143
Verification of MSE Wall Foundation Bearing Capacity Based on the CPT and DCPT		230,000		230,000
Develop and Deploy a Safe Truck Platoon Testing Protocol for the Purdue ARPA-E Project in Indiana		353,000		353,000
Pack Rust - Mitigation Strategy Effectiveness		185,497		185,497

JTRP Awards to Other Investigators (cont'd)				
Title	**2017**	**2018**	**2019 (Jan.-Jun.)**	**Grand Total**
SP-4335 Environmentally Tuning Asphalt Pavements Using Phase Change Materials			216,226	216,226
SPR - 4332 Performance Related Specification for Pavement Milling			50,202	50,202
Development of Compaction Control Guidelines for Aggregate Drainage Layers and Evaluation of In situ Permeability Testing Methods for Aggregates			337,997	337,997
SPR-4322 Development of an Intelligent Snowplow Truck that Integrates Telematics Technology, Roadway Sensors, and Connected Technology.			196,028	196,028
"Improvement of scaling resistance of pavement concrete using titanium dioxide (TiO2) and other nano-additives			134,364	134,364
SPR-4332 Development of Volumetric Acceptance and Percent Within Limits (PWL) Criteria for Stone Matrix Asphalt (SMA) Mixtures in Indiana			219,662	219,662
Central HMA Acceptance Lab Process Improvement Project			34,936	34,936
Assessment of an Offset Pedestrian Crossing for Multilane Arterials			109,709	109,709
Cost benefit analysis of installing fiber optics of INDOT projects.			99,960	99,960
SPR4318 - Installation and Maintenance of Raised Pavement Markers at State Transportation Agencies: Synthesis of Current Practices			48,912	48,912
4203 - Synthesis Study: Facilities (Enterprise Development, Sponsorship/Privatization)-Scope Change			25,034	25,034
#4422 - Automate the generation of construction checklists			129,784	129,784
Life Cycle Integration of Infrastructure Information Modeling			131,769	131,769
SPR-4442: Highway Lighting Test Bed on INDOT Facility			120,000	120,000
#4351 - Blast Furnace Slag Leaching			152,120	152,120
JTRP Awards to Other Investigators Subtotal	**$5,568,644**	**$4,137,667**	**$2,447,989**	**$12,154,299**

Awards from other Federal Sponsors include projects awarded to Darcy Bullock as well as projects transferred to him after the initial award due to change in project Investigator.

Bullock Awards from Other Federal Sponsors				
Prime Sponsor	**Sponsor Name**	**Title**	**Award Date**	**Total Award**
Federal Highway Administration	Leidos	Objectives and Performance Based Management of Traffic Signal Operations	6/27/2019	17,813
National Academy of Sciences	Kittelson & Associates	NCHRP 03-122 Performance Based Management of Traffic Signals	7/19/2017	51,764
U.S. Department of Energy		Enabling High-Efficiency Operation through Next-Generation Control Systems Development for Connected and Automated Class 8 Trucks	6/2/2017	477,000
Federal Aviation Administration		Project #29: Technology Assessment to Improve Operations Counts at Non-Towered Airports, Amendment 61	9/20/2017	150,608
Bullock Awards from Other Federal Sponsors Total				**$697,185**