<table>
<thead>
<tr>
<th>PID</th>
<th>Project Title</th>
<th>Technical Office</th>
<th>ORIL</th>
<th>CB Approved</th>
<th>Research Agency</th>
<th>Researcher (PI) Name</th>
<th>ODOT Project Manager</th>
<th>Total Contract Cost</th>
<th>Start Date</th>
<th>End Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>100247</td>
<td>Investigate Feasibility of GPR to Measure In-Place Density of New Asphalt Pavement</td>
<td>Construction</td>
<td>X</td>
<td></td>
<td>Infrastructure Management and Engineering, Inc.</td>
<td>Arul Rajappal</td>
<td>KN</td>
<td>$ 45,947.05</td>
<td>8/3/15</td>
<td>4/3/17</td>
<td>Documenting and testing ground penetrating radar (GPR) technology as applied to measurement of asphalt mixture in-place density compared to core and electric gauge samples.</td>
</tr>
<tr>
<td>98593</td>
<td>Extended Life Concrete Bridge Decks Utilizing Improved Internal Curing to Reduce Cracking</td>
<td>Construction</td>
<td>X</td>
<td>Iowa State University</td>
<td>Peter Taylor</td>
<td>JM</td>
<td>$ 246,966.00</td>
<td>4/30/15</td>
<td>4/30/18</td>
<td>Evaluate the current practice as well as new equipment and application rates with regard to tack coat.</td>
<td></td>
</tr>
<tr>
<td>99760</td>
<td>Tack Coat Performance and Materials Study</td>
<td>Construction</td>
<td>X</td>
<td>Texas A&amp;M Transportation Institute</td>
<td>Bryan Wilson</td>
<td>KN</td>
<td>$ 296,700.00</td>
<td>2/17/15</td>
<td>8/17/16</td>
<td>Evaluate the current practice as well as new equipment and application rates with regard to tack coat.</td>
<td></td>
</tr>
<tr>
<td>98708</td>
<td>Performance Comparison of Abutment and Retaining Wall Drainage Systems</td>
<td>Construction</td>
<td></td>
<td>University of Akron</td>
<td>Junkang (Julian) Tao</td>
<td>KN</td>
<td>$ 284,834.39</td>
<td>10/16</td>
<td>4/6/17</td>
<td>Conduct a benefit analysis comparing ODOT's current process of two feet of porous backfill with prefabricated composite drainage systems.</td>
<td></td>
</tr>
<tr>
<td>99821</td>
<td>Effectiveness of Wildlife Mitigation Treatments on the Nelsonville Bypass</td>
<td>Environmental</td>
<td>Ohio University</td>
<td>Deborah McAvoy</td>
<td>KN</td>
<td>$ 555,729.05</td>
<td>11/17/14</td>
<td>4/17/17</td>
<td>Determine if the wildlife treatments are functioning as intended on U.S. Route 50 in the Wayne National Forest.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>101628</td>
<td>Earthen Berm Noise Reduction Analysis</td>
<td>Environmental</td>
<td>Burton Planning Services, LLC</td>
<td>Kimberly Burton</td>
<td>KN</td>
<td>$ 73,576.22</td>
<td>10/19/15</td>
<td>10/19/16</td>
<td>Determine the acoustic benefit of various earthen berm heights compared to same height concrete barriers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102225</td>
<td>Timber Rattlesnakes' (Crotalus horridus) Use of Man-made Rocky Features Constructed in Roadway Right-of-Ways</td>
<td>Environmental</td>
<td>Ohio University</td>
<td>Willem M. Rosenburg</td>
<td>ML</td>
<td>$ 40,000.00</td>
<td>4/25/16</td>
<td>7/25/17</td>
<td>Determine the optimal placement of wildlife exclusion fencing in future roadway projects and how to regrade and revegetate the highway cuts within the Nelsonville Bypass ROW.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102896</td>
<td>Streamlining Implementation of Sustainable Channel Maintenance Practices</td>
<td>Environmental</td>
<td>The Ohio State University</td>
<td>Jon Witter</td>
<td>JM</td>
<td>$ 129,455.82</td>
<td>4/27/16</td>
<td>10/27/17</td>
<td>Implement Natural Channel Design (NCD) based practices and the use of alternative construction materials for maintenance accessible and obtainable with a reasonable amount of effort by county forces and district staff.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Geotechnical Projects

<table>
<thead>
<tr>
<th>PID</th>
<th>Project Title</th>
<th>Technical Office</th>
<th>ORIL</th>
<th>CB Approved</th>
<th>Research Agency</th>
<th>Researcher (PI) Name</th>
<th>ODOT Project Manager</th>
<th>Total Contract Cost</th>
<th>Start Date</th>
<th>End Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>96792</td>
<td>Implementation and Transition of Data Interchange for Geotechnical and Geoenvironmental Specialists (DIGGS)</td>
<td>Geotechnical</td>
<td></td>
<td></td>
<td>American Society of Civil Engineers</td>
<td>Jim Rossberg</td>
<td>JM</td>
<td>$ 80,000.00</td>
<td>10/30/13</td>
<td>10/30/15</td>
<td>The significance of this new work is to reach the public delivery level for the DIGGS system and establish a permanent home for the system. The successful deployment of DIGGS 2.0 will produce tangible benefits for the state. Time extension pending.</td>
</tr>
<tr>
<td>98866</td>
<td>Understanding the Soil Plugging Mechanism in Large Open Ended Pipe</td>
<td>Geotechnical</td>
<td></td>
<td>Case Western Reserve University</td>
<td>Bill Yu</td>
<td>KN</td>
<td>$ 265,286.00</td>
<td>6/1/15</td>
<td>6/1/18</td>
<td>Study the soil plugging mechanism in large open-ended pipe piles, especially for typical types of soils in Ohio.</td>
<td></td>
</tr>
<tr>
<td>99625</td>
<td>Validation and Calibration of Finite Element of Forces in Wingwalls</td>
<td>Geotechnical</td>
<td></td>
<td>E. L. Robinson Engineering of Ohio, Co.</td>
<td>Jamal Nusairat</td>
<td>KN</td>
<td>$ 210,887.00</td>
<td>11/15</td>
<td>3/1/18</td>
<td>Analyze the behavior of the drilled shafts supporting abutments during construction and service life.</td>
<td></td>
</tr>
<tr>
<td>98866</td>
<td>Geotechnical Engineering Research On-Call Services (ROC)</td>
<td>Geotechnical</td>
<td></td>
<td>University of Akron</td>
<td>Robert Liang</td>
<td>KN</td>
<td>$ 168,113.51</td>
<td>8/29/14</td>
<td>8/29/16</td>
<td>Short-term research services to meet immediate needs for system management and maintenance improvements.</td>
<td></td>
</tr>
</tbody>
</table>

### Hydraulics Projects

<table>
<thead>
<tr>
<th>PID</th>
<th>Project Title</th>
<th>Technical Office</th>
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<th>End Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>101513</td>
<td>Operation &amp; Maintenance of a Statewide Creep-Slase Stream Gauging Network in Ohio (July 2015 - June 2019)</td>
<td>Hydraulics</td>
<td></td>
<td></td>
<td>Ohio Department of Natural Resources</td>
<td>Branden Vonrns</td>
<td>KN</td>
<td>$ 305,248.00</td>
<td>8/7/03</td>
<td>8/7/21</td>
<td>Collect additional flood data at selected stream sites throughout Ohio for flood magnitude and frequency data.</td>
</tr>
<tr>
<td>98655</td>
<td>Hydraulic Engineering Research On-Call Services (ROC)</td>
<td>Hydraulics</td>
<td></td>
<td>Ohio University</td>
<td>Shad Sargand</td>
<td>KN</td>
<td>$ 156,181.07</td>
<td>8/13/14</td>
<td>8/13/16</td>
<td>Short-term research services to meet immediate needs for system management and maintenance improvements.</td>
<td></td>
</tr>
<tr>
<td>94310</td>
<td>Assessment of ODOT's Cordul Service Life Prediction Methodology</td>
<td>Hydraulics</td>
<td></td>
<td>Ohio University</td>
<td>Shad Sargand</td>
<td>KN</td>
<td>$ 708,133.03</td>
<td>10/15/12</td>
<td>8/15/16</td>
<td>Evaluate the effectiveness of ODOT's current methodology for estimating service life of culverts.</td>
<td></td>
</tr>
<tr>
<td>100840</td>
<td>Structural Benefits of Concrete Paving of Steel Culvert Inverts</td>
<td>Hydraulics</td>
<td></td>
<td>Ohio University</td>
<td>Terehsa Masada</td>
<td>VF</td>
<td>$ 190,802.20</td>
<td>11/15</td>
<td>10/15/18</td>
<td>Enhance the understanding of the mechanics of steel culverts and the impact that this common corrective maintenance action has on the structural integrity of the steel culvert.</td>
<td></td>
</tr>
<tr>
<td>100880</td>
<td>Update Regional Skew Characteristics of Annual Peak Flows Through StreamStats</td>
<td>Hydraulics</td>
<td></td>
<td>U.S. Geological Survey</td>
<td>Greg Kotkin</td>
<td>KN</td>
<td>$ 139,315.00</td>
<td>10/15/11</td>
<td>10/15/18</td>
<td>Update the flow-frequency estimates for Ohio streamflow gages based on the updated regional skew information and peak flow data collected through water year 2014.</td>
<td></td>
</tr>
<tr>
<td>100948</td>
<td>Evaluating the Particle Size Distribution (PSD) of Ohio's Stormwater Runoff</td>
<td>Hydraulics</td>
<td></td>
<td>The Ohio State University</td>
<td>Jon Witter</td>
<td>JM</td>
<td>$ 431,622.86</td>
<td>11/15</td>
<td>7/1/18</td>
<td>Quantify the PSD generated on the roadway system and transported in roadway stormwater runoff.</td>
<td></td>
</tr>
</tbody>
</table>

### Maintenance Projects

<table>
<thead>
<tr>
<th>PID</th>
<th>Project Title</th>
<th>Technical Office</th>
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<th>CB Approved</th>
<th>Research Agency</th>
<th>Researcher (PI) Name</th>
<th>ODOT Project Manager</th>
<th>Total Contract Cost</th>
<th>Start Date</th>
<th>End Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>96469</td>
<td>Evaluating Vegetation Management Practices for Woody and Herbaceous Vegetation</td>
<td>Maintenance</td>
<td></td>
<td></td>
<td>Davey Resource Group</td>
<td>Jenny Gulick</td>
<td>JM</td>
<td>$ 1,231,807.63</td>
<td>8/26/13</td>
<td>11/26/18</td>
<td>Holistic look at vegetation management from grass to trees and how ODOT can handle it better, safer and more efficiently.</td>
</tr>
<tr>
<td>100825</td>
<td>Evaluation of roadway Subsurface Drainage on Rural Routes</td>
<td>Maintenance</td>
<td></td>
<td>Ohio University</td>
<td>Roger Green</td>
<td>JM</td>
<td>$ 374,281.50</td>
<td>9/15</td>
<td>9/15/16</td>
<td>Provide an analysis of ODOT's current method of addressing saturated sub-base issues prior to resurfacing projects and provide recommendations on how to cost effectively increase the longevity of pavement in rural areas.</td>
<td></td>
</tr>
<tr>
<td>100819</td>
<td>Best Practices of Road User Maintenance Agreements Among Local Government Agencies in Ohio</td>
<td>Maintenance</td>
<td></td>
<td>Ohio University</td>
<td>Roger Green</td>
<td>VF</td>
<td>$ 130,696.90</td>
<td>9/21/15</td>
<td>12/21/16</td>
<td>Conduct a synthesis of current practices related to the development and execution of RUMA.</td>
<td></td>
</tr>
</tbody>
</table>
## Materials Projects

### 79545 Evaluation of Optional and/or Replacement Concrete Sealers
- **Project Title:** Evaluation of Optional and/or Replacement Concrete Sealers
- **Office:** Materials
- **ORIL:** 100124
- **CB Approved:** 201171
- **Research Agency:** Ohio Department of Transportation
- **Researcher (PI) Name:** Maria Keresty, KN
- **Total Contract Cost:** $118,636.73
- **Start Date:** 9/15/12
- **End Date:** 2/15/18
- **Notes:** In-House study being conducted by the Office of Materials Management. This project investigates application issues and the performance of the epoxy-anhydride concrete sealers.

### 100124 Fundamental Evaluation of the Interaction between RAS/RAP and Virgin Asphalt Binders
- **Project Title:** Fundamental Evaluation of the Interaction between RAS/RAP and Virgin Asphalt Binders
- **Office:** Materials
- **ORIL:** 100781
- **CB Approved:** 100407
- **Research Agency:** Ohio University
- **Researcher (PI) Name:** Munir Nazzal, KN
- **Total Contract Cost:** $131,955.73
- **Start Date:** 8/3/13
- **End Date:** 8/3/17
- **Notes:** This project evaluated the interaction between RAS/RAP and virgin asphalt binders to improve the performance of asphalt mixes containing RAS/RAP to lower the life cycle costs of pavements as well as improve their environmental impacts.

### 98609 Analysis of Ground Tire Rubber (GTR) in Mix Design on Local Roadways in Ohio
- **Project Title:** Analysis of Ground Tire Rubber (GTR) in Mix Design on Local Roadways in Ohio
- **Office:** Materials
- **ORIL:** 100811
- **CB Approved:** 100407
- **Research Agency:** Ohio University
- **Researcher (PI) Name:** Munir Nazzal, VF
- **Total Contract Cost:** $176,288.66
- **Start Date:** 9/2/14
- **End Date:** 9/21/16
- **Notes:** This project assessed the true life-cycle cost of GTR mixes on local roads within Ohio and identified opportunities for GTR to be more affordable.

### 93632 Development of an Automated System for QC/QA of Asphalt and Aggregate Materials - Phase 2
- **Project Title:** Development of an Automated System for QC/QA of Asphalt and Aggregate Materials - Phase 2
- **Office:** Materials
- **ORIL:** 100781
- **CB Approved:** 100407
- **Research Agency:** University of Akron
- **Researcher (PI) Name:** Ala R. Abbas, KN
- **Total Contract Cost:** $469,770.00
- **Start Date:** 6/23/14
- **End Date:** 9/15/16
- **Notes:** This project designed and developed an automated process for ensuring QC/QA of asphalt and aggregate materials used by ODOT contractors on Ohio highway projects.

### 101499 Dedolomitization and Aftai Reactions in Ohio-Sourced Dolostone Aggregates
- **Project Title:** Dedolomitization and Aftai Reactions in Ohio-Sourced Dolostone Aggregates
- **Office:** Materials
- **ORIL:** 100781
- **CB Approved:** 100407
- **Research Agency:** Bowling Green
- **Researcher (PI) Name:** John Farver, KN
- **Total Contract Cost:** $39,449.50
- **Start Date:** 9/21/15
- **End Date:** 12/1/17
- **Notes:** This project employed state-of-the-art scientific/analytical methods for sample characterization and analysis to identify the presence of dedolomitization in Ohio-sourced dolostone aggregates and concretes produced using these aggregates.

### 101171 Crack Resistance and Durability of RAS Asphalt Mixtures
- **Project Title:** Crack Resistance and Durability of RAS Asphalt Mixtures
- **Office:** Materials
- **ORIL:** 100781
- **CB Approved:** 100407
- **Research Agency:** Auburn University
- **Researcher (PI) Name:** J. Richard Willis, KN
- **Total Contract Cost:** $166,314.97
- **Start Date:** 1/6/16
- **End Date:** 11/8/16
- **Notes:** This project determined suitable test methods and equipment for testing of RAS, RAP and virgin mixes in order to distinguish expected crack propagation resistance and durability performance of each.

## Pavements Projects

### 93675 Effectiveness of Asphalt Penetrating Sealers in Extending New Asphalt Pavement Life
- **Project Title:** Effectiveness of Asphalt Penetrating Sealers in Extending New Asphalt Pavement Life
- **Office:** Pavements
- **ORIL:** 100236
- **CB Approved:** 100407
- **Research Agency:** Applied Research Associates, Inc
- **Researcher (PI) Name:** Harold Von Quintus, JM
- **Total Contract Cost:** $211,658.77
- **Start Date:** 8/23/12
- **End Date:** 12/23/16
- **Notes:** This project evaluated the effectiveness of different asphalt sealers in extending new asphalt pavement life.

### 93047 Polymeric Thermochromic Dye for Improvement of Asphalt Pavement Durability
- **Project Title:** Polymeric Thermochromic Dye for Improvement of Asphalt Pavement Durability
- **Office:** Pavements
- **ORIL:** 100236
- **CB Approved:** 100407
- **Research Agency:** Case Western Reserve University
- **Researcher (PI) Name:** Bill Yu, KN
- **Total Contract Cost:** $249,846.00
- **Start Date:** 7/10/12
- **End Date:** 1/10/16
- **Notes:** This project evaluated the effectiveness of using a polymeric thermochromic dye to increase the longevity of asphalt pavement.

### 96429 Evaluation of High Performance Pavement and Bridge Deck Wearing Surface Repair Materials
- **Project Title:** Evaluation of High Performance Pavement and Bridge Deck Wearing Surface Repair Materials
- **Office:** Pavements
- **ORIL:** 100236
- **CB Approved:** 100407
- **Research Agency:** Cleveland State University
- **Researcher (PI) Name:** Norbert Delatte, JM
- **Total Contract Cost:** $391,207.00
- **Start Date:** 8/10/15
- **End Date:** 12/15/17
- **Notes:** This project evaluated the effectiveness of high performance pavement and bridge deck wearing surface repair materials.

### 98696 Bonded Concrete Overlay (BCO) Cost Effectiveness Evaluation
- **Project Title:** Bonded Concrete Overlay (BCO) Cost Effectiveness Evaluation
- **Office:** Pavements
- **ORIL:** 100236
- **CB Approved:** 100407
- **Research Agency:** Ohio Department of Transportation
- **Researcher (PI) Name:** Adam Au, KN
- **Total Contract Cost:** $1,000,000.05
- **Start Date:** 12/14/16
- **End Date:** 6/30/17
- **Notes:** This project is a project to place a 2.7 mile bonded concrete overlay in District 11 in FY2016 and monitor the pavement performance (white topping).

### 100767 Determining Optimum Thickness for Long-Life Concrete Pavement in Ohio
- **Project Title:** Determining Optimum Thickness for Long-Life Concrete Pavement in Ohio
- **Office:** Pavements
- **ORIL:** 100236
- **CB Approved:** 100407
- **Research Agency:** Ohio University
- **Researcher (PI) Name:** Shad Sargand, KN
- **Total Contract Cost:** $237,384.88
- **Start Date:** 8/15/15
- **End Date:** 12/15/17
- **Notes:** This project determined the optimum thickness for long-life concrete pavements in Ohio.

### 98677 Forensic Study of Early Failures with Unbonded Concrete Overlays
- **Project Title:** Forensic Study of Early Failures with Unbonded Concrete Overlays
- **Office:** Pavements
- **ORIL:** 100236
- **CB Approved:** 100407
- **Research Agency:** Ohio University
- **Researcher (PI) Name:** Shad Sargand, KN
- **Total Contract Cost:** $520,905.44
- **Start Date:** 8/13/14
- **End Date:** 4/13/17
- **Notes:** This project determined the mechanisms of failure responsible for distress evident at the time of the study.
### ODOT Office of Statewide Planning Research
#### Research Section Projects

<table>
<thead>
<tr>
<th>PID</th>
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<th>Researcher (PI) Name</th>
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<th>Total Contract Cost</th>
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<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>96688</td>
<td>Development of an Overlay Design Procedure for Composite Pavements</td>
<td>Pavements</td>
<td>University of Toledo</td>
<td>Liangbo Hu</td>
<td>KN</td>
<td>$214,597.00</td>
<td>9/5/13</td>
<td>9/5/16</td>
<td></td>
<td></td>
<td>Develop and validate a Falling Weight Deflectometer (FWD) deflection-based overlay design procedure for composite pavements and incorporate it into the most current version of ODOT's overall design software.</td>
</tr>
<tr>
<td>97397</td>
<td>Estimating External Travel Using Purchased Third-Party Data</td>
<td>Planning</td>
<td>The Ohio State University</td>
<td>Harvey Miller</td>
<td>KN</td>
<td>$631,662.26</td>
<td>9/4/15</td>
<td>7/4/17</td>
<td></td>
<td></td>
<td>Determine whether third-party datasets are able to replace roadside O-D surveys.</td>
</tr>
<tr>
<td>95237</td>
<td>Passenger Flow Estimation and Characteristics Expansion</td>
<td>Planning</td>
<td>The Ohio State University</td>
<td>Rabab Mishalani</td>
<td>KN</td>
<td>$884,470.00</td>
<td>3/4/15</td>
<td>3/4/16</td>
<td></td>
<td></td>
<td>Quantify the amount of bias in the 2008 COTA On-Board Survey in regards to distance traveled and inclusive of any others that the researcher discovers, and to determine appropriate methods to ameliorate those biases in the data.</td>
</tr>
<tr>
<td>100100</td>
<td>Development and Field Testing of an Automatic Turning Movements Identification System</td>
<td>Planning</td>
<td>University of Akron</td>
<td>Ping Yi</td>
<td>KN</td>
<td>$136,586.46</td>
<td>7/1/15</td>
<td>3/1/17</td>
<td></td>
<td></td>
<td>Develop and evaluate a real time system, which can automatically collect the Turning Movements Information at signalized intersections using signal control information and video detection data.</td>
</tr>
<tr>
<td>92459</td>
<td>Development of Transportation Asset Management Decision Support Tools</td>
<td>Planning</td>
<td>University of Toledo</td>
<td>Eddie Y. Chou</td>
<td>KN</td>
<td>$497,683.00</td>
<td>1/15/12</td>
<td>8/30/17</td>
<td></td>
<td></td>
<td>Develop a web-based platform for asset management.</td>
</tr>
<tr>
<td>101068</td>
<td>Recommendations and Strategies for IRP Truck Licensing Impacts for Ohio Counties</td>
<td>Planning</td>
<td>University of Kentucky</td>
<td>Andrew Martin</td>
<td>VF</td>
<td>$40,059.17</td>
<td>2/1/16</td>
<td>2/1/17</td>
<td></td>
<td></td>
<td>Assessing the economic impact of non-Ohio registered commercial vehicle fleets based within Ohio jurisdictions.</td>
</tr>
</tbody>
</table>

#### Planning Projects

- **97397** Estimating External Travel Using Purchased Third-Party Data
- **95237** Passenger Flow Estimation and Characteristics Expansion
- **100100** Development and Field Testing of an Automatic Turning Movements Identification System
- **92459** Development of Transportation Asset Management Decision Support Tools
- **101068** Recommendations and Strategies for IRP Truck Licensing Impacts for Ohio Counties

#### Safety Projects

- **100300** Evaluation of Safety Practices for Short Duration Work Zones

#### Structures Projects

- **100820** Structures Research On-Call Services
- **93579** Structures Research Services
- **98644** Evaluation and Design of a TL-3 Bridge Guardrail System Mounted to Steel Fascia Beams
- **100636** Bridge Condition Index for Transportation Asset Management in Ohio
- **101121** Reduction of Bridge Deck Cracking through Alternative Material Usage
- **97083** Waterproofing Details of Connections for Adjacent Precast Concrete Box-Beam Bridges
- **98639** Inspection, Repair, Retrofit Procedures, and Design Recommendations for Non-Redundant Steel Structures
- **100776** Synthesis of Research on Load Capacity of Concrete Slabs Without Plans
- **99803** LUC-2-1682 Long Term Maintenance of the Anthony Wayne Suspension Bridge Main Cables
- **98995** Veteran's Glass City Skyway Ice Dashboard Implementation

#### Recently Completed Projects

- **76600** Operation & Maintenance of a Statewide Crest-Stage Stream Gauging Network in Ohio 2003 - June 2015
- **96817** Evaluation of ODOT's Culvert Boring Process

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**Method of Excavation Based on the Depth of Fill and User Costs.**

**Ohio Department of Natural Resources.**

**University of Ohio.**

**Develop a measure called bridge condition index (BCI) for reliable condition assessment of Ohio bridges through effective utilization of ODOT's bridge databases.**

**Preserving the cables on the Anthony Wayne Bridge, Ohio's only suspension bridge.**

**Locate and configure the dashboard app to maximize the utility to the operators of the VGCS.**

**Collect additional food data at a selected stream sites throughout Ohio.**

**Examine the cost effectiveness, safety and overall efficiency of culvert replacements using the jack and bore method versus the traditional method of excavation based on the depth of fill and user costs.**
<table>
<thead>
<tr>
<th>PID</th>
<th>Project Title</th>
<th>Technical Office</th>
<th>ORIL</th>
<th>CB Approved</th>
<th>Research Agency</th>
<th>Researcher (PI) Name</th>
<th>ODOT Project Manager</th>
<th>Total Contract Cost</th>
<th>Start Date</th>
<th>End Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>96627</td>
<td>Linking Land Use and Travel in Ohio: Incorporating Vehicle Choice and Decline Components</td>
<td>Planning</td>
<td>The Ohio State University</td>
<td>Guisah Akar</td>
<td>KN</td>
<td>$151,108.00</td>
<td>1/2/14</td>
<td>5/2/15</td>
<td>Develop vehicle choice models to forecast the changes in vehicle fleet based on changing socio-economic and land-use characteristics, develop models to deal with both population and employment growth and decline, integrate the models into the existing land-use allocation decision model and identify the impacts of potential future scenarios based on socio-economic changes, mass transit investments and land-use changes.</td>
<td></td>
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<tr>
<td>98874</td>
<td>Stabilization of Peat Deposits for Roadway Construction and Remediation</td>
<td>Construction</td>
<td>University of Akron</td>
<td>Junliang (Julian) Tao</td>
<td>JM</td>
<td>$41,412.88</td>
<td>11/1/14</td>
<td>5/1/15</td>
<td>Identify the potential ground improvement technologies which are applicable to roadways on peat deposits, to assess the cost-benefit of each technology and to rate each technology considering the various selection factors.</td>
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<tr>
<td>95426</td>
<td>A Comparison of Full Wave Inversion Technique to Assess Underground Voids</td>
<td>The Ohio Department of Transportation</td>
<td>Steve Talafarre</td>
<td>KN</td>
<td>$110,000.00</td>
<td>6/5/14</td>
<td>6/5/15</td>
<td>Compare selected geophysical methods with the Full Waveform Inversion Technique. Results of the surveys will be compared with conventional geophysical techniques and validated by drilling and sampling.</td>
<td></td>
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<tr>
<td>99747</td>
<td>Bridge Trough Maintenance Evaluation on Finger Joint Bridges</td>
<td>Maintenance</td>
<td>Ohio University</td>
<td>Eric Steinberg</td>
<td>JM</td>
<td>$64,544.02</td>
<td>2/2/16</td>
<td>2/2/16</td>
<td>Determine if design changes or equipment may be available to provide a better way of cleaning debris that accumulates in the drainage trough underneath the bridge expansion joints.</td>
<td></td>
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<tr>
<td>98611</td>
<td>Investigation of In-Situ Strength of Various Construction/Widening Methods Utilized on Local Roads</td>
<td>Pavements</td>
<td>Ohio University</td>
<td>Shad Sargand</td>
<td>VF</td>
<td>$147,948.11</td>
<td>8/11/14</td>
<td>2/11/16</td>
<td>Establish a range of structural coefficients (or moduli) for various materials utilized to widen/construct roads on Ohio’s local system.</td>
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<tr>
<td>100296</td>
<td>Evaluation of Technology for School Bus Stop Ahead Signs</td>
<td>Safety</td>
<td>Toxcel, LLC</td>
<td>Bryan Katz</td>
<td>JM</td>
<td>$48,048.34</td>
<td>8/10/15</td>
<td>2/10/16</td>
<td>Evaluate the current ODOT practice for school bus stop sign placement, identify available technology for school bus stop signs that could enhance or replace the current practice.</td>
<td></td>
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</tr>
<tr>
<td>98376</td>
<td>Enhancement of UASLOPE for Improving Implementation Efficiency</td>
<td>Geotechnical</td>
<td>University of Akron</td>
<td>Robert Liang</td>
<td>KN</td>
<td>$99,989.00</td>
<td>8/1/14</td>
<td>2/1/16</td>
<td>Provide ODOT with a more robust version of the current UASLOPE software to enhance equation accuracy.</td>
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<tr>
<td>98729</td>
<td>Performance Comparison of Structural Steel Coating Systems</td>
<td>Materials</td>
<td>University of Dayton</td>
<td>Elias Toubia</td>
<td>KN</td>
<td>$208,816.84</td>
<td>10/6/14</td>
<td>2/6/16</td>
<td>Investigate the Two Coat Organic Zinc and Polyurethane Structural Steel Coating Systems.</td>
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<tr>
<td>98582</td>
<td>Implementation and Analysis of Snow Removal Wash Water Reuse Research</td>
<td>Maintenance</td>
<td>University of Akron</td>
<td>Chris Miller</td>
<td>JM</td>
<td>$59,686.00</td>
<td>7/17/14</td>
<td>2/17/16</td>
<td>Enable the recycling of a large percentage of wash water collected at county garages and outposts.</td>
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<tr>
<td>96820</td>
<td>Optimization of Patching for Spray Injection Equipment</td>
<td>Maintenance</td>
<td>University of Akron</td>
<td>Ali A. Abbas</td>
<td>JM</td>
<td>$191,776.00</td>
<td>9/30/13</td>
<td>3/30/16</td>
<td>Evaluation of the cost-effectiveness, benefits and limitations of the spray injection, identify different aggregate and emulsion materials for use, and provide specifications for use and storage.</td>
<td></td>
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<tr>
<td>101869</td>
<td>Cost Benefit Analysis for Culvert Replacement</td>
<td>Maintenance</td>
<td>X GS&amp;P/ OH Inc.</td>
<td>Mark McCabe</td>
<td>JM</td>
<td>$96,981.59</td>
<td>11/13/15</td>
<td>4/13/16</td>
<td>Perform a cost-benefit analysis on a recently completed research study that looked at three different methods of culvert replacement: open/cut, jack and bore, and pipe bursting.</td>
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<tr>
<td>98399</td>
<td>Evaluation of Cost Effective Protective Coatings for ODOT Snow &amp; Ice Equipment</td>
<td>Maintenance</td>
<td>University of Akron</td>
<td>Chelsea Monty</td>
<td>JM</td>
<td>$221,805.00</td>
<td>8/7/14</td>
<td>12/7/15</td>
<td>Develop a corrosion prevention strategy that will increase public safety by preventing unexpected equipment failures.</td>
<td></td>
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<tr>
<td>100697</td>
<td>Evaluation of Grade Crossing Hazard Ranking Models</td>
<td>Safety</td>
<td>Ohio University</td>
<td>Benjamin Sperry</td>
<td>KN</td>
<td>$80,068.15</td>
<td>7/15/15</td>
<td>5/15/16</td>
<td>Provide a better understanding of the hazard ranking formulas currently in use.</td>
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</tbody>
</table>

ODOT PM List
JM - Jill Martindale, 614-644-8173
KN - Kelly Nye, 614-387-2710
VF - Vicky Foot, 614-466-3029
ML - Michelle Lucas 614-644-8315
CJ - Cynthia Jones, 614-466-1975