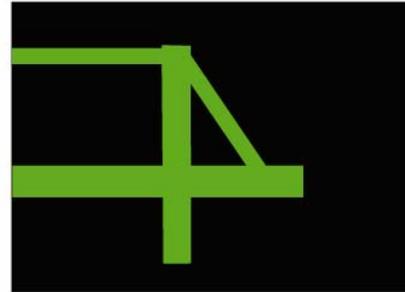
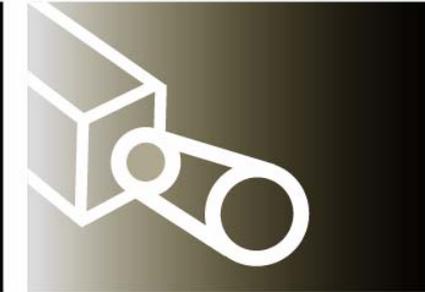
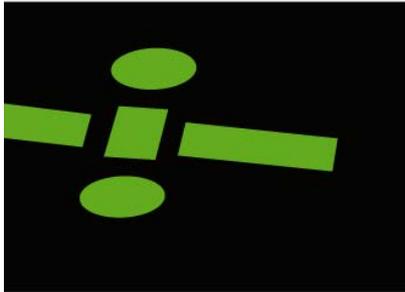


EXPLORATORY ADVANCED **RESEARCH**



Multifunctional Pavements

Presentation at the
Conference on Electric Roads and Vehicles

May 17, 2016

Tim Schmidt

Senior Advisor

Turner-Fairbank Highway Research Center



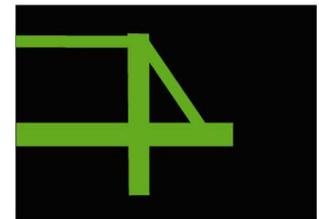
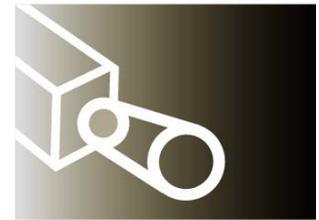
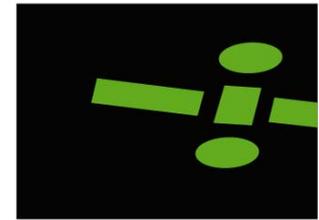
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Roadway Pavements

- Durability
- Friction
- Noise and vibration
- Drainage



Brick and cobblestone pavements Providence, RI (top), Portland concrete cement and asphalt pavement San Francisco, CA (left)



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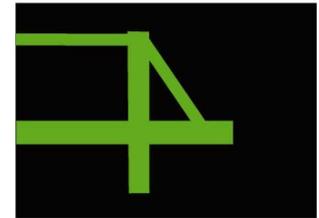
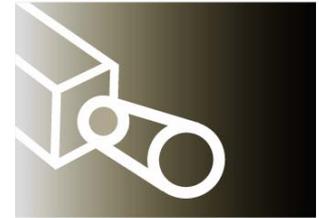
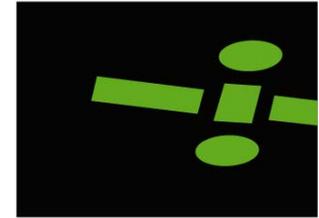
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Other Functions

- Markings
- Sensors
- Utilities



Bike path Mountain View, CA (top) street Englewood, NJ (left)



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Considerations

- Traffic type and volume
- Traffic speeds
- Environmental conditions



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Multifunctional Future

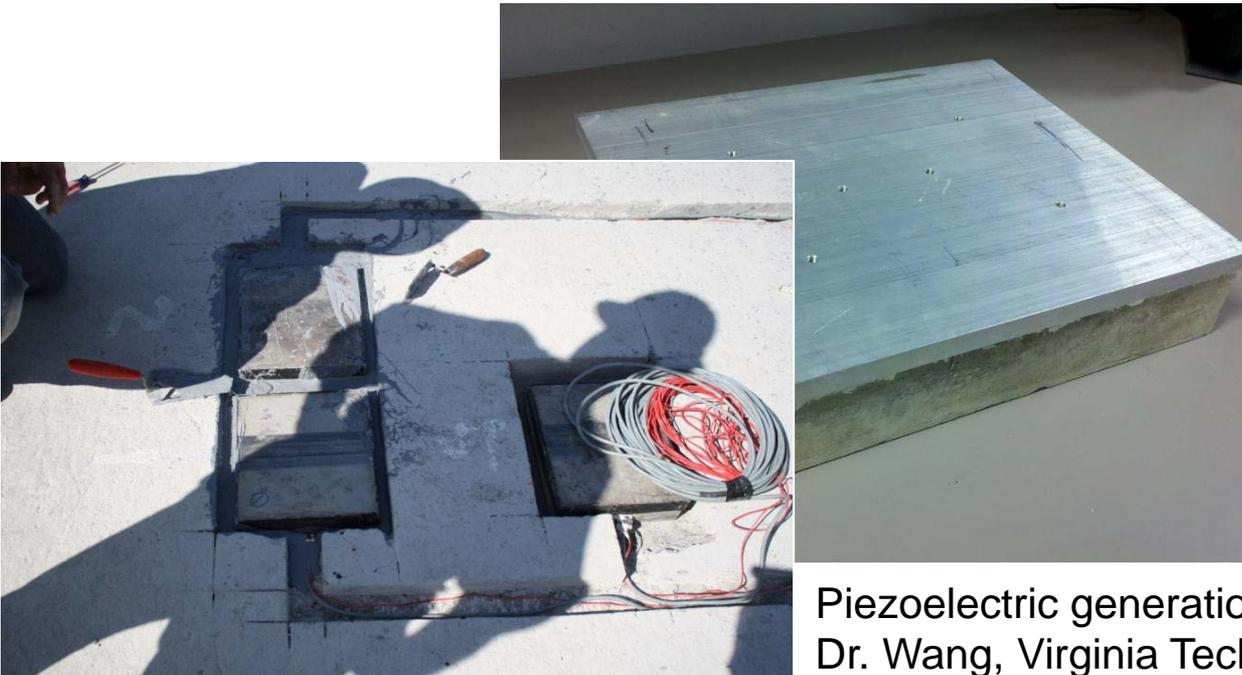
- Increased Resilience
- Reconfigurable



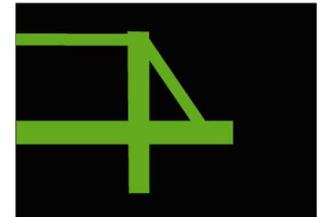
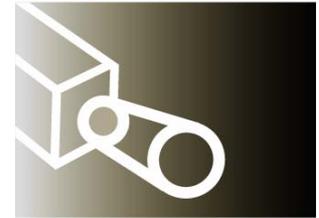
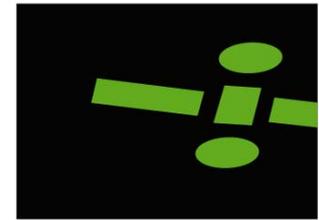
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Multifunctional Future

- Energy Generation
- Energy Transfer



Piezoelectric generation
Dr. Wang, Virginia Tech



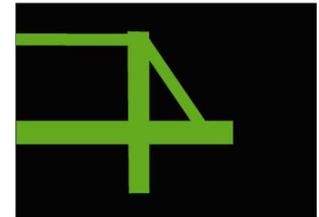
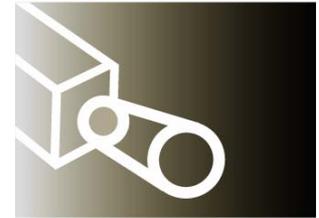
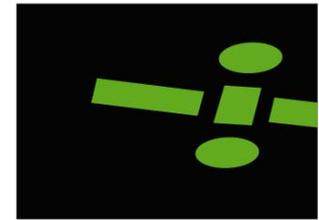
Small Business Innovation Research (SBIR)



Photo: Solar Roadways Inc.

- Solar Roadways
 - Driving surface built out of solar panels

Scott Brusaw, president and CEO of Solar Roadways Inc. assembles the prototype for a road built from solar panels.



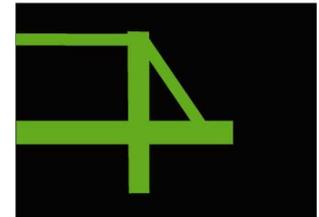
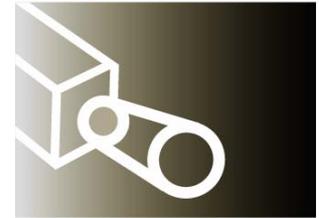
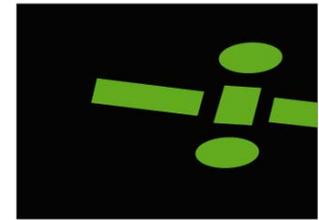
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Related Research

- Deployment of Alternative Vehicle and Fuel Technologies
 - Objective: Aid DOT deployment of alternative fuel infrastructure
 - \$0.5M from FHWA, 8 State DOTs
 - Started 2015; scheduled to 2017



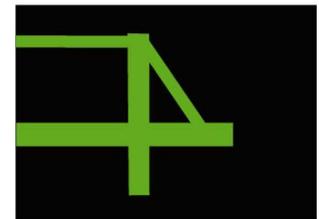
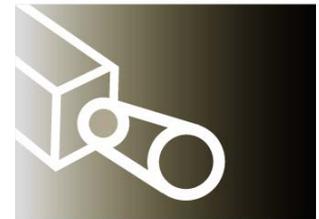
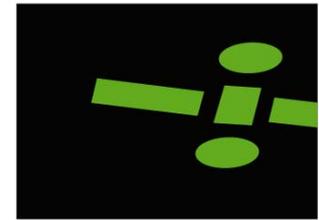
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Request for Information

- “Inductive Charging Systems and Roadway Pavement Design and Durability” (DTFH61-16-RI-00015)
- FHWA Reviewing Responses
- Please contact David Kuehn (EAR Program Manager/david.kuehn@dot.gov) at 202-493-3414 or Eric Weaver (Research Engineer/eric.weaver@dot.gov) at 202-494-3153 to coordinate any remaining submissions



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Legislation

- Designation of Alternative Fuel Corridors (Section 1413)
 - www.fhwa.dot.gov/environment/climate_change/mitigation/webinars/
- CMAQ Program amended (Section 1114)



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Thank You



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