
North Eastern States Materials Engineers Association Meeting (NESMEA)

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SBIR Topic 091-FH5: “Self-Sustaining Intelligent Pavement Systems”

- generates its own power…
- transfers the power generated …
- made of recycled or other sustainable materials…. 
- modular for ease of replacement…. 
- durable enough to withstand repeated loading from traffic 
- meets or exceeds safety characteristics … 
- mitigates water runoff …
- cost that allows it to be economically self-sustaining…
SBIR Topic 091-FH5: “Self-Sustaining Intelligent Pavement Systems”

- 2 Phase I awards in 2009 at $100k each
- 1 Phase II award to Solar Roadways in 2011 at $750k
- Phase IIB award at $750k for durability and viability evaluation
Components
Potential early application: Glass Sidewalks
Engineered, tempered, low-iron glass tests

Traction testing
  British Pendulum Test

Load testing

Impact resistance testing
  Standard Test Method for Ball Drop Impact of Laminated Architectural Flat Glass”, Glass Association of North America (GANA). 1.875” steel balls (0.922 pounds) dropped from 10-feet

Transmissivity Testing
Glass surfaces tested for transmissivity and skid

- Horizontal Groove
- Clear
- No Macro-texture
- Hexagon
- Low-Iron
Finite Element Analysis

Mesh

Tire Loading
Impact Testing

Center

Edge
Electronic Control and Communication

Microprocessor

Controller
Single Micro Inverter - Wh

Entire Parking Lot - kWh
Solar Roadways

$2,200,716 USD
RAISED OF $1,000,000 GOAL

220%

Flexible Funding

CAMPAIGN CLOSED
This campaign ended on June 20, 2014

SELECT A PERK
Existing concrete is cut
Drain system and conduit added
Forms built
Concrete poured
Dried concrete

Web Cam
Mayor of Sandpoint helping install aluminum retainer rails (perimeter only).
Leveling the sand base prior to compaction
Installing Typar over the sand
Installing panels. The high intensity flashlight is positioned over the internal light sensor, causing the LEDs to brighten.
Final test
Kids enjoying the pilot project
Webcam - http://www.cityofsandpoint.com/visiting-sandpoint/solar-roadways#ad-image-4
Amtrak Train Station Sandpoint
Sandpoint Airport
Competition

SolaRoads - Netherlands
The concept

- Wattway by Colas | Paving the way to tomorrow’s energy - Mozilla Firefox
- StayConnected @ Hilton
- wattway - Yahoo Search...
Related Concepts

Plastic Roads - Netherlands
SBIR Phase IIB

- Recommended for award July 2015
- $750k over 2 years
- Address the following objectives:
  - 3D FEM structural analysis and deflection testing…
  - Refine the manufacturing and production processes…
  - Demonstrate mechanical and structural performance with time…
  - Demonstrate electrical performance with time…
  - Perform life cycle assessment…
  - Produce design, construction, operation and maintenance guidelines
  - Guidance for coordinating with multiple relevant stakeholder entities