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SEISMIC SUPPORT SYSTEM FOR EXPANDED POLYSTYRENE GEOFOAM BRIDGE

MECHANICAL, CIVIL, & ENVIRONMENT

Cable system for added seismic support to enable the use of rapid, lightweight expanded polystyrene bridge technology in seismic geographic areas.

TECHNOLOGY TYPE

Infrastructure
Expanded Polystyrene (EPS)
Accelerated Bridge
Construction

STAGE OF DEVELOPMENT

Proof of concept
demonstrated in simulations.

IP PROTECTION

Nationalized PCT Pending in the United States

Light-Weight Bridge Support
Systems and Methods of Use
US20180209106A1

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Reference Number: U-5984

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TECHNOLOGY SUMMARY

According to the U.S. Department of Transportation, 61,000 bridges in the United States are structurally deficient. Consolidation and post-construction creep settlement slow and inhibit accelerated construction of support systems for bridge structures on soft soil. Other common challenges include low bearing capacity, poor construction conditions, relocation of buried utilities, and potential settlement damage to adjacent structures and foundations.

Expanded Polystyrene (EPS) Geofoam Bridge Support Systems accelerate construction of bridge support without compromising safety. EPS eliminates the need for deep foundations or ground improvement in soft ground conditions. EPS technology is lightweight and reduces, or almost eliminates, uneven settling of soil. EPS bridges are used around the world, but not currently permitted in the United States as they do not hold up under seismic conditions. The proposed system increases stability during seismic events by utilizing a steel cable system enabling EPS bridge deployment in seismic geographic areas.

FEATURES AND BENEFITS

- Enables EPS bridge deployment in seismic geographic areas.
- Provides increased safety, while reducing comparable bridge deployment costs.
- Eliminates need for foundation systems and ground improvement.
- Demonstrates potential for use with both permanent and temporary structures.

RECENT PUBLICATIONS

Bartlett, S.F. and Neupane, R. (2015). Seismic evaluation of expanded polystyrene (EPS) geofoam bridge system for overpass structures. Technical Report Prepared for the *Mountain Plains Consortium* and the *Norwegian Public Road Administration*, 252. [Link to publication.](#)

INVENTOR PROFILE

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