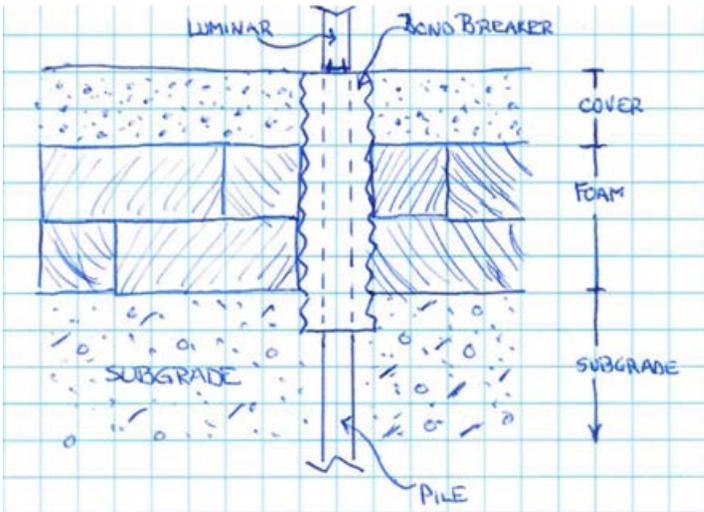


Expanded Polystyrene Lightweight Foam Backfill

State	Response
Alabama	<p>Unfortunately, Alabama will not be much help in this matter. Our use of the EPS product was to lighten the weight on a landslide in rural NW AL. There were no signs or lighting in this stretch of roadway so we did not have the issue. I would agree that the material would not support the foundation loads for the signs and lighting, thus foundations for those structures will be expensive due to the extra length required to penetrate the EPS and poor soils to reach material with bearing capacity. I am sure there are states who have had a similar issue as I know the material is used at bridge abutments a good bit throughout the US. Sorry I could not be more help.</p>
Alaska	<p>We have used EPS foam blocks on a few projects but none have had foundation elements associated with them. I would think that any lateral movement of a pile for example would simply crush the blocks and so they would offer very little resistance. But I'm guessing. I wonder if installing a bond breaker of sufficient diameter through the foam section could absorb any lateral movement and discourage the foam/pile interaction. Then the foundation would have to be designed with extraordinarily low strength values for that thickness. Similar to values for peat maybe."</p> 
Arkansas	Not an issue that Arkansas has dealt with
Delaware	Apparently we have only used this on one project in a limited fashion and no signs were part of the project.

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State	Response
Illinois	Our Bridge Office informed me that we have used EPS or high-strength Styrofoam over the past 17 years to help reduce settlement of roads and lateral pressure on walls. We've used approximately 36,000 cu yd total. To our knowledge, we haven't had a situation where we had to install a sign post or light pole foundation in this material. Our Bridge Office told me the material we've used does have a specific strength, so depending on the load, the foundation size could be increased to match this strength. Otherwise, I assume the foundation would have to be extended below the EPS.
Indiana	We checked with our GeoTech and Design Offices and found that while INDOT has used this material as backfill going back to the 1990s it has not been encountered at traffic structure locations. However if we were to encounter it and could not relocate the structure to more suitable material the designer would have to come up with a special design- according to our GeoTech office this might involve increasing the depth of the drilled shaft pending the depth of the fill.
Kentucky	No such experience in Kentucky
Minnesota	Here at MnDOT we avoid placing sign posts and light bases in Geof foam fills where possible. According to Geof foam design manuals, you may need to design the sign or light foundation to be supported above the Geof foam fill with additional concrete support.
Nebraska	Have not had to deal with this issue so far
New Hampshire	No experience here
Oregon	<p>Yes. The EPS is great for poor soils, settling etc. and does not provide lateral support. We have not used sign posts, light poles etc. in EPS. I believe they have a couple of options.</p> <p><u>1) They could replace the EPS with Low Density Cellular Concrete (LDCC www.cell-crete.com and ODOT has a video), yes this is a Contract Change Order and change in philosophy. LDCC over EPS has some advantages starting with lateral support. LDCC weight 25-40 pcf depending on needs and design criteria. LDCC also is constructed faster 4'-6' lifts every 12 hrs or so. LDCC has strength of about 400 psi can be excavated for utilities later on. LDCC does not require wrapping with impermeable geomembrane for protection against petroleum spills, bugs, and rodent infestation.</u></p> <p>2) For prevention of reflective cracking they should be incorporating a thick concrete slab over the top of their EPS. Can their poles be engineered to be embedded in the EPS and anchored in the concrete?</p> <p>3) Is there an option for moving out of the EPS?</p> <p>This is off the top of my head. WSDOT has lots of EPS installed which I am sure has vertical utilities that need lateral support. Sorry, I couldn't supply better answers.</p>

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State	Response
Ohio	We don't have any direct experience with the polystyrene geofom (EPS) as a lightweight backfill, however have used something similar. We use the attached product to backfill our 70ft concrete poles for ITS cameras. Not heard of any issues to date and been using for 3-4 years. We have not used it for sign posts or light poles.
Pennsylvania	Our spec is located at: ftp://ftp.dot.state.pa.us/public/bureaus/design/Pub408/pdf for printing 2011 8/Pub_408_2011_8.pdf
Virginia	VDOT has not used the EPS in sign, signal or light poles foundation backfill installation.
Vermont	Has not used EPS for backfill for signs or light poles
Washington	Attached is a photograph for what this material looks like in the field. There may be a reinforced concrete cantilever wall covering the face of this material and that wall can be designed to support a sign, luminaire or traffic signal pole. A reinforced moment slab can be designed to support those portions of the concrete traffic barrier that must also support a sign, luminaire or traffic signal pole. I have included the WSDOT standard plan that details a moment slab. (The slab is show on top of a geosynthetic wall, but the reinforced moment slab concept can also be designed onto expanded polystyrene foam) This design would be modified to support the additional load of a sign, luminaire pole or traffic signal pole.
Wisconsin	I know of 3 projects where we have used EPS for embankment backfill. They include: a project in NWR several years ago, STH 50 near William Bay about 15 years ago and a local road (parallel to I-94 near Oconomowoc [between the lakes]) on the way to Milwaukee (about 15 years ago). All of these were consultant designs and I am not sure how the sign foundations were designed/supported. Generally we placed 3-4 feet of soil fill above the EPS.