# CHAPTER 2

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LITERATURE REVIEW

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# 2.1 Expanded Polystyrene Geofoam

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**Horvath (1994)** presented the manufacturing of EPS prismatic block. That EPS prismatic block is called as geofoam. He provided in this paper basic properties like density, durability and engineering properties like load deformation, thermal conductivity of EPS-block geofoam. EPS is most widely used geofoam material.

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**Horvath (1997)** carried out analysis and design methodologies of compressible- inclusion function of EPS Geofoam. He explains the applications of EPS geofoam. EPS geofoam can be used in earth retaining structures, above foundation element and above pipes, culverts, and tunnels. The result shows that using a compressible inclusion there is reduction of earth pressure under static and dynamic loading, also compressible inclusion used to accommodate ground or structure movement.

# 2.2 Expanded Polystyrene Beads

**Deng and Xiao (2008)** studied the direct shear and triaxial compression tests and effects of expanded polystyrene (EPS) mass ratios in sand-EPS mixtures and stress status on materials’ shear behaviour were investigated. Result indicated that Increase of EPS ratios and decrease of normal/confining stresses, shear strength decreases. EPS inclusion results in the substantial decrease in densities of sand-EPS mixtures.

**Ram Rathan Lal et al. (2014)** made an attempt for proper utilization of fly ash and expanded polystyrene (EPS) beads which investigated through triaxial compression. The triaxial compressive strength of lightweight fill material (LWFM) was analyzed with varying EPS beads to fly ash ratio. They observed peak deviator stress values decreased with increasing EPS beads to fly ash ratio. For each EPS beads to fly ash ratio, peak deviator stress values are increased with increasing confining pressure.