



Case Study: Using Geofoam under a school staircase in Encinitas, CA.

Matt Gaebe, Winter 2019



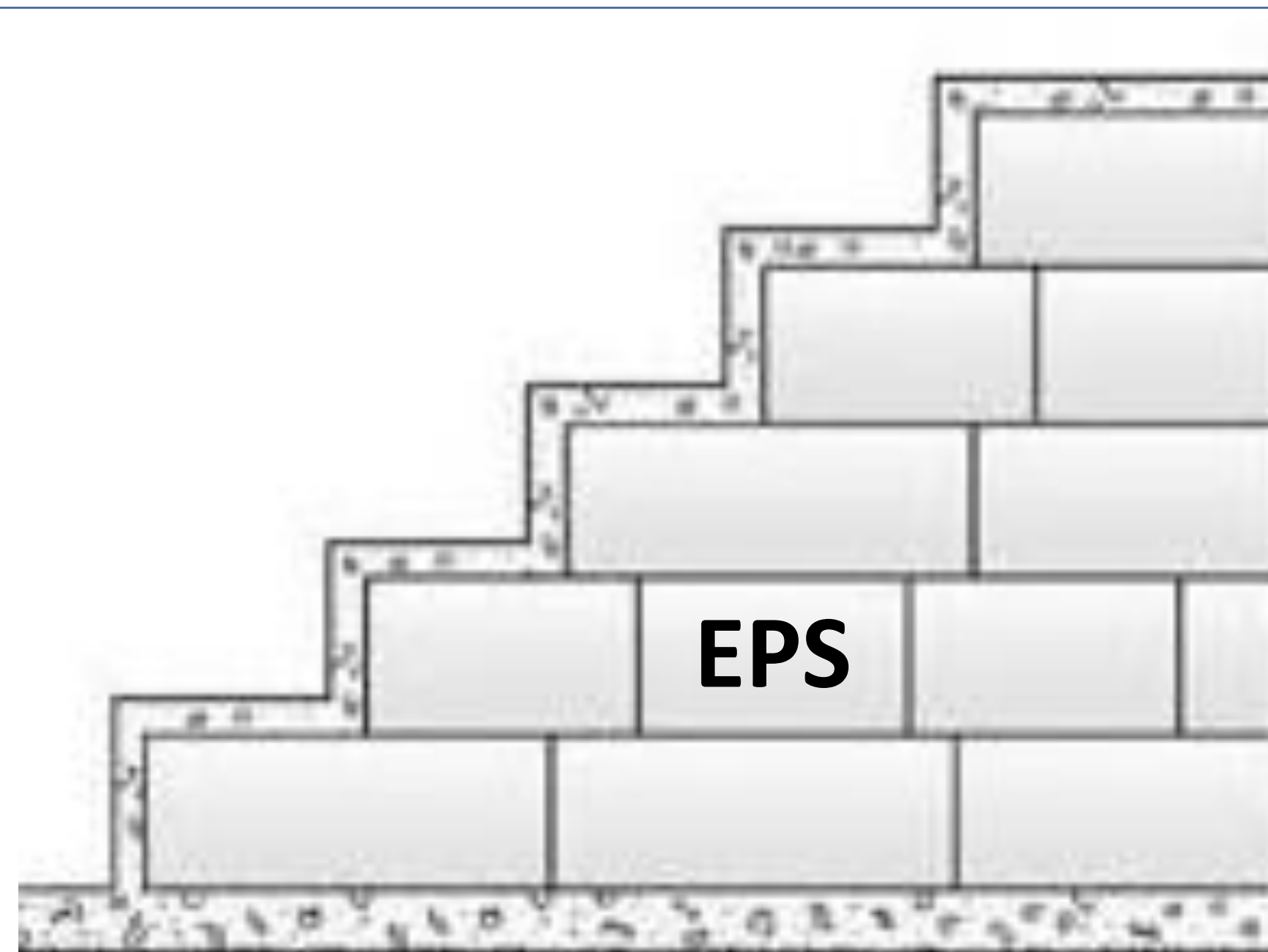
Photo courtesy of Jesse Ahrend, Superintendent



Photo courtesy of Jesse Ahrend, Superintendent

Methodology

- Qualitative Research
- Structured Interviews with:
 - Structural Engineer
 - Architect
 - Superintendent
 - Inspector



Cross Section of stairs showing **Expanded Polystyrene (EPS)**

Abstract

This paper is a case study that identifies why Geofoam was used as in-fill material for a construction project on a school in Encinitas, CA. The Geofoam was installed under a stairway that connects to a structural retaining wall. The concrete formwork was connected directly to the foam and the stairs were poured in place. The foam acted as the on-grade material, so the concrete stairs did not have to be self-supporting. The purpose of this study is to understand the benefits of using Geofoam, as opposed to other traditional materials, as the in-fill material. An analysis of various factors, given by the structural engineer, architect, inspector, and superintendent involved in this project, was conducted to compare alternate materials.

Key words: Geofoam, Foam, Structural Fill, EPS 39, Backfill

Fill Weight Comparison

Fill	Typical Weight (lb/ft^3)
EPS Geofoam	0.7-2.85
EPS 39 Geofoam	2.40
Soil	110-120
Cellular Concrete	35-100
Wood Chips	15-30
Shredded Tires	38-56
Pumice	40

Considerations

Material Considerations:

- Weight
- Location and Access
- Cost
- Time

Environmental Concern

- Cutting with a saw would release small foam particulates into the surrounding environment
- Used an electric “hot wire” to cut through the foam by melting the EPS

Conclusions

Geofoam was used because it alleviated concerns about weight, limited access, cost, and time.

References

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2. White, Light, and Out of Sight: Geofoam applications for infrastructure and building projects. (2013, October 7). Retrieved from <https://www.constructionspecifier.com/white-light-and-out-of-sight-geofoam-applications-for-infrastructure-and-building-projects/>

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