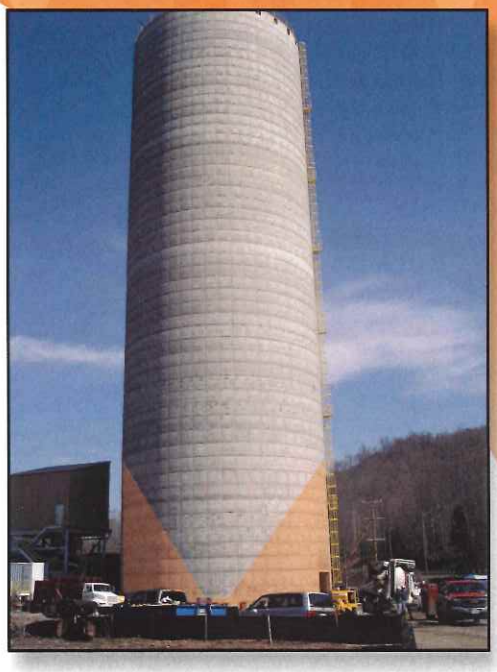
Elastizell EF Behind Sloping Hopper Plates Reduces Loads

Silo foundation load reduced

Elastizell EF fills the voids (seen in orange at right) behind the sloping discharge hopper plates and the slipformed silo wall.

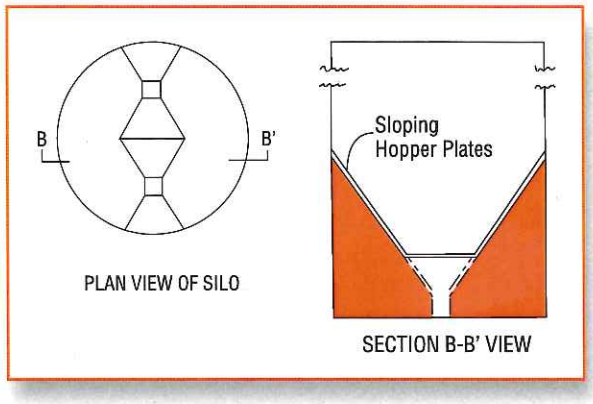


Problem

During construction or retrofitting of a silo, hydrostatic loads from hopper plate backfill require extensive bracing and limited lift heights slowing construction. Can construction time and cost be reduced?

Discussion

Storage silos usually require a stable fill material for uniform support behind the sloping hopper plates. If the conventional lean concrete fill were replaced by a lighter density material, the lateral loads would be reduced. This change would increase the safety factor for welders assembling the plate system during construction. The lightweight fill material needs to be fluid enough to ensure that all voids are filled.



Solution

Elastizell EF was used to backfill the hopper plates. Elastizell EF was the most economical material which was able to fill all of the voids and support the plates.

The lightweight Elastizell EF permitted substantial savings in the silo structure design due to the reduced effects of seismic forces. A reduction in the dead load of the silo construction allowed for more storage capacity and a decrease in foundation cost.

Advantages

- *In seismic areas, a significant savings will result in the slipformed or cast in place silo wall design due to reduced mass of the fill.*
- *Elastizell EF is faster and safer to install than heavier lean concrete.*
- *Elastizell EF may be less costly than lean concrete.*
- *Elastizell EF will reflect a saving in wall, foundation and floor slab structural design requirements.*

= ELASTIZELL EF

BASIC PHYSICAL PROPERTIES

Elastizell EF

*Greater values may be obtained if required per Elastizell Corporation design.

CLASS	MAXIMUM CAST DENSITY pcf (kg/m³)	MINIMUM COMPRESSIVE STRENGTH* psi (Mpa)	ULTIMATE BEARING CAPACITY Tons/sf (kN/m²)
I	24 (384)	10 (0.07)	0.7 (69)
II	30 (480)	40 (0.28)	2.9 (276)
III	36 (576)	80 (0.55)	5.8 (552)
IV	42 (672)	120 (0.83)	8.6 (827)
V	50 (800)	160 (1.10)	11.5 (1103)
VI	80 (1280)	300 (2.07)	21.6 (2068)

Comparison of Maximum Fill Material Densities

ELASTIZELL EF			
Class I	24 pcf (384 kg/m³)	Water	62.4 pcf (1000 kg/m³)
Class II	30 pcf (480 kg/m³)	Lightweight Aggregates	60-90 pcf (961-1442 kg/m³)
Class III	36 pcf (576 kg/m³)	Flowable Fills	90+ pcf (1442+ kg/m³)
Class IV	42 pcf (672 kg/m³)	Soils	120 pcf (1922 kg/m³)
Class V	50 pcf (800 kg/m³)	Aggregates, Asphalts	125 pcf (2002 kg/m³)
Class VI	80 pcf (1280 kg/m³)	Lean Concrete	145 pcf (2323 kg/m³)

For specific design values and more detailed specifications, as well as design assistance, please contact the ELASTIZELL CORPORATION OF AMERICA or our local applicator below.

Elastizell Cellular Concrete
ENGINEERED FILL

www.elastizell.com

Corporate Office
PO Box 1462 • Ann Arbor, MI 48106 • PH (734) 761-6900 • FAX (734) 761-8016

Research Center
7900 Second Street • Dexter, MI 48130 • PH (734) 426-6076 • FAX (734) 426-6078

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