

OCTOBER 2001 - "The Use of Ground Granulated Blast-Furnace Slag to Enhance Concrete"

Speaker: Darrell Elliot, Lone Star Industries, Inc.

Darrell Elliot of Lone Star Industries spoke on the use of slag as a substitute for Portland Cement in making concrete. Although first produced in South Africa in 1950, slag was first produced here as a co-product of steel in 1982. We now have a large slag industry with 20 plants producing 5.2 million tons per year, enough for 52 million CY of concrete.

Unlike fly ash, slag does not need Portland Cement to react. However, it is not normally used by itself as there are trade-offs. The optimum recipe is often a 50/50 mix with Portland Cement. However, some mixes may call for fly ash in combination with slag and Portland Cement, depending on the job specs. Slag causes the concrete to set slower, so it is essentially a retarder which is good for hot weather concreting in this area. The engineer can get a higher strength with slag, but he may need to specify more than a 28 day strength since it cures slower than does pure Portland Cement.

Darrell said that other advantages slag has over pure Portland Cement include a low heat of hydration, better workability, less porosity (slag is half the diameter of Portland Cement) and less cementitious material is required. For example, they have achieved 20 psi per lb. of cementitious material on an 18,000 psi mix.

Thanks for speaking to our group Darrell.

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