

CE 890 Graduate Seminar

- SPEAKER:** Brandon Bortz (Major Professor: Dr. Kyle Riding)
- TOPIC:** “Long Term Salt Scaling Durability of Concrete Containing Fly Ash”
- DATE:** February 3, 2010
- TIME:** 4:00 p.m. (refreshments at 3:45 p.m.)
- PLACE:** 2144 Fiedler Hall

ABSTRACT

Fly ash is a by-product of coal-fired power plants. This material can be used as a partial cement substitute in Portland cement concrete. The use of fly ash is environmentally beneficial by making use of an industrial by-product that would otherwise be land filled and improving the concrete durability. However, research on fly ash concrete has shown that in some cases concrete with a high volume of fly ash can have deicer salt scaling. Salt scaling is the flaking of concrete surface resulting in lower skid resistance and service life.

In this study, concrete mixes with six types of fly ashes were tested in the laboratory using the ASTM 672 Standard. Curing compound, a waxy coating sprayed on the fresh concrete surface to reduce evaporation, was used to compare the effects of curing on salt scaling of concrete containing high volumes of fly ash. The different variables that were measured were type of fly ash, curing conditions, and cementitious content included in the mix.

The preliminary results show that curing compounds will improve the salt scaling resistance of concrete containing a fly ash that only marginally exhibits salt scaling. However, the salt scaling performance of concrete that contains fly ash from a source that performs poorly in ASTM C 672 is not markedly improved by the use of a curing compound. Experiments are ongoing to help better understand the mechanism of fly ash concrete resistance to salt scaling.