

AUGUST 2004 MEETING

August 18, 2004

TECHNICAL PROGRAM

Concrete Floor Covering Failures

Speaker: Mr. Lee Lawrence, P.E. (tel: 512-835-0940) of Wiss, Janney, Elstner Assoc., Inc.

PRESENTATION SUMMARY

Mr. Lawrence, P.E., a licensed professional engineer with BSCE and MSCE degrees from the University of Texas at Austin from the Austin office of Wiss, Janney, Elstner Associates, Inc, presented, to a audience of about 45, a slide presentation entitled, "Concrete Floor Covering Failures."

Mr. Lawrence said the common causes of floor covering failures are improper application, vapor and vapor transmission and moisture (i.e., liquid). He said common application problems are bad surface preparation, elevated moisture and vapor transmission rates and improper mixing. He also described problems with incompatible materials. He said that sometimes it is simply bad formulation before it arrives at the job site.

Mr. Lawrence said that vapor pressure alone (usually less than 1 psi) will not cause a flooring failure, but that in combination with other problems, it can cause alkali silica reaction (ASR). sulfate attacks, osmotic blistering, and saponification (chemical attacks). He said although there is a more quantitative test using anhydrous calcium chloride, a simple qualitative test to see if a slab is not transmitting too much vapor is to lay a plastic sheet on the slab for 72 hours and see if the underside of the sheet collects condensate.

Mr. Lawrence outlined five typical methods used in a forensic investigation of a floor covering failure:

1. Look, touch, feel
2. Vapor transmission test
3. Pull-off test (adhesives usually bond with more than 400 psi)
4. Concrete petrography
5. Chemical studies

He noted that because the industry has moved from a solvent-based to a water-based adhesive, we are now having more floor covering failures. He also noted that an epoxy adhesive is a vapor barrier and can handle a lot of abuse.

For a copy Mr. Lawrence's presentation, [click here](#).

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