# POSITION STATEMENT #6

## Ready Mixed Concrete Acceptance and Product Warranty

Coincident with the increased use of new de-icing materials and questionable construction practices, a recent increase in concrete mortar flaking and scaling problems has led the concrete industry in Canada and the U.S., along with owners, users and academia, to undertake additional research projects in an attempt to discover the causes.

This issue is evident in several Canadian provinces and U.S. states. While the majority of exterior concrete appears to be unaffected by this scaling issue, the small percentage of concrete that is experiencing this problem is undergoing extremely rapid deterioration.

Concrete is specified and accepted for durability based on known measurements, such as approved raw materials, plastic or hardened air content, compressive strength, maximum W/CM ratio, etc. Factors such as proper placing, consolidation, finishing and curing practices, as well as adequate air drying time all contribute greatly to concrete's durability. Any decline in these practices, or lack of protection from the elements in the early stages can have very adverse affects on the performance of the concrete.

One focus in determining the possible cause of this scaling issue lies in investigating the affects of the changes in materials and application methods of winter maintenance operations on the existing concrete infrastructure. Non-traditional de-icing materials or application methods may be detrimental to concrete's performance and there has been little or no research into the long term durability affects of these materials on concrete. It is unknown at this time exactly how these materials react in the overall state.

- Are products attacking and softening the concrete chemically or physically?
- What affect does pre-wetting have on the number of freeze-thaw cycles that the concrete is exposed to?
- What affects do liquid anti-icing procedures have on the concrete when they are being applied to dry concrete before a snowfall event?
- What role does the timing of finishing and curing operations play?
- Are there additional chemical by-products in these new de-icing materials that are detrimental to concrete?
- Is there an accelerated ingress rate of chlorides to the reinforcing steel that may affect corrosion rates?

The concrete industry has a responsibility to provide concrete that meets the customer's specifications. The construction industry has implemented a third party testing system on all concrete projects for many years to ensure compliance with these specifications. A situation where all performance and prequalification requirements have been met, and where the concrete producer is still being held responsible for problems out of their control is completely unacceptable.

**The concrete industry is responsible for the compliance with the concrete supply requirements to the owner's known specification.**

**The concrete industry cannot accept responsibility for defects or issues of durability which arise external to such specifications or due to factors outside our control.**

**No product warranty can be provided unless the placing, finishing and curing of the concrete is in accordance with either CSA A23.1/.2 or OPSS 904 specifications.**

**The concrete industry can offer no product warranty where the concrete is exposed to non-traditional chemical de-icers or application techniques.**

The concrete industry is working very hard, as are several other cooperating groups, to discover the failure mechanism that we are witnessing and to research possible improvements to both concrete specifications and protection systems.

Please visit www.rmcao.org for more information.

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