



April 12, 2017

RE: Suitability of 40 mil PRECIDIUTM ECSTM Spray Applied Polyurea as an Under-slab Methane (and other organic vapours) Barrier.

Quantum Technical Services Ltd. has completed testing of **PRECIDIUTM ECSTM** (ECSTM) membrane in an attempt to replicate in-field service conditions of an under-slab methane barrier.

We conducted two tests, the first at a pressure differential of five psi between the methane and atmospheric sides of the apparatus. No loss in pressure of the contained methane was detected over seven days. These conditions match those specified by the City of Los Angeles for certifying methane barriers.

Quantum also tested an extreme condition where methane was at 15 psi greater pressure than the downstream atmospheric conditions. As with the previous test at atmospheric pressure, negligible pressure drop across the ECS membrane occurred after 7 days.

It is evident that most of the critical methane seepage locations in an under-slab barrier are at the attachment points to the foundation and around penetrations. **ECSTM** is spray-applied and forms a tight permanent seal to concrete and other penetrations. The highly elastic and durable physical characteristics of **ECSTM** afford the its ability to better avoid damage during the rebar/concrete installation process and maintain vapour barrier integrity long-term.

With respect to other organic vapours often encountered in brown field development, **ECSTM** can be an excellent choice of vapour barrier. Upon request, Quantum will evaluate containment of specific organic vapours on a scope specific basis to ensure a successful outcome.

If you would like to discuss this information further, please contact Quantum at 780.458.3355 or dmartin@quantumchemical.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Dave Martin", with a stylized flourish at the end.

Dave Martin, P. Eng.
Chemical Engineer
Quantum Technical Services Ltd.