



MISSION STATEMENT

Durability Consultants is ever present throughout the Western United States, including the Hawaiian Islands. Our main goal is to stay true to the efforts of Concrete Durability, with an undercurrent of the strongest Sustainability propositions possible. We spend half our time amongst a handful of the American Concrete Institute's National code and performance writing committees, the American Society for Testing and Materials (ASTM) technical committees, and direct specific concrete and/or steel testing. And the other half of the time, discussing and incorporating that information specifically with engineers, architects, owners, and public agencies; directly or through specific groups like the ASCE and SEAOC.

DURABILITY. According to the Portland Cement Association is *“Corrosion of embedded metals in concrete can be greatly reduced by placing crack-free concrete with low permeability and sufficient concrete cover.”* We could also throw in certain strengths (i.e. compressive, flexural, tensile, etc.) and come up with a pretty good definition of concrete durability. The “low permeability” portion covers mitigating and reducing most of the ‘bad stuff’ that enters concrete and adversely effects either the concrete and/or the reinforcing steel – the most popular combination of building materials responsible for the greatest and most beautiful structures in the world. “Sufficient concrete cover” is directed by the *Plans & Specs* and executed by installers through intelligent *Means & Methods*.

So that brings us back to the initial position of “crack-free” concrete while achieving “low permeability” concrete. We have substantial experience with certain complex silicate solutions in concrete and their ability to negate the movement of moisture/vapor through concrete that produces a wide range of issues and costly

manifestations; re-emulsified flooring adhesives, failed coatings, lacking roofing systems, mold and mildew, ugly white efflorescent, “sweating slab syndrome” and overall unhealthy indoor air quality. This technology (along with macro-synthetic fibers) has been around actively since the early 2000s and documented by tens of millions of square feet of construction, that are both warranted and insured. What we’ve seen more recently, is the adoption of that same chemistry and applied to other ancillary areas of concern; long-term shrinkage of concrete, and the initial ‘Bleed’ of concrete, where most of the negative stuff involving concrete initiates from (i.e. slab curl/warping, cracking, and splotchy, irregular color and tone of concrete).

SUSTAINABILITY. Today, the term *Sustainability* is one of the most overused terms out there. From the packaging of materials and products to subtle changes to the characteristics of a material. Our goal, is to move towards a 100% increase (doubling) in the Life Cycle of a building or road through concrete as a material. One of the optimum ways we’ve found to achieve that, is the Vapor Lock admixture system. A crucial part of a system - **good concrete design**. Vapor Lock is part of an intelligent concrete mix design; about a half to three quarters of gallon, overall. The results are a denser, superior piece of concrete that exhibits significantly less long-term shrinkage, state-of-the-art Ultra Low Permeability, a more monolithic uni-chrome color, and when used with proper “ways & means” (i.e. adequate concrete coverage), will extend both the initiation and propagation stages of encased steel corrosion moving towards a doubling of the life cycle for reinforced concrete. Vapor Lock is priced and supplied by your local commercial ready mix concrete producers and should be considered at multiple levels of design where *RISK* is involved. Whether moisture/vapor concerns are affecting flooring installation critical paths, or a heavy water proofing schedule has your hands tied - Vapor Lock is the intelligent option, and worthy of consideration for both concrete Durability and Sustainability.

-by Jim Kaylor, April 2018. Vapor Lock is represented and serviced by OK Hardware and Supply on the Hawaiian Islands.