Kelley Kronenberg

“Clap on, Clap Off” – Managing Risk with Emerging Technologies in Construction (May, 2019)

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Consumers demand the latest and greatest technology has to offer. No longer limited to phones, PDAs, or cars, emerging technologies are now becoming common place in the construction process. For instance, luxury residential condominiums now offer garages with automated parking systems. And in the not too distant future, buildings will be constructed with “smart” concrete thanks to engineers at the University of Rhode Island who have developed “self-healing concrete”[i] and engineers at State University of New York at Buffalo who are using carbon fibers and electricity to predict failures in concrete before they occur.[ii] As buildings become “smarter,” the risk of technology failures – and the resulting defect claims against those involved in the design and construction of these buildings – becomes even greater. The consequences of their failure to operate as intended could range widely. With automated garages, a unit owner may suffer a minor inconvenience having to wait longer for a vehicle, or a system failure could result in property damage or personal injury. With smart concrete, the failure to “self-heal” or detect stress cracks could lead to a catastrophic collapse, resulting in significant property damage or injury, and even death. As technology in construction evolves, so too, must strategies for risk management. Under a traditional design-bid-build delivery method, the owner, or developer, bears the risk that the completed project, including building components, will function as designed. This is particularly so with Florida condominium construction, where the developer is deemed to provide initial and subsequent purchasers with an implied warranty of fitness and merchantability for the purposes or uses intended extending to: each unit, personal property that is transferred with, or appurtenant to, each unit; all other improvements for the use of unit owners; all other personal property for the use of unit owners; the roof and structural components of a building or other improvements; mechanical, electrical, and plumbing elements serving improvements or a building (except mechanical elements serving only one unit); and all other property which is conveyed with a unit. Depending upon the portion of the unit or property that is transferred or conveyed with the unit that the warranty relates to, these implied warranties last between one and three years (up to five years depending upon the date of turnover and potentially even longer as it pertains to manufacturer warranties).[iii] Under a design-build approach, the contractor is responsible to ensure a functional design. In other words, the design must not only comply with applicable building codes and standards of care, but also the expectations of the owner so that the completed building functions as intended. With either delivery method, the contractor is responsible to the owner for proper construction. Regardless of whether failures in technology result from errors in design or construction (or both), the owner will ultimately suffer the consequences of these failures, and worse, may have liability to third parties as a result of such failures. Thus, it is important that owners mitigate these risks with the use of well-tailored contract provisions and carefully crafted insurance coverage. Contractors should manage these risks with subcontractors in a similar way. An owner, or contractor under a design-build contract, may elect to purchase additional insurance coverage for design liability to account for lower limits traditionally in place for design professionals (typically less than $2,000,000 per claim). Importantly, errors and omissions policies covering design liability are so-called “wasting” or “burning limits” policies where coverage limits erode with every dollar spent on the costs of defending claims. Where defense costs are significant, there will be little to no coverage remaining to pay a settlement or judgment for a defective design. Even though under a contractor’s commercial general liability policy, defense costs do not affect coverage limits, contractors should consider increasing traditional limits (often $1,000,000 per occurrence and $2,000,000 in the aggregate) or obtaining umbrella coverage with additional limits on projects with advanced or emerging technologies. Another strategy to manage risk from failed technology is by reallocating it through contract. For instance, where the owner’s contemplated design requires use of a sole-source provider (such as with automated parking garages) or use of only certain specified “smart” materials, the contractor could limit its scope to installation only, with the owner being responsible for any design failures of the system or “smart” materials. This will limit the contractor’s liability to the owner for the subcontractor’s work for installation failures only. This is important, because a typical commercial general liability policy or default insurance for defective work of a subcontractor will not cover professional design liability. Neither will a performance bond. Another alternative for the contractor is to limit its professional design obligations for a design-build project through completion of the project only, as opposed to a longer period generally applicable under the law.[iv] Where “smart” materials are required, the contractor could attempt to limit its liability from material failures by using indemnity and hold harmless

provisions in its contract with the owner. Alternatively, the design liability owed to the owner from the contractor could be transferred to the design professional or supplier of the “smart” materials through a release of the contractor and an assignment to the owner of the design professional’s or supplier’s obligations to the contractor. Another option is for the contractor to limit its liability to the extent of its insurance coverage. Regardless of such limitations or an assignment by the contractor, an owner may still have other remedies against a negligent design professional. For instance, regardless of privity, a negligent design professional is liable to an owner in tort.[v] And the design professional may have statutory liability.[vi] However, it bears noting that some jurisdictions, such as Florida, limit individual design professional liability for damages which are “solely economic in nature and…do not extend to personal injuries or property not subject to the contract” where the contract with the design professional complies with certain statutory requirements.[vii] Where property damage or personal injuries occur, the statute has no application.

In short, emerging technologies in construction are becoming more prevalent. As developers – and the construction industry professionals employed by them – continue to implement new technologies, the risk of liability for all parties involved will continue to increase. While avoiding liability altogether is unlikely, owners and contractors presenting these technologies to end-users should explore non-traditional approaches in contracting and insurance to better manage and mitigate these risks, keeping in mind the potential limitations on liability that may exist through contractual provisions or by law.

If you have any questions about this article or any construction-related legal issues, please contact Gary Brown, Partner and head of the firm’s Construction Practice Group in the firm’s Fort Lauderdale office. Brown assists clients in both complex and routine commercial matters with substantial experience and expertise in construction-related issues. He practices in state and federal trial and appellate courts throughout Florida. Brown is also Board Certified by The Florida Bar in Construction Law and is a published author on the subject. In 2015, he published *Florida Construction Defect Litigation*, which is now in its 4th edition.

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[i] In 2010, a graduate student at University of Rhode Island, working with engineers, developed “self-healing concrete.” Directly embedded within the concrete matrix is a microencapsulated sodium silicate that acts as a healing agent when tiny stress cracks begin to form in the concrete. The tiny capsules rupture and release the healing agent into the adjacent areas which in turn causes a chemical reaction that blocks the pores in the concrete. This chemical reaction creates a gel-like material that hardens in about one week. As explained by the graduate student, “[s]mart materials usually have an environmental trigger that causes the healing to occur…only in the areas that really need it.”[source: https://today.uri.edu/news/uri-research-on-self-healing-concrete-yields-cost-effective-system-to-extend-life-of-structures/] [ii] Carbon fibers naturally conduct electricity. By adding carbon fibers to concrete, electrical impulses are added to the concrete structure, making the concrete able to have electrical resistance change in response to damage or defamation. In other words, the concrete becomes a sensor, able to detect even minute changes in the amount of stress inside. Thus, the concrete becomes a self-monitor for signs of cracks or stress. Where once, personal inspection was required to check concrete structures for signs of cracking, stresses can now be measured with more precision before cracks form. “With smart concrete, scientists are able to measure the precise amount that the concrete deforms as it is exposed to massive amounts of weight…With the ability to monitor the hidden stressors within to a very precise degree, smart concrete may be able to lead engineers to troubleshoot weak spots in their structures long before a crack is ever visible to the human eye.”[source: https://www.mma-midatlantic.com/2017/05/22/smart-concrete-expected-to-revolutionize-building-structures-in-the-future/] [iii] *See e.g.,* Fla. Stat. § 718.203. [iv] *See e.g.*, Fla. Stat. § 95.11(3)(c) which set forth a four-year statute of limitations for design defects (up to ten years for latent defects). [v] *See e.g., Baskerville-Donovan Engineers, Inc. v. Pensacola Executive House Condominium Ass'n, Inc.*, 581 So. 2d 1301, 1303 (Fla. 1991) (“Clearly, privity between the parties may create a duty of care providing the basis for recovery in negligence…However, lack of privity does not necessarily foreclose liability if a duty of care is otherwise established.”) (internal citations omitted). [vi] An aggrieved owner can pursue a design professional for building code violations. *See e.g.*, Fla. Stat. § 553.84 (“Notwithstanding any other remedies available, any person or party, in an individual capacity or on behalf of a class of persons or parties, damaged as a result of a violation of this part or the Florida Building Code, has a cause of action in any court of competent jurisdiction against the person or party who committed the violation…”). [vii] *See e.g.*, Fla. Stat. § 558.0035.

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