It’s All About the Contract

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Presented at the 2019 Annual Program
April 25-27, 2019
The Diplomat Beach Resort, Hollywood, Florida

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Abstract

This paper addresses the issue of catastrophic risk and the role of the transactional construction lawyer in helping participants in the construction process to properly manage the possible losses that may occur. It is ultimately “all about the contract,” as the title suggests, but the contract is just the “tip of the iceberg” – the visible 10% above the water that documents the final risk allocation, insurance program and financial and management responsibilities of the project stakeholders. While addressing final contract language, this paper focuses on the due diligence efforts that the construction lawyer should consider (particularly on major projects) to create the proper foundation for effective contract formation – an exploration of the 90% of the iceberg that sits below the surface and may be overlooked.
I. INTRODUCTION

Whether representing the owner, design professional, constructor or others in the building process, the transactional construction lawyer can assist the client in a number of important respects: helping to create an appropriate project delivery system; ensuring that design and construction contracts are properly structured and well-balanced; assisting to develop a seamless process emphasizing effective communication and prompt issue resolution; and identifying risk and assisting to implement appropriate methods for dealing with risk. This paper highlights the convergence of all such activities in the contracting stage and beyond, with particular focus on the issue of addressing catastrophic risk.

What shows up in the final contracts is the tip of the iceberg – the “10% that appears above the water.” In the event of a disaster, it will often be “all about the contract,” as that is where the roadmap for risk management and resolution should be documented, but the construction lawyer’s efforts prior to and after the contracting stage are equally, if not more, important. It is imperative to see the “90% beneath the surface” – the analysis that builds the contractual terms – and understand how such provisions are to be implemented in practice. This work, which is often managed by project counsel, includes front-end risk identification, organization of the risk mitigation model, coordination with the insurance broker and others to develop the proper insurance program, assuring that proper risk modeling takes place, and related work.

A. Background Overview

It is an unfortunate reality that the risk of loss – including catastrophic loss – is a possibility on every construction project. When serving in the role of project counsel or project management consultant for large community impact projects, it is important to continuously integrate elements of a comprehensive risk management and insurance program to address such
risks in preparation and negotiation of the project “deal” documents (such as the development, lease and operating agreements among the project developer and public or private stakeholders) and the definitive design and construction agreements. For sophisticated projects, in addition to preparation of the contract memorializing the deal itself, it is useful to create a project risk management matrix to identify risks and set forth the responsible parties and actions to be taken to mitigate such risks. The matrix can help the construction lawyer to recognize gaps to be filled in the risk management plan during the contracting stage, and to document the contractual provisions that are implemented during construction. Additional discussion of project risk management matrices is included at Section II. In preparing the matrix, a threshold task is to evaluate the appropriate risk profile for owners, contractors, design professionals and other stakeholders and identify how risks are allocated to each of the parties. Section III discusses the risk profile from the point of view of each project participant.

As a general proposition, risk should be allocated to the party that is in the best position to manage or control the risk, and/or to most efficiently employ insurance or an alternative risk transfer tool to absorb the risk. Accordingly, effective risk management planning involves the careful coordination of contracts and comprehensive insurance planning. Information regarding availability and cost effectiveness of insurance products will assist in driving the discussion of allocation of responsibility, availability of project contingencies, contractual limitations of liability and related matters. Section IV discusses methods for allocating and dealing with these various risks.

B. Extraordinary Risks

In addition to risks that are common on most construction projects, certain projects – particularly those of large scale with specialized characteristics – can present extraordinary and unusual risks. These “special risks” often have potential for catastrophic loss and may require a
tailored, “one-of-a-kind” risk management approach. Identification of these risks will require the involvement of engineers and other consultants with skills beyond those provided by the construction lawyer. Examples of such risks identified at the outset of major sports facility projects involving the authors include the following:

1. **Earthquake Risk**

   Levi’s Stadium (home of the San Francisco 49ers) was constructed in the vicinity of the Hayward Fault. The vulnerability of the building structure and non-structural elements (architectural finishes, mechanical, electrical, plumbing, equipment, contents, etc.), and potential loss, varied during phases of construction as both structural support and construction value increased. Meanwhile, the amount of insurance to cover such loss in worldwide markets was extremely limited. A discussion of the strategy for managing the catastrophic risk from earthquake in the construction of Levi’s Stadium follows at Section VI.A.

2. **Wind/Named Storm**

   Marlins Park (home of the Miami Marlins) involved the construction of a unique ballpark with a massive retractable roof over the course of three hurricane seasons. During construction, the partially completed roof could have the characteristics of a “wind sail,” creating major risk. A discussion of the strategy for managing the catastrophic risk from wind/named storms in the construction of Marlins Park follows at Section VI.B.

3. **Crane Collapse or Loss**

   Many large commercial projects, including stadiums and arenas, depend upon tower cranes or enormous crawler cranes. For example, construction of Mercedes-Benz Stadium (home of the Atlanta Falcons) and Globe Life Park (home of the Texas Rangers) depended upon a unique crawler crane to erect the roof structure. This crane weighs in at over 3,000 tons and
can lift 5 million pounds. Assembly of the crane involves over 150 truck-loads of parts and requires the use of two smaller cranes.4 If this enormous crane is damaged or destroyed, the entire project could be delayed for months. A discussion of the strategy for managing the catastrophic risk from crane collapse or loss in the course of stadium construction follows at Section VI.C.

4. External “Man-Made” Influences

Occasionally, the potential of catastrophic loss is created by the proximity of a project to a known condition. For example, many projects are built over or adjacent to subways, commercial railroads, major highways, or similar structures.5 Of great concern to both the project owner and the operators of adjacent facilities is the potential loss that could occur, both during and subsequent to construction, if, for example, a train derailed or a truck filled with flammable material exploded due to impact with the structure under construction. A discussion of the strategy for managing the potential catastrophic risk of such “man-made” influences follows at Section VI.D.

C. What Do You Do When Risks Are Extraordinary?

In addition to those examples of catastrophic risks identified above, similar examples could be listed for virtually every major construction project. Risk of loss to a completed structure due to a catastrophic event is a concern addressed by building codes, design and construction standards, and the work of architects and engineers in the design of structures. Buildings must be designed with flood, wind, seismic, and similar considerations in mind. In recent years, the threat of global warming and sea level rise has amplified these concerns.6 But the issue of potential catastrophic loss is not simply a matter for consideration for a completed structure. The issues may be more acute when the building is under construction and generally
in a more vulnerable condition due to the lack of final structural support and other systems.

What are the contractual, insurance, and other considerations for dealing with such risk?

To answer these questions, effectively manage risk, and arrive at a solution memorialized in the construction contract, the transactional construction lawyer should engage in a due diligence and strategic evaluation process that may include the following tasks: risk identification and assessment; modeling major risks; insurance market exploration; creation of risk allocation strategy; determination of available coverages and development of the insurance “master plan;” determination of required contingencies; creation of a Differential Document (or stakeholder responsibility matrix); and finalization of the risk management matrix. Through engaging in the foregoing processes and forming the necessary foundation, the appropriate contractual methods will take shape to be memorialized in the final contract, and thus, the apparent “tip of the iceberg” will emerge. What follows is a discussion of these processes and related contractual strategies.

II. THE PROJECT RISK MANAGEMENT MATRIX

The project risk management matrix is used to catalogue and quantify each project risk and develop a comprehensive strategy to either abate risk (i.e., minimize risk with corrective systems and processes), allocate risk (i.e., establish a fair sharing of risks and rewards among the owner, design professional, and contractor), or transfer risk (i.e., place risk with the entity most capable of absorbing the risk). The typical risk matrix lists the universe of project risks for which stakeholders have greatest concern on the “X” axis, and then provides a range of possible remedies on the “Y” axis, including (a) an indication of which parties have primary and secondary responsibility, (b) a listing of contractual, insurance, and process remedies, and (c) an identification of applicable project contingencies and other financial remedies. The risk matrix can be quite comprehensive and provides an excellent tool for (a) identifying and filling gaps in
the project delivery and risk management system, (b) demonstrating to lenders and rating agencies that project risks have been identified and fully addressed, and (c) identifying remedies during the course of the project.

Risks on the matrix can be categorized in a number of different ways, with particular emphasis on the cause of loss,8 identification of the party suffering loss,9 and the nature of the loss or damage sustained.10 Certain risks identified on the risk matrix are typical of every construction project and must always be addressed. For example, faulty design or defective workmanship can lead to personal injury, property damage, or economic loss, including cost of correction, costs associated with schedule impact, late completion, etc. As a result, those risks are managed through the use of multiple techniques, including the choice of the most suitable project delivery system, implementation of a comprehensive insurance program, incorporation of design and construction contingencies as appropriate, carefully constructed contracts that identify and clarify each party’s responsibility for such risk, and the use of appropriate process tools (such as implementation of an effective BIM protocol, comprehensive cost and constructability review, facilitated GMP process, etc.). Other risks, particularly those potential “disaster risks” that may result in catastrophic loss if realized, could be unique, and may require the application of special remedies.

III. SOURCES OF RISK AND RISK PROFILE

A. Source or Cause of Disaster Risk

So-called “disaster risk” may result from natural causes, human-created causes,11 or a combination of the two. While many of the catastrophic loss events listed below are presented with statistics showing overall loss from an event (i.e., instances where the vast majority of loss is with respect to completed construction), the point is that these are very real catastrophic risk
events that will be considered by insurers when underwriting a project, whether the event occurs pre- or post-completion.\(^{12}\)

1. Natural Risks

   (a) Passive

   While not the focus of this paper, passive natural risks, like climate change and incremental climate trends, are risks worth monitoring. Although climate change occurs incrementally over long periods of time, incremental climate trends exacerbate extreme climate shocks.\(^{13}\) As a result, what used to be a 500-year event is now a 70-year event, and 100-year events are relatively routine.\(^{14}\) Many large projects in coastal areas are now being designed with the potential of sea level rise and similar risks in mind, and the evaluation of such risk is now a consideration of lenders, rating agencies, and insurers.\(^{15}\)

   (b) Active

   Active natural risks include “climate and natural shocks,” such as earthquakes, droughts, floods, wildfires, and heat waves, as well as other natural disasters and extreme weather events. While “climate shocks” and other natural disasters are not “new” risks, the intensity and frequency of such events are forecasted to increase as climate change continues to impact the environment. A few recent examples of “climate shocks” and other natural disasters include:

- **Hurricane Katrina** (May 2005) – by 2006, the population of New Orleans had decreased by 51%,\(^{16}\) total sales tax revenue to decrease by almost 24%,\(^{17}\) and the city’s credit rating was downgraded.\(^{18}\) Hurricane Katrina resulted in $161 billion in damage, including $16 billion in flood insurance payouts.\(^{19}\)

- **Hurricane Sandy** (October 2012) – caused $71 billion in damage in and around New York City, including $18.75 billion in insured property losses, excluding flood insurance claims.\(^{20}\)

- **Hurricane Harvey** (August 2017) – caused $125 billion in damage in and around Houston and Southeast Texas,\(^{21}\) including $19 billion in insured property losses (comprised of $11 billion in flood insurance payouts, among other losses).\(^{22}\)
• **Lake Oroville Dam Spillway** (February 2017) – Spillway compromised due to series of storms with heavy precipitation; cost of repairs currently estimated at $1.1 billion.\(^{23}\)

• **Christchurch Earthquake** (February 2011) – Catastrophic earthquake in the Canterbury Region of New Zealand resulting in $40 billion in rebuild costs among other detrimental impacts to New Zealand’s economy.\(^{24}\)

2. **Human-Created Risks**

   Human-created risks involve, at a basic level, both intentional risks (e.g., terrorism events) and unintentional events (e.g., negligence). While these risks are almost certain to be outside the control of either the owner or the developer, their impact to both parties can be profound. As a result, it is important that the development agreement, any design and construction contracts, and any relevant insurance policies address the potential for such incidents and clearly lay out respective responsibilities in the event of such occurrences. It is important to note that acts of terrorism and war are often excluded from coverage in a standard builder’s risk policy, so separate consideration must be given to obtain terrorism coverage.

B. **Risk Profile of the Owner, Contractor and Design Professional**

   It is important for project stakeholders to understand their individual risk profiles, including their financial and managerial responsibilities, when risks do materialize. Unfortunately, roles and responsibilities are often misunderstood until after a disaster occurs, leading to disputes and failed expectations. The fundamental “risk profile” starting point for each party is as follows.

1. **Owner**

   Absent contractual risk transfer to another party or insurance coverage, the owner bears virtually all risk stemming from delays, cost overruns, casualties, and disasters. Owners are often ill-advised of this fact\(^{25}\) and fail to establish and maintain necessary owner contingency to
cover uninsured and/or un-transferred risk.\textsuperscript{26} The owner’s risk exposure and risk mitigation tools are discussed in more detail in Part IV below.

2. \textit{Contractor}

Aside from the risk of injury to its own employees (addressed through worker’s compensation and employer’s liability insurance), the contractor is primarily concerned about loss resulting from bodily injury or property damage sustained by third parties arising out of the contractor’s activities (which are the subject of the contractor’s commercial general liability/excess/umbrella policy) and economic loss/damages resulting from the contractor’s (or its subcontractor’s) failure to perform. In addition, the contractor is concerned about the costs it may experience in the event of delays, unforeseen conditions, or additional work not contemplated under the original contract. A contractor’s sensitivity to increased costs is especially relevant in planning for disasters and other catastrophic losses. While a time extension will normally be available for an event of force majeure (as it is an “excusable” delay), the contractor will seek some form of additional compensation to at least cover direct costs if the delay becomes protracted. \textit{See} discussion at Section IV.C.1. At the same time, the owner will want to balance this exposure by keeping the contractor responsible for costs within the contractor’s control and motivating the contractor to mitigate losses and additional costs.

3. \textit{Design Professional}

Common law does not require perfection from design professionals. Rather, the design professional must perform in accordance with the standard of care expected of a reasonably prudent architect or engineer providing services in the same locale, in the same time frame, given the same or similar facts and circumstances. Failure to meet the standard constitutes professional negligence. In addition to claims made against design professionals for pre-disaster negligent
acts (e.g., negligent design defects), design professionals are also subject to claims stemming from disaster response and post-disaster services.

A prime, yet tragic, example of claims against design professionals for design errors and omissions that resulted in disaster is the 2007 Minnesota bridge collapse. During rush hour traffic on August 1, 2007, the center span of the 1,907 ft. bridge failed, followed by a number of other sections of the bridge. The bridge failure dropped 111 vehicles and 18 construction workers approximately 80 feet to the river and riverbank below, killing 13 people. Lawsuits filed in connection with the collapse resulted in settlements with the contractors for $10 million, and with the engineering firm for $52.4 million.

(a) Disaster Response Claims

In the wake of a natural disaster or catastrophic event, design professionals are often enlisted in an advisory capacity to assist emergency response and clean-up efforts so as to limit further damage to remaining and surrounding structures or, as in the case of the 9/11 response, to advise on efforts to assist the rescue of those trapped in the rubble. However, by providing such services without the protection of applicable Good Samaritan laws, design professionals open themselves up to potential litigation stemming from their efforts. For instance, after 9/11, architects were engaged to provide guidance on how best to dig out without causing further damage and/or endangering those on site. Later, as part of a wave of multi-million dollar class action lawsuits, those same architects were forced to defend against various claims (including failure to save people buried in the rubble, and environmental damage caused by toxic dust).

(b) Post-Disaster Construction Claims

After a natural disaster or catastrophic event, design professionals are vital in creating plans and specifications for the rebuilding efforts. This may involve responding to difficult
building conditions where a disaster has already occurred, stricter scrutiny is in place, and new and untested building code provisions have been enacted in quick response. The resulting new designs and methods “often involve risky designs, and they test architectural limits.”

Couple these issues with the need for extensive, time-sensitive reconstruction, and these efforts can create a substantial risk for design professionals.

From the design professional’s point of view, the solution to all of these issues is professional liability coverage coupled with a limitation of liability. From the owner’s perspective, however, additional protection may be desirable above the limitation of liability, which leads to the implementation of alternate insurance solutions, as described at Section I.A.3(b)-(c).

IV. RISK MANAGEMENT TOOLS – TECHNICAL EVALUATION AND IMPLEMENTATION OF ENGINEERING AND CONSTRUCTION SOLUTIONS

From a technical point of view, it is essential that the necessary engineers and/or other consultants be assembled to conduct an initial assessment of all risk items. That assessment may involve environmental, geotechnical, archaeological, and other forms of analysis. As design commences, the architect and/or engineer, including all civil, structural, mechanical, electrical, plumbing, code, and specialty consultants, and the construction manager, contractor, or others providing constructability reviews, perform the normal work required to ensure that risks are properly addressed in the design of the project and determine the means and methods to be employed to safely construct the project.

In preparing front-end contracts, it is advisable to require the lead design professional(s) and constructor (whether general contractor, construction manager, or design-builder) to assist in the creation of a differentiation document (sometimes referred to in the industry as the “Diff-Doc”) that identifies every aspect of investigation, engineering, or design required and the party
responsible for the work. This helps to avoid gaps or overlaps and assure all necessary work to address all risk items is covered. The project team should also determine whether any special assessments are required, such as those discussed later in this paper.

Notwithstanding the best efforts of all design, engineering, construction, and other disciplines involved to create “risk-resistant” structures, some risks may materialize with significant loss-causing potential, so it is critical that risk is allocated among the parties and that risk management tools, as discussed below, are employed.

A. Insurance and Bonds

1. The Owner’s Risk Profile and Insurance Opportunities

From the owner’s perspective, there are several risks that are not typically transferred to the architect/engineer, contractor, or other participants in the construction process, such as (a) the owner’s failure to timely acquire property, raise capital as required, or otherwise satisfy development obligations necessary to commence the construction process; (b) damage or destruction to the structure prior to substantial completion by natural or other causes (not due to the fault of other project participants), and the resulting repair and replacement cost and schedule impact of such events; and (c) encountering hazardous materials or other unforeseen subsurface or similar conditions. It is normally extraordinarily expensive, if not impossible, to transfer or insure against the risk posed by the first group of items listed, although in rare cases, transfer of those risks from the owner to a “turnkey” design-builder may be possible. Risks that can result in catastrophic loss are more commonly associated with the other two categories, and risk transfer products are available to address those risks.

(a) Builder’s Risk Insurance

A significant concern to the owner is the risk of damage to the structure while under construction due to fire, flood, windstorm, vandalism, or a variety of other perils. This risk is
addressed through placement of a builder’s risk policy that covers direct physical loss (typically on a replacement cost basis) to the structure, as well as building materials, whether incorporated into the structure, stored on site, or in transit. The coverage is commonly provided under a “special form” or “all risk” policy, which is defined by its exceptions and exclusions – that is, the policy will protect against all causes of loss that are not specifically excluded. The policy typically provides coverage (and sublimits) for “hard costs” associated with the direct replacement of that which has been damaged or destroyed, as well as “soft costs,” such as architectural and engineering fees, testing and inspection services, legal expenses, additional insurance premiums, etc., that will also be incurred. While this policy may be purchased by the contractor, it is more frequently purchased by the owner so that the owner may control the cost, scope, and limits of the insurance coverages involved. In addition there are several endorsements that the owner will have a particular interest in procuring, including the following:

(i) **Delay in Completion, Expediting Expense and Contractor’s Extra Expense**

The “Delay in Completion” endorsement extends coverage for soft costs, additional expenses, and loss of rental income or gross earnings or other demonstrable loss that results from the failure of the project to achieve on-time completion due to a builder’s risk event. This coverage usually involves a substantial deductible or “waiting” period and may not respond to claims for acceleration or premium time required to meet the completion date. However, the policy normally includes a modest sublimit for so-called “Expediting Expense” that covers the cost of additional labor, premium time, and other extraordinary expenses required to restore or replace work that has been damaged. Typically, “Expediting Expense” does not cover the costs of other contractors who are impacted by the damaged work but not directly involved in its repair or replacement (such as those trades whose work is delayed because they are unable to work in
the vicinity of the damaged work), nor does it cover any expense once the work has been restored. A separate coverage, known as “Contractor’s Extra Expense (which may be provided separately or combined with Expediting Expense) can cover this additional risk category. Contractor’s Extra Expense will normally cover the costs (subject to a sublimit) incurred by impacted contractors, but this coverage may also terminate once the work is restored. Accordingly, it is important to negotiate the terms of the policy so that (1) coverage is provided for the “extra expense” of contractors who are forced to accelerate after replacement or repair is completed in order to recover the schedule impact of the builder’s risk event, and (2) the sublimits for Expediting Expense and Contractor’s Extra Expense are increased in proportion to project size and risk. On particularly time-sensitive projects, such as a ballpark that must be ready for Opening Day, these coverages are essential.

(ii) “Ensuing Loss” From Defective Design or Workmanship

The typical builder’s risk policy form will contain a policy exclusion similar to the following:

THIS POLICY DOES NOT INSURE LOSS OR DAMAGE CAUSED BY ANY OF THE FOLLOWING:

Errors, omissions, or defects in:
A. Designs and plans;
B. Specifications; and
C. Materials or workmanship.

Unless direct physical loss or damage by an insured peril ensues, and then this policy will cover for such ensuing loss or damage only.

While written as an exclusion, the “ensuing loss” clause provides a significant opportunity for recovery. For example, on a major project, a massive building roof system was subjected to significant water infiltration during a “horizontal wind-driven rain” event during construction. As a result, the insulation below the roof was soaked and had to be replaced, and other structures below the roof were damaged, causing significant loss to the project in terms of
replacement cost and delay. A determination was made that the loss would not have occurred but for a significant roof design error compounded by defective workmanship. While the policy did not pay “the cost of making good the design error,” – *i.e.*, replacing the defectively designed and installed roof, it did pay for all of the ensuing loss, such as replacement of the insulation and other damaged work.

Situations sometimes occur where professional liability insurance is unavailable due to exhaustion of aggregate limits, and the “ensuing loss” coverage under the builder’s risk policy is the only vehicle for recovery of a portion of a substantial loss that resulted from a design error.

The builder’s risk policy is normally primary with respect to damage to the project during the course of construction, an intent that is supported contractually by the waiver of subrogation included in most construction contracts (including the AIA forms) and the “waiver of subrogation endorsement” contained in the builder’s risk policy. As a result, coverage is effectively provided on a no-fault basis.

(b) Environmental Insurance

Another category of risk that is normally a concern for the owner is the discovery of hazardous materials or other so-called “pollution conditions” that may be encountered underground, in existing structures or otherwise on the site, and that are either unknown at the commencement of the project or that occur in greater quantities or different type than anticipated based upon the initial investigation and site remediation plan. This risk can be devastating to the owner because of the substantial remediation expense and delay to the project schedule that may be involved. Various risk transfer products have historically been available to limit exposure, such as Clean-Up Cost Cap Insurance\(^{33}\) or a Pollution and Remediation Legal Liability Policy (PLL),\(^{34}\) but the market for these products, and extent of coverage provided, is ever-changing, so it is critical to carefully review options and specific policy terms with a broker or lawyer.
knowledgeable about environmental coverage. Any uncovered risk, or deductible exposure, should be the responsibility of the owner, as it is atypical, and frankly unwise, for a contractor to accept such risk.

2. The Contractor’s Risk Profile and Insurance and Bonding Opportunities

The contractor is responsible for those risks that it can control or for which it maintains liability in the event of the contractor’s (or its subcontractor’s) negligence. Under the design-bid-build format, the contractor has primary responsibility for “construction means and methods” but takes no responsibility for errors or omissions in plans and specifications prepared by the design professional. Its principal risk transfer tool is insurance – Worker’s Compensation for personal injury and death of its workers and Commercial General Liability (CGL)/excess liability for personal injury to third parties and property damage.35 A significant component of the coverage is completed operations for issues that occur subsequent to substantial completion. Contractors may also be required to maintain Contractor’s Pollution Liability insurance, among other specialty policies.36 While the foregoing policies are typically procured by individual contractors performing services on a project, on larger projects where the economics favor such a method, they may be “wrapped up” in either a Contractor Controlled Insurance Program (CCIP) provided by the lead contractor or an Owner Controlled insurance Program (OCIP) provided by the owner.37

(a) Commercial General Liability

The CGL policy is the contractor’s primary tool for addressing bodily injury and property loss exposure. It operates on an “occurrence basis,” meaning that it will respond to a claim made long after the policy period has expired if the injury or damage occurred while the policy was in effect. Since bodily injury or property damage can occur after substantial completion or
conclusion of the normal policy period, most contracts require the contractor to obtain “completed operations coverage” under the CGL policy for an additional period (on major projects, typically up to the state’s statute of repose). The owner is an additional insured under this policy and, to gain the benefits of its protection, may seek to impose a wrap-up with high excess limits – often greater than $100 million – to provide coverage in the event of a catastrophic loss, even if that loss is caused by the contractor.

(b) Contractor’s Pollution Liability

Any contractor performing operations or conducting work may obtain Contractor’s Pollution Liability, which provides coverage for third-party bodily injury, property damage, and related defense costs on a claims-made or occurrence basis that arise from a contractor-caused pollution condition. This coverage is sometimes combined with the PLL described above and included as part of an environmental “wrap-up” program.

(c) Performance Bonds

Suretyship is premised upon a three-party contractual relationship – the contractor (as “principal”) purchases the performance bond from the surety (as “obligor”) for the benefit of the owner (as “obligee”). In the construction setting, the performance bond issued by the surety provides critical protection for the owner in the event of a contractor’s default. One important distinction between surety bonds and insurance products is that surety bonds cover the default of the principal, regardless of cause. But unlike with insurance products, the surety does not expect losses. If losses do occur, and the surety is required to pay or perform, reimbursement is expected from the contractor. Accordingly, the surety will typically require the contractor to indemnify the surety for costs incurred in remedying the default.
(d) Subcontractor Default Insurance

As an alternative to the performance bond at the subcontractor level, subcontractor default insurance (SDI) may be purchased by a contractor to protect the contractor from certain defaults of its subcontractors. With SDI, the contractor has a direct insurance contract with the SDI provider, in contrast to the protection the contractor may have from a performance bond purchased by its subcontractor in a suretyship relationship, as described above. When it comes to catastrophic loss, SDI has certain advantages over bonding, in that it provides an overall coverage limit that can be used for any subcontractor default, as opposed to bonds that have a “penal limit” in the lesser amount of the defaulting subcontractor’s contract value. In addition, SDI will respond to a broader range of damages and may provide immediate funding of losses while issues are being resolved.\(^4\)

3. The Design Professional’s Risk Profile and Insurance Opportunities

Design professionals are responsible for those risks that result from professional liability, including errors or omissions in the plans and specifications they prepare. Professional liability insurance provides coverage that is limited to the extent of the insured’s negligence, so design professionals will seek to limit contractual performance standards to their professional standard of care. Additionally, prudent design professionals will typically not agree to the same degree of schedule risk allocation as seen with contractors (e.g., liquidated damages). Professional liability insurance options include the following:

(a) Professional Liability Practice Policy

The principal risk transfer tool of the design professional is coverage available from its firm’s professional liability practice policy.\(^4\) Unlike the CGL policy, the standard professional liability policy does not limit coverage to a specific type of injury, such as “bodily injury” or “property damage,” but covers all amounts that the insured is legally liable to pay as damages
because of its professional negligence, including purely economic losses, such as the owner’s increased construction cost, diminution in value, and project delay costs. A critical limitation of the professional liability policy, however, is that the policy only responds to the extent that the design professional is negligent according to the common law standard of care, regardless of whether that standard has been elevated by contract.

Another critical limitation of the professional liability policy is that such coverage may be limited either because practice policy limits are insufficient or coverage is exhausted, in whole or in part, due to a claim on a different project during the same policy year. Also, design professionals typically seek a limitation of liability that is no greater than policy limits. For this reason, on major construction projects where risk of loss may well exceed the coverage afforded under the design professional’s professional liability policy, it is incumbent upon the owner to develop a more comprehensive solution, which usually involves implementation of a project policy or OPPI (each discussed below).

(b) Project Professional Liability Policy

The project professional policy is a single policy that covers all design professionals listed as insureds for their negligent errors and omissions with respect to a particular project. All claims made for professional negligence during the project and for a period of several years thereafter are covered by the policy, and the policy is not subject to cancellation (except under extremely unusual circumstances). The project policy replaces the professional liability policy of each design professional providing services to the project and can be procured by the lead design professional or owner; however, the policy cost is ultimately paid by the owner in most instances.

Advantages of the project policy may be found in the higher limits of insurance dedicated to the specific project, typically higher than the individual insureds can generally provide on
their own. Additionally, there are efficiency gains in the event a claim involves multiple design professionals on the project. This is due to the single deductible, and because the policy pays regardless of which insured is at fault, and without any right of recovery against the insured.

However, there are limitations that may make the project policy a less than optimal option. The premium associated with the policy may be far higher than other alternatives, and the available limits may be lower than desired. To bring down the cost, the policy deductible or self-insured retention may be far greater than that contained in the design professional’s practice policy, which creates a coverage gap and/or financial hardship for the insured. Additionally, when project risk is transferred from the practice policy to the project policy, design professionals typically receive minimal credits from underwriters of their own practice policy already paid for and in place. As a result, contrary to the beliefs of some owners, the project policy approach might not give rise to significant savings in terms of what a design professional ultimately charges an owner for its services and insurance allocation.

(c) **Owner's Protective Professional Indemnity**

Another professional liability risk transfer tool is the owner’s protective professional indemnity policy (OPPI). Here, the owner is the named insured, as opposed to the design professional, and the OPPI exists as a supplement to the design professional's practice policy, and not as a replacement of it. The OPPI then sits as excess over the primary design professional’s practice policy, provided that design professional maintains a contractually-required “minimum insurance requirement,” or MIR. If the design professional’s practice policy limits are reduced or exhausted by a claim on a different project, the OPPI will also “drop down” to fill the gap. Given the excess nature of the OPPI approach, higher coverage limits are afforded at a lower cost, as compared to other insurance methods.
This OPPI approach is particularly advantageous on larger projects requiring high coverage limits. The trade-off is that on a claim large enough to require payment from the OPPI, multiple policies will be involved, and the OPPI approach does not have the ease of administration of a project policy.

B. Project Contingencies

Not all risks are fully insurable or properly transferrable. The project risk management matrix will help to identify and quantify the risk associated with these gaps, and it is critical that the party maintaining risk exposure have access to an appropriate project contingency to mitigate exposure.

Typically, the owner’s contingency will address such risks as owner-caused delays, changed and unforeseen conditions, owner-driven change orders, and the so-called Spearin gap exposure discussed below. The contractor’s contingency must cover all risks assumed by the contractor, such as cost overruns resulting from subcontractor buyout, rework due to improper construction, overtime required to address delays due to subcontractor performance and coordination problems, and similar issues.

Where lump sum or fixed-price contracts are involved, the contractor’s contingency is not revealed, but is built into the “schedule of values” and paid as part of the contract sum based on percentage of completion on a monthly basis. Accordingly, there is no restriction on contingency use.

On open-book, guaranteed maximum price projects, contractor’s contingency is subject to restrictions – it must be used for a documented “Cost of the Work” and an approved purpose. The owner has an interest in the contractor’s contingency, as any unused portion may be returned to the owner (subject, in some cases, to shared savings or other incentive provisions), or utilized
by the owner in some other fashion – such as to procure add-altelates pursuant to a pre-
established contingency reduction plan.

Regardless of the approach, establishing and maintaining adequate owner and contractor
contingencies is essential to effective risk management planning.

1. An Example of an Issue Requiring Contingency Protection – The

   Spearin Gap

   A prime example of the importance of maintaining adequate contingency is the need to
address Spearin gap risk. As initially promulgated in United States v. Spearin, 248 U.S. 132
(1918), the Spearin doctrine provides that the owner impliedly warrants to the contractor the
accuracy, completeness, and suitability of plans and specifications. This doctrine has been
adopted in nearly every state. Although the owner provides this implied warranty to the
contractor, the design professional responsible for preparation of the plans and specifications
does not provide the same implied warranty to the owner – the design professional only agrees
to meet the standard of care (i.e., not be negligent). This creates a significant exposure for the
owner that, in some instances, may only be addressed by owner’s contingency. Of course, one
technique to avoid this result is to adopt a design-build project delivery approach, which shifts
the Spearin gap problem from the owner to the design-builder. In the latter case, the design-
builder must establish an appropriate contingency to cover the same risk.48

C. Contractual Allocation of Risk

   1. The Issue of Delay

   While a catastrophic event can result in loss of life, personal injury, or property damage,
traditional methods of risk allocation through contractual indemnification and insurance are well
known and established in AIA, ConsensusDocs, and other industry forms. If a building is
destroyed by a natural disaster or builder’s risk event, the builder’s risk policy provides for
replacement and should honor a contractual waiver of subrogation. If personal injury or property
damage is caused by the contractor’s activity, the contractor has indemnification responsibilities
to the owner and other parties, and that indemnification is backed up by the CGL policy. The
wildcard issue that is not always as well defined is identification of the party that bears the risk
of delay, and the extent of responsibility for the massive losses, including consequential
damages, that may occur when a catastrophic event causes months of delay and precludes a
project from opening on time.

For purposes of allocating contractual responsibility for delay, it is useful to review the
normal categorization (from the perspective of whether the contractor is entitled to time, money,
or both):

**Compensable delays** are those delays that are within the control or
responsibility of the owner. Examples of compensable delay triggers include
owner-initiated changes, design errors or omissions (except in a design-build
format), and changed conditions or differing subsurface conditions. The owner is
typically in the best position to manage and mitigate these types of risks, and the
contractor is normally entitled to both an extension of time and financial
compensation for compensable delays. As discussed below at Section IV.C.2,
however, owners utilize various devices to limit the extent or availability of such
compensation.

**Excusable delays** are those delays that are not within the control or
responsibility of either the owner or the contractor. Examples of excusable delay
triggers include unusual weather, industry-wide strikes, and events of force
majeure. Since neither party is in a position to control these risks, the parties
share in the costs associated with resulting delay. The traditional view is that the contractor is entitled to an extension of time but not compensation. However, sometimes the timely completion of the project is more important to the owner or an extension of time is not possible. If the owner is unable or unwilling to grant an extension of time for an excusable delay, then the contractor is forced to accelerate, and the cost of acceleration becomes compensable. As discussed below, owners often attempt to limit the availability or extent of time extensions, despite the fact that the delay is excusable; and contractors often attempt to receive some form of compensation, especially in those cases where the period of delay is protracted.

**Non-excusable delays** are those delays that are within the control or responsibility of the contractor. Examples include delays resulting from defective work or improper sequencing or management of subcontractors. Since the contractor is in the best position to avoid or mitigate these types of risks (and is normally legally responsible to do so through express contractual provisions), the contractor is entitled to neither a time extension nor money on these occasions. To the contrary, the contractor may have responsibility to compensate the owner for the damages that ensue, including consequential or liquidated damages. For this category, on sophisticated projects, the contractual allocation efforts are normally directed at creating a reasonable and enforceable liquidated damage structure.

These general categories help frame negotiations of remedies for delay, but the parties may substantially adjust contractual allocations. Common modifications are discussed below,
along with an exploration of how certain delay events are ultimately classified and contractually allocated.\textsuperscript{49}

2. \textbf{Force Majeure and Resulting Delay}

Delays resulting from events of force majeure are normally \textit{excusable but not compensable}, as they are beyond the control or responsibility of the parties to the contract. Thus, the general approach under an owner/contractor agreement provides that (i) the owner bears the additional schedule burden (\textit{i.e.}, the contractor receives an extension of time for performance), and (ii) the contractor bears the additional cost of work burden (\textit{i.e.}, the owner experiences no increase in the amount it owes the contractor).\textsuperscript{50}

Owners may attempt to limit the contractor’s access to a time extension in a variety of respects. For example, most contracts create strict notice requirements as a prerequisite for obtaining a time extension. The contractor is also typically required to demonstrate that the delay affects the critical path of the work, and the period of extension is only granted to the extent of critical path delay, taking into account concurrent delays that would have otherwise resulted due to the contractor’s unexcused activities. The owner may also impose an affirmative obligation upon the contractor to mitigate schedule loss and provide that any time extension is reduced to the extent the length of the delay would have been decreased if the contractor had diligently and properly pursued efforts to mitigate the delay. Contractors might seek to push back by obtaining at least some ability to be compensated for delay in an equitable fashion.\textsuperscript{51}

3. \textbf{Unforeseen or Changed Conditions and Resulting Delay}

Delay resulting from unforeseen or changed conditions is a classic example of a \textit{compensable delay} because the owner is generally in the best position to protect against these risks, as the owner can order studies and investigations to determine site conditions, manage a contingency within its development budget, etc. Generally, if there is a delay resulting from an
unforeseen condition (for example, subsurface conditions varying from those indicated in soil boring reports), the contractor will receive both time and money.\textsuperscript{52}

Once again, virtually all contracts create limitations and restrictions on the contractor’s ability to recover both time and money. In addition to standard provisions, requiring prompt notice and documentation of the unforeseen condition, demonstration of critical path delay, and evidence of mitigation efforts, owners may take the additional step of imposing a “no damage for delay clause,” despite the fact that the underlying event may otherwise be compensable. The degree to which such a clause will be enforceable varies on a state-by-state basis. Thus, crafting an effective “no damage for delay” clause will require an understanding of (and adherence to) the applicable statutory and/or common law rules concerning these clauses depending on the jurisdiction.\textsuperscript{53} For example, many states preclude the use of “no damage for delay” clauses to the extent that delay is caused by the owner.\textsuperscript{54}

From the contractor’s perspective, efforts should be made to keep compensable delays from having unreasonable restrictions or limitations. This means carefully reviewing, and striking or limiting the scope of “no damage for delay” clauses, particularly when they relate to items within the control or responsibility of the owner.

\textbf{4. Suspension or Termination Rights as a Delay Management Tool}

A delay management tool that extends beyond the compensability of a delay is both the contractor’s and the owner’s rights to suspend or terminate the work, depending on certain circumstances. This is an end-game option and does not come without risk.

From the contractor’s perspective, the standard AIA A201-2017 General Conditions provides the contractor with the ability to terminate the contract if delays occur for a certain period of time.\textsuperscript{55} This option allows the contractor to prevent a situation where non-compensable delays extend to the point where there is no way the contractor could resume and complete the
work without taking an overall loss. The owner may seek to remove this termination right altogether from the contract, or may seek to limit the extent to which the contractor receives payment (e.g., by deleting language that would otherwise provide the contractor the right to overhead and profit on work not yet performed as of the date of termination).

From the owner’s perspective, the standard right to termination for convenience can be a valuable exit-tool, where a compensable delay would result in an increase in the contractor’s time and compensation for performance to such a degree that the project viability is in serious danger. The standard AIA A201-2017 General Conditions provides the owner with such a termination right but allows for the possibility of a termination fee to be due to the contractor in addition to amounts owed. At minimum, the owner will want to revise language regarding compensation for termination for convenience to exclude any termination fee, if possible.

5. Design Professional Delay

The AIA B101-2017 Standard form of Agreement Between Owner and Architect transfers delay risk to the owner, except where the architect simply fails to timely perform. For example, under Article 4 of the AIA B101-2017, services performed by the architect after a certain date will be deemed additional services (i.e., the owner will be responsible for more payment out-of-pocket). From the architect’s standpoint, this is a fair approach, as project delays requiring the architect to continue to provide services may prevent the architect from moving on to its next project and cause the architect to lose out on other profits.

But, from the owner’s standpoint, the owner needs to make sure that clear timelines are established through coordination of timing provisions to make sure it does not end up paying twice for services that were not performed during a delay that then constitute an additional service upon resuming the project. One way that the owner may seek to do this is by adding a
force majeure clause that automatically extends the time for performance for force majeure events of a certain duration.

The architect will want to ensure that any inserted force majeure clause does not extend the cutoff point when any services are considered additional services. If this is not possible, the architect will want to keep this extension limited to a finite period of time, for example, not to exceed thirty (30) days. By adding a finite time frame, the architect adds certainty of additional payments in a situation where the architect could otherwise be subject to delays for an unknown period of time. Lastly, as noted above, the ideal scenario for a design professional is to keep any time-related obligations tied to its professional standard of care, so as to keep its failure to timely perform tied to a negligence standard (covered by professional liability insurance) instead of simply being a breach of contract (not covered by professional liability insurance). The architect will want to make sure no modifications relating to timeliness would create a time for performance obligation that is not tied to architect’s standard of care and subject to delays beyond the architect’s reasonable control.

6. **Limitation of Liability**

While general limitation of liability provisions are uncommon with respect to owner/contractor agreements, specific forms of damages are often subject to limitation or waiver provisions, such as a mutual waiver of consequential damages, or a limitation or cap on the cumulative total of liquidated damages that may be assessed. *(See discussion at Section IV.C.7. below).*

As discussed above, design professionals will typically seek to cap their risk exposure through a limitation of liability provision. There are many variations as to how this may be done *(e.g., limitation to available insurance proceeds; limitation to professional fee or available proceeds, whichever is greater; limitation to a fixed amount; etc.)*. The key issue for design
professionals, as opposed to other project participants, is that most design professionals, as professional service providers, have business models resulting in limited liquidity. While the owner (or design-builder) may have no practical choice but to accept such a limitation of liability, it must then seek alternate coverage opportunities above the limitation of liability. See discussion of project professional policies and OPPIs at Section IV.A.3(c).

7. Liquidated Damages

On major projects, owners will not agree to a full waiver of consequential damages because contractors must remain accountable for contractor-caused delay. On the other hand, contractors are understandably reluctant to place their companies at risk if exposed to the full brunt of potential consequential damages.

For instance, in the case of Perini Corp v. Greate Bay Hotel & Casino, Inc.,\(^57\) the contractor, Perini, entered into a contract to renovate the Sands Hotel & Casino in Atlantic City. The guaranteed maximum price of the contract was originally $16,800,000 (subsequently adjusted to $24,000,000), which included Perini’s fee for services in the amount of $600,000 plus actual expenses. Ultimately, the project was delivered several months late and the owner sued Perini for, among other things, lost profits and consequential damages. In the end, the owner was awarded over $14,500,000 in lost profits as consequential damages (almost 25 times the contractor’s fee).

The solution is for the parties to agree to reasonable liquidated damages in lieu of the contractor’s exposure to consequential damages. A liquidated damages clause reduces the owner’s anticipated delay damages (both direct and consequential) to a fixed amount. If the project is late due to a non-excusable delay, the contractor pays liquidated damages to the owner instead of actual damages.
When used properly, liquidated damages can be an effective tool to balance the risks of the parties. A well-crafted liquidated damages provision must meet a series of legal tests that may vary from state to state.\textsuperscript{58} It is also important that the damages not be set either too high or too low. If the damages are set too low, they may create a disincentive to the contractor to expend dollars for premium time, additional crews, and the like in order to complete the project, because the per diem damage assessment may be less expensive than the cost to accelerate. On the other hand, if the liquidated damages are too high, and flow through to subcontractor agreements, they may substantially impact the bidding market and either increase project cost or drive away potential bidders.

On large community impact projects, contractors and design-builders typically accept liquidated damages but cap the cumulative total.\textsuperscript{59}

8. \textbf{Insurance Provisions}

Once the insurance program has been designed, it must be memorialized via contract. The AIA Documents Committee\textsuperscript{60} recognized that, at times, the contract stage did not involve adequate insurance planning and, thus, the 2017 AIA Document updates include an insurance exhibit meant to serve as a checklist to help project participants, practitioners, and insurance brokers think through insurance products that may be of benefit to a given project.\textsuperscript{61} This checklist-style exhibit can be used in tandem with the project risk management matrix to select policies that may be valuable in providing coverage against risk items that are identified on the matrix. Moreover, by completing this exercise, the exhibit can serve as a template for drafting insurance requirements in the final contract.\textsuperscript{62}

D. \textbf{Process Tools}

Process tools include different levels of assessments, mechanisms for the dissemination of critical information between different portions of the project team, and planning documents
that allow the quantification (and hopefully mitigation) of the different natural and other catastrophic risks on a project. These process tools include communications devices, such as the risk matrix and differentiation document discussed above, but extend to other categories, including the following:

1. **Initial and Detailed Engineering Risk Assessments**

   The risk mitigation process should include both an initial and detailed risk assessment. The initial risk assessment should be performed very early in the project and should address the natural and man-made hazards impacting the site. High-level engineering estimates of the hazards and related items should be included, if possible, to provide a basis for the initial quantification of the risk. For instance, for a project in an area of high seismicity, the initial risk assessment should include information on the level of expected ground motion at the site, initial geotechnical considerations, and potential impacts (at a high level) to the design and construction of the facility. Where a significant seismic risk is present, it is imperative that the initial assessment include a preliminary geotechnical report. The geotechnical report will provide a better understanding as to the possible local amplification of the earthquake ground motions, as well as any potential issues, such as liquefaction or lateral spreading, that could impact the entire project site.

   The detailed risk assessment should include information from the early stages of the project design; however, design should be at least at the “Design Development” level in order to provide useful information. The detailed risk assessment should utilize information from the design to increase the level of confidence in the loss estimation, as well as to identify specific areas of the project that are most vulnerable to potential hazards. For projects with a significant seismic or hurricane risk, sophisticated Catastrophe (“Cat”) models are used to help quantify the potential losses. These models typically utilize “damage functions” (also referred to as damage
curves) in the estimation of the losses. For high value, unique structures, such as ballparks and stadiums, it is critical that the detailed loss assessment utilizes loss models with project-specific damage functions (as opposed to the standard damage functions included in the model library) to provide a realistic estimate of the potential losses.

2. **Design Modifications Based on Risk Assessment Feedback**

The initial and detailed loss assessments should also be made available to the design team as soon as they are completed. Information in assessments related to the natural and man-made hazards at the site can help inform the project team’s design decisions. For instance, if the initial assessment shows a site with high seismicity and poor soil conditions, the design team’s engineers may focus on a structural system with increased strength and ductility, as opposed to simply seeking the low-cost option. In a hurricane prone region, an initial assessment that highlights not only the probability of hurricane force winds, but also related issues, such as the potential for wind-borne debris, may help inform the project architect as it selects façades, glazing, and other vulnerable elements.

The detailed assessment, which should incorporate initial design information, provides another opportunity to provide feedback to the design team in an effort to reduce the overall project risk. If the assessment finds that the building structure, non-structural elements, or site features are particularly susceptible to the identified risk, the design team may have the flexibility of changing or modifying the elements to reduce the risk.

It is critical that there be open and frequent communication between the team performing the risk assessment and the project design team. Where the risk assessment is contracted and managed outside the management of the primary design/construction project, a concerted effort should be made to encourage communication between the project teams.
3. Crisis Management Plan

Much has been written about the steps that should be taken once a catastrophic loss occurs and the development of on-site crisis management plans to address logistics and communication. Such plans are typically implemented by large owners with frequent involvement in major construction and/or large contractors who play the lead role as general contractor, construction manager, or design-builder. Others who may participate in creation of the plan include lawyers, insurers, insurance consultants or brokers, crisis communication consultants, and those responsible for supplying on-site or emergency medical care. The elements of a crisis management plan may include: (a) identification of the response team and chain of command; (b) confirmation of notifications required by law (e.g., as required by OSHA); (c) steps required to secure the site; (d) plan for notification of local medical, fire, police, and other first responders; (e) preservation of evidence; and (f) communications protocol for project stakeholders, insurers, affected individuals, as well as external communication (media and social media). While the development and implementation of an effective crisis management plan is important on every major project, it is particularly essential for large community impact projects with atypical risk profiles.

V. APPLICATION OF TOOLS TO RISK CATEGORIES

When selecting the appropriate tools (which can range from soil borings to be performed at the site, to “simple” calculations, to high fidelity Cat models) to address the risk(s) in question, it is critical to understand the level of expertise and limitations associated with the different tools.

If a Cat model is going to be utilized to assist in the modeling and determination of the natural hazard risk, it is important to ascertain both the validity of the model for the risk in question and the expertise of the risk modeler. With regard to the actual Cat model, there are certification processes that many of the larger Cat modeling firms go through for both extreme
wind and seismic risk. Will the modeler of the building and/or other critical elements be an architect or engineer that understands nuances of the design? If not, the model itself may simply be utilizing the “average” default values to define the potential damage of the building structure and other critical features.

With physical testing, such as geotechnical investigations, not all test methods are equal. While early in the project it may be acceptable to utilize a non or minimally destructive investigation, it can be vital to confirm the initial results with more detailed investigation later in the project, even if that entails additional time and cost.

A. Geotechnical Risk

Geotechnical issues and hazards can be a substantial risk on any major project. Both the initial and detailed risk assessments discussed above should include geotechnical investigations. The portion of the geotechnical investigation that informs decisions related to natural hazards will often be performed in conjunction with the overall project geotechnical investigation. For example, in a high seismic region, the geotechnical investigation will provide information related to the site seismicity and the possible ground motion amplification due to the site soils. This information is typically derived from the site borings and associated testing.

Non-destructive testing methods can be utilized as part of the initial risk investigation if site-specific seismic information is needed prior to the project borings being performed. A common, non-destructive, low-impact method for determining the site soils’ shear wave velocity (used to classify the soil profile for seismic considerations) is surface shear wave testing. Using this test to get an initial understanding of the site soils and their potential impact on the seismic hazard can be a cost-effective method of gaining additional insight into the seismic risk early in the project. However, as noted above, it may be prudent to follow up with supplemental tests
during the full site investigation to confirm the information developed as part of the initial risk investigation.

B. Environmental Risk

When environmental risks are discovered during the initial project site investigation (e.g., via a Phase I Environmental Site Assessment), additional tests can be performed (e.g., a Phase II Environmental Site Assessment) to provide for further identification and investigation of environmental exposures. Early identification of environmental risks will allow for preventative measures to be instituted as part of the overall project risk management plan, such as working with governmental authorities to determine an appropriate clean-up plan and set a cutoff point for further liability. It will also provide the best opportunity for possible application of environmental insurance coverage. Taking these steps will reduce the possibility of subsequent claims due to undiscovered environmental exposures.

An example of this process in practice can be seen with the approach used with Marlins Park construction (this project is also discussed with respect to wind risk in Section VI.B below). Here, the project site was extremely well studied prior to the start of construction, and “hotspots” with high levels of arsenic in the soil were identified and fully remediated. This enabled the Marlins, as developer, to obtain a “no further action letter” and proceed with site work. The Marlins also obtained a “PLL” environmental policy to provide coverage for any undisclosed and unknown pollution conditions. Unfortunately, after construction commenced, a previously undetected plume of arsenic was discovered that contaminated the groundwater and caused a major redesign of the project dewatering system, which, in turn, impacted construction cost and schedule. Fortunately, the initial investigation and remediation activities greatly diminished the possible impact of arsenic contamination, and the costs incurred as a result of the undiscovered plume were addressed by the PLL.
C. **Structural/Architectural Risks**

Structural and architectural risks due to natural or man-made hazards at a site may or may not be addressed by the particular building code (typically a version of the *International Building Code* in the United States) utilized for the project. While some hazards, like earthquakes, are addressed in the building code, many hazards are not considered. In addition, even when the building code requires the design to include a natural hazard, such as earthquake, it is typically only at the Life Safety level. Life Safety is intended to minimize the loss of life in the event of a design level hazard; for example, a structure experiencing the design level earthquake will remain intact in order to allow the occupants to safely evacuate the building. This is a critical differentiation that is often lost on many of those involved at all levels of the project. The basic building code design does not consider the economic consequences of earthquake (or other hazard) damage to the facility and the potential loss of revenue due to the loss of use of the facility. A robust risk assessment should capture not only the potential damage to the building structure and the non-structural elements, but it should also consider the loss of use (business interruption) of the facility due to the specific hazard.

D. **Builder’s Risk Events**

When considering the type and magnitude of risk event to be considered, it is extremely important to understand how the probability, magnitude and impact of the potential event is quantified for different interested parties.

Natural hazard events are typically quantified using deterministic or probabilistic events. The fundamental difference between deterministic (often referred to as scenario or historic event analysis) and probabilistic analyses is that deterministic analyses do not consider the probability associated with the hazard, whereas probabilistic analyses incorporate the hazard probability. The impact of this difference is discussed in detail in Section VI.A below.
As the climate and weather patterns change, questions often arise as to the accuracy of existing reference documents and tools. For instance, is a site located just outside the 100-year flood plain, as defined by the FEMA flood maps, really “outside” the zone of the 100-year flood risk? Are storm surge maps, which are developed by NOAA to provide the areas of potential water inundation during a large hurricane, an accurate representation of the storm surge risk at the project site given sea level rise?

Do the different risk analyses have “built-in” biases or other issues that need to be considered? If a seismic or extreme wind risk analysis is performed, and the damage functions are based on structures from a specific region of the United States, do those damage functions truly represent the project under consideration?

All of the above questions need to be considered and discussed as the different risk events, and corresponding risk analyses, are defined for the project.

1. Wind/Storm

Named storm coverage can require particularly large deductibles – as much as 10% of the value of the risk. During development of the risk management matrix, and pending results of implementation of certain process tools, the parties will need to determine how deductibles are treated and how this will relate to overall implementation of insurance requirements to be memorialized via contract. Additional discussion of these risks and a specific example of process tool implementation is set forth in Section VI.B below.

2. Earthquake

Depending on the location of a project, the risk of earthquake may be astronomical from the perspective of insurance underwriters. In fact, the risk may be so large that coupling of multiple insurance policies may not be enough to provide for the coverage needed to protect an owner from the loss that may ensue from an earthquake. The result of such a risk determination
by underwriters is that limits of coverage liability may be inadequate to cover the full cost of rectifying a loss caused by an earthquake. Additionally, deductibles may be so high that ultimately the owner is left paying a hefty amount out of pocket before it can actually begin to recover insurance funds in the event of a covered loss caused by earthquake. A real-life example of these limitations and the project team approach toward finding an acceptable risk management program is provided in Section VI.A below.

3. **Flood**

Flood insurance is required by federal law where a construction loan is secured by a building in the course of construction; however, such insurance is not required where the construction loan is secured only by land.\(^{63}\) For flood insurance obtained for a building in the course of construction, materials and supplies used in construction are not insurable, except where such materials or supplies are in an enclosed building on or adjacent to the premises.\(^ {64}\) This presents a gap in coverage unless such materials or supplies are covered by the builder’s risk policy. Construction lenders are required by federal law to ensure that flood insurance is in place prior to construction, except in the event of certain deferral scenarios.\(^ {65}\) Primary flood insurance is provided under the National Flood Insurance Program with maximum limits (depending on lender compliance requirements) of $500,000 for the building and $500,000 for personal property.\(^ {66}\) Excess coverage is available, but often in limited amounts.

VI. **CASE HISTORIES**

The strategies outlined above have been implemented in numerous ways during project planning and contract preparation for several major projects. Each of the projects discussed below had unique risk characteristics that were identified, allocated, and managed through use of the project risk management matrix and other process tools.
A. Construction in Earthquake Zones

The predominant risk for the San Francisco 49ers’ Levi’s Stadium project in Santa Clara, California is earthquake. The project is located in the vicinity of several major fault lines, the Hayward, the Monte Vista-Shannon, the Calaveras and the San Andres. Initially, the parties had an earthquake assessment performed to determine the probable earthquake performance of the structure and non-structural elements (architectural finishes, mechanical, electrical, plumbing, equipment), contents, and associated business interruption losses during both construction (an issue addressed by the builder’s risk policy) and after substantial completion (an issue addressed by the property policy).

Next, the parties needed to determine the proper sub-limit for earthquake coverage in the event of a loss. While builder’s risk policies generally provide full replacement cost coverage, there are certain risks, like earthquake and named storm, that are subject to sub-limits. The challenge is to purchase a sufficient sub limit to reasonably cover the risk to the satisfaction of the owner, lenders and/or rating agencies (if bonds are involved) without overspending for additional coverage (increasing sub-limits may be enormously expensive). Moreover, there may be severe limitations in terms of the capacity of the casualty markets to supply coverage for a particular event. For example, we learned that there was limited coverage available in all international markets combined for risk associated with certain fault lines in California.

Quantifying the proper amount of coverage required for a particular risk category may be accomplished by commissioning a “PML” or Probable Maximum Loss study. PML studies have been a staple in the insurance and financial industries to help quantify the risk due to earthquakes and other natural hazards. Classic PML studies typically utilize a deterministic analysis, as opposed to a probabilistic analysis to quantify the natural hazard risk.
In a deterministic earthquake analysis, the controlling fault for a site is specified. An event with specified parameters (magnitude for earthquakes) for the desired return period *is assumed to have occurred*. This approach can be expected to generate a conservative “worst-case” scenario for loss, especially when combined with a 90% confidence level on the loss estimate. Deterministic analyses may yield very conservative results relative to “probabilistic” analyses and overstate the values required for coverage.

A probabilistic analysis accounts for the full range of possible earthquakes, their location, frequency of occurrence, size, and the propagation of the earthquake motion from the rupture zone to the site(s) of interest. Uncertainty in each of these elements and in the damageability of the building(s) is taken into account. This provides a more complete and “realistic” evaluation of the potential earthquake losses. The fundamental difference between deterministic and probabilistic analyses is that deterministic analyses do not consider the probability associated with the hazard, whereas probabilistic analyses incorporate the hazard probability.

In order to evaluate the probable earthquake performance of the structure and associated elements at discrete points during construction and upon completion, and provide a “probabilistic” PML for purposes of determining proper coverage amounts, a seismic risk analysis was performed. The probable earthquake performance of the stadium was analyzed for the completed stadium and at three discrete points during construction. The construction stages were chosen based on elapsed time, percentage of the total stadium cost, and the amount and type of work completed or in progress. A preliminary evaluation of the design drawings, geotechnical investigation and construction sequence was used to help inform the risk modeling. Specifically, the results of the preliminary evaluation were used to adjust the vulnerability
(damage) functions in the earthquake risk model to better estimate the potential damage based on the specific design and details of the facility.

The use of a probabilistic earthquake loss assessment, incorporating project specific vulnerability functions, yielded more accurate and cost-effective earthquake loss estimates for both the completed stadium and at the three discrete points during construction.

B. Hurricane and Named Storm During Construction

In the case of the construction of Marlins Park in Miami, Florida, the developer needed to find a creative solution to address the potential impact of a hurricane force wind during construction. The project involved erection of a massive retractable roof. Once fully in place and secured, the design assured the necessary resistance to hurricane force winds. The issue, however, was the impact of such winds during construction when the roof was partially erected and not permanently secured. In that condition, it could act like a giant “wind sail” and create the potential for catastrophic loss, much of which would be an uninsured owner liability given the very high deductibles normally associated with named storm coverage. As a result, it was deemed advisable to model the risk at various stages of construction, both to determine whether means and methods of temporarily securing the roof in the event of a wind event were adequate, and also to model the potential loss at various points in time to be sure that insurance coverage (and deductible exposure reserves) were adequate.

Thus, in 2008, a hurricane wind vulnerability assessment was completed for Marlins Park to provide a probabilistic loss analysis of the ballpark due to direct damage from hurricane winds and subsequent potential damage related to the storm surge that may be produced by the event. Loss assessments were developed at selected points during construction and after stadium completion.
Damage loss percentages for the ballpark were projected based on many factors, including the type, quality, and sequence of construction; design code used; wind-resisting systems; structural and architectural design details; local topography, windstorm risk; distance from coast line; windstorm history; and performance of similar structures in previous hurricane events. The loss opinions represented both the probable repair costs for the ballpark, as well as the loss of revenue should the use of the ballpark be restricted by any damage sustained during an extreme wind event.

Determination of the windstorm risk required modifications to the standard modeling approach. Wind risk modeling is typically accomplished by identifying the structure type and then modeling the structure based on a pre-defined vulnerability curve. But, given the unique nature of the ballpark, it was evident that the standard, pre-defined vulnerability curves would not be adequate to model such a complex and varied structure. Instead, the wind risk analysis was refined to represent the ballpark as a series of “zones” for which separate vulnerability curves could be developed. For example, the large retractable roof was modeled as its own “zone” to capture the unique vulnerabilities associated with the complex system at the various stages of construction. The designation of the different zones considered many factors, including material types, location of the element (interior vs. exterior), and the susceptibility of the particular element to wind damage. This was especially important in capturing the risk to the interior and exterior glazing and façade systems, where the vulnerability of these systems actually varied depending on the stage of construction. Ultimately, this evaluation was used to confirm the adequacy of temporary support planned for the roof structure during three construction seasons, and to support the determination of the adequacy of builder’s risk coverage.
available in the event of a wind related loss to the satisfaction of rating agencies and others who evaluated the project risk profile.

C. **Enormous Cranes**

Some of the most devastating and catastrophic construction losses have involved crane collapses. Unfortunately, many incidents have resulted in loss of life and damage to surrounding property, not to mention significant damage to the project under construction and substantial delays to completion.

In the wake of disasters such as the “Big Blue” crane collapse at Miller Park in 1999, experienced counsel, brokers, and insurance carriers have carefully studied the issues and understand how to insure projects and equipment for the risks associated with property damage and loss of life resulting from collapse or failure of fixed and movable cranes. However, there remain difficult issues that do not always have obvious solutions.

For example, if a tower crane collapses or is destroyed due to a builder’s risk event, is the delay in completion of the project covered if it takes months to replace the crane? Keep in mind that the crane itself is not part of the structure under construction – therefore, it is not typically included in the builder’s risk policy. Even if the contractor responsible for the tower crane insures the crane, including damage to the crane itself, and personal injury or property damage caused by a crane collapse, there is usually no coverage for the delay to the project if months are required to replace the crane due to a builder’s risk event.

To avoid this result, one option is to include the crane in the builder’s risk policy through a scheduled contractor’s equipment endorsement. In essence, the value of the crane is included as part of the value of the building, so that time element coverage (*i.e.*, delay in completion) and other coverages, such as expediting expense and contractor’s extra expense, will apply even in the event that the only property damaged is the crane itself. While this is occasionally done with
respect to tower cranes that may be integrated into the building during construction, what about movable cranes?

To take a real-life example, the largest movable crane manufactured in the United States is the Manitowoc 31,000. It was used for construction of Mercedes-Benz Stadium in Atlanta, and then shipped to Arlington, Texas (by 150 truckloads) to be used for erection of the retractable roof for Globe Life Park. If the crane was ever destroyed due to a builder’s risk event (imagine a fire), it would be extraordinarily impactful to the project to remove the damaged crane and replace it, since the crane is unique and a replacement would not likely be readily available. In the event of such a loss, it could take months to install a replacement, and the cost of doing so could be enormous. Although the crane contractor would insure the crane and bear the risk of loss, it would not be responsible for project delay. While it would be possible to protect against this risk by placing the movable crane on the scheduled contractor’s equipment endorsement as suggested above, the value of the crane could approach $30 million, and the owner would certainly not want to pay the full premium for replacement cost coverage simply to take advantage of the delay in completion coverage. A solution is to place the crane on the equipment endorsement, but create a nominal sublimit of liability (e.g., $50,000) so the carrier would not have to worry about replacement cost (and the premium for adding the crane to the policy would be substantially reduced). The policy would still provide delay in completion coverage, as well as expediting expense and contractor’s extra expense should the project be delayed due to loss of the crane.

The point to be made here is that there is no “one-size-fits-all” plan for managing this risk. Cranes are usually critical for project completion, and plans always must be developed for what technically should occur if a crane goes down (what is the replacement and workaround
plan), how the various risks associated with cranes are insured, and who bears risk for any uninsured loss.

D. “Unnatural Risk” – Intersection with Inconvenient Objects

Many projects in dense urban settings are built over or adjacent to subways, commercial railroads, and waterways or over and under bridges, major highways, and similar objects. This raises the issue of potential catastrophic risk if a train derails into a foundation structure, a truck carrying flammable liquid crashes into the building and explodes, and similar possibilities. For example, Target Field, the new home of the Minnesota Twins, cantilevers over an operating commercial railroad, and a highway frequented by trucks and other traffic tunnels under another portion of the project site.

In order to convince rating agencies that the risk associated with a railroad or truck collision was sufficiently insured, a PML using a probabilistic analysis was conducted. A preliminary vulnerability risk assessment for selected hazards at the new ballpark focused on two primary locations at the ballpark: the first of which was located at the west elevation, where the structure is constructed over active railroad tracks owned and operated by BNSF railroad (formally known as the Burlington Northern and Santa Fe Railway). A probabilistic risk assessment of the critical locations and associated hazards was performed using a combination of event tree analysis and cursory consequence analysis modeling. Probabilities were established for all potential event sequences and were evaluated against other events (on a per annum occurrence basis) to demonstrate the relative potential for the event occurrence. From the event tree analysis and probability calculations, it was determined that one event that exceeded the established acceptable risk limit, and thus warranted additional modeling, was the structural impact of a train on a column/crash wall system on the BNSF rail line.
To quantify the risk from the potential loss of a column due to a locomotive impact on a column under the plaza area at the ballpark, a finite element modeling approach was taken to assess the resulting structural damage to a single reinforced concrete column integrated with a concrete crash wall barrier.

A subsequent project utilized the results of the train impact analysis as a starting point for a progressive collapse evaluation of a representative section of the ballpark that would be adversely affected if selected columns were compromised by the train traveling on the BNSF main line.

As a result of this analysis, a very specific insurance plan was developed that satisfied the needs of the project developer, the public ownership entity, and the adjacent railroad. It was utilized to support the project risk management matrix and plan that was presented to rating agencies in connection with insurance of the bonds required to finance the project.

VII. CONCLUSION

While it is often said that managing risk on a construction project is “all about the contract,” the contract itself is just the tip of the iceberg. A transactional construction lawyer’s job on a large-scale project is not simply to pick a form and paper an agreement. Rather, an effective practitioner’s work should include efforts to assist the client to fully manage risk through stages of investigation, risk identification, analysis, and development of insurance and other risk management alternatives. This should lead to creation and documentation of a plan that minimizes risk with corrective systems and processes, allocates risk in a fair and reasonable manner, and transfers risk to insurance policies, contingencies, and/or entities in the best position to absorb risk. Hopefully, this paper provides some background and suggests some useful techniques for carrying out those tasks.
ENDNOTES

1 The authors would like to thank Jack Clark and Matt King (members of Thompson Hine’s construction practice group) for their contributions to this paper.
2 As used in this paper, the term “constructor” or “contractor” generally refers to the “at-risk” builder of a project, and depending on the context, may be a General Contractor, Construction Manager At Risk, or Design-Builder.
3 Co-author Jeff Appelbaum has served in the role of project counsel or lead management consultant (through Project Management Consultants, LLC – a wholly owned subsidiary of Thompson Hine LLP) for dozens of community impact projects throughout North America including 20 MLB, NFL, NBA, NHL and MLS stadia and arena projects. On many of those projects, including examples discussed in this paper, co-author Nathan Gould was retained to conduct the probable maximum loss analysis of major risk elements.
5 In Minneapolis, Minnesota, Target Field, the home of the Minnesota Twins, cantilevers over a major commercial railroad.
6 See Moody’s Investors Service, *Evaluating the Impact of Climate Change on US State and Local Issuers*, Sector In-Depth, November 28, 2017
7 For example, for the Levi’s Stadium project in Santa Clara, California, the risk matrix identified 77 risks and included hundreds of cells identifying specific contractual, insurance, contingency and process remedies.
8 Cause of loss may include at least the following categories:
   a. Act of God or other force majeure or builder’s risk event (earthquake, storm, flood, fire, other natural disasters)
   b. Casualty involving movable or other equipment
   c. Environmental or geotechnical risk
   d. Failure of performance, default or negligent act of project participant
      i) Owner
      ii) Design Professional
      iii) Subcontractor, materialmen or supplier
      iv) Other
   e. Act of Third Party
   f. Other
      i) Financial risks – fluctuating markets
      ii) Material shortage, shipping disruption, strike or labor action
9 Parties incurring loss may include project participants (owner, design professionals, contractors, etc.) including their employees, subcontractors, subconsultants, materialmen and suppliers; intended beneficiaries of the work; and third parties.
10 Categories of Damage or Loss include the following:
   a. Personal injury or death
      i) Involving workmen or project participants
      ii) Involving third parties
b. Property damage or loss
   i) To building under construction or contents
   ii) To equipment or property utilized and construction process
   iii) To other property

c. Economic loss, (including delay, acceleration, liquidated damages, etc.)
   i) To owner
   ii) To others

11 For purposes of this paper, climactic conditions resulting from global warming that may, in fact, be “human caused” are nevertheless referred to as “natural causes.” “Human caused” risk refers to such activity such as defective workmanship, errors or omissions in design, acts of terrorism, derailment of a train into the structure, etc. There are always gray areas in these definitions.

12 The likelihood of the event occurring during the construction phase is an important focus of the “probabilistic” versus “deterministic” evaluation, discussed in Sections V.D. and VI.A.


14 See, e.g., Catastrophic Storms, Once Rare, are Almost Routine, Amina Cohan, Los Angeles Times, August 30, 2017, quoting Kevin Trenberth, National Center for Atmospheric Research (“With climate change, what used to be a 500-year event is becoming a 70-year event or a 50-year event.”)

15 See generally Moody’s supra note 13.

16 Id. at 11.

17 Id.

18 Id. at 10.


20 Id.


25 Co-author Appelbaum has conducted hundreds of facilitated partnering sessions at the outset of major community impact projects. Those sessions include anonymous benchmarking, at which each participant is shown a list of potential project risks and asked which party has ultimate responsibility for bearing the risk. Inevitably, owners and developers believe that they have shifted more risk to other stakeholders than is actually the case. For example, owners often
do not understand the *Spearin* Gap risk that they undertake (see discussion at Section IV.B.1.), and the need for contingency to cover such risk.

Owner contingency is typically set at a high value during the conceptual design phase, and is reduced as design progresses and becomes more defined, a guaranteed maximum price or other contract price is established, and construction commences. The amount that should remain for construction phase risk is highly dependent on the project delivery system (for example, if the project is design-build, then *Spearin* Gap risk described at Section IV.B.1. is transferred to the design-builder and not accounted for in the owner's contingency), the extent of high deductibles, low sub-limits or other exposures in the builder’s risk program, and other risks that must be evaluated on a case-by-case basis.

Highway Accident Report, Collapse of I-35W Highway Bridge, Minneapolis, Minnesota, National Transportation Safety Board, August 1, 2007, NTSB Number HAR-08/03, NTIS Number PB2008-916203.


Id. at 231.

Id. at 232.

The Diff-Doc can be expanded to a project-wide tool that includes responsibility for programming, budget, management, design, specification, procurement, installation and operation of every critical process. It is commonly used on projects where multiple layers of service are required, such as in hotel development where different teams may be involved in design, construction, procurement of FF&E, OS&E, artwork, etc., restaurant and retail fitout, etc.

Although Insurance Services Office, Inc. (ISO) forms are available (ISO Form CP 00 20), builder’s risk policies are typically written under specialty forms or manuscript policies created by the insurer. Accordingly, these policies should be carefully reviewed, as the coverage provided cannot be assumed to be the same as the ISO form. If ISO Form CP 00 20 is used, care should be taken to assure that all available endorsements are procured. For example, Endorsement CP 11 20 deals with collapse during construction and removes the limitations in CP 00 20 to cover collapse during the course of construction resulting from defective materials or construction methods, including collapse caused by faulty designs, plans or specifications.

Subject to a self-insured buffer, this insurance policy generally covers insureds for cost overruns resulting from clean-up or remediation of known contamination when the clean-up or remediation costs are greater than the initial cost projected for corrective action.

This policy covers loss, remediation expense and legal defense expense resulting from pollution conditions, such as hazardous materials, encountered at the site.

However, note that CGL policy claims by contractors are often denied on the grounds that the damages are not “property damage” resulting from a covered “occurrence.” The majority view has long been that CGL policies do not cover defective workmanship performed by the contractor or a subcontractor because such faulty workmanship was not an accident and, accordingly, not an “occurrence” under the policy. There has been a trend of many jurisdictions re-examining what constitutes an “occurrence” in light of the policy language. A limited number of jurisdictions have strayed from the majority view and concluded that there is an initial grant of coverage for defective work, thus resulting in more extensive coverage in these jurisdictions. But other jurisdictions have refused to sway from the majority view. For example, the Ohio Supreme Court recently confirmed that defective workmanship performed by a contractor or
The subcontractor is not an “occurrence” and that a CGL insurer is not obligated to cover a CGL policyholder against a claim for defective workmanship brought by a project owner. See *Ohio N. Univ. v. Charles Constr. Servs.*, 2018-Ohio-4057 (finding that a general contractor’s CGL policy did not cover claims for property damage caused by a subcontractor’s faulty work, as such defective work is not “an occurrence”, which is necessary to trigger coverage for property damage).

The new AIA Document A101-2017 Exhibit A – Insurance Exhibit provides a list with a number of other optional specialty policies. This was created in part to spur discussions among the project team and their insurance brokers regarding other possible insurance products that may benefit the parties.

On some projects, wrap-up responsibility is split, such that the lead contractor “wraps up” the worker’s compensation coverage and the owner “wraps up” the commercial general liability coverage. Owners do not typically seek to be involved with the management of the worker’s compensation program but seek the benefits of control of the CGL program.

The construction process also involves payment bonds that an owner requires of the contractor to secure its payment obligation to subcontractors, and bid bonds that partially secure the contractor’s bid. This discussion focuses on the performance bond only, as it is more commonly involved in dealing with a catastrophic loss that may involve the failure or default of a contractor to perform.

The construction process also involves bid bonds and payment bonds. This discussion focuses on the performance bond only.

This will often be accompanied by a requirement that the contractor pledge assets as collateral for the indemnification.

It is of historic interest that for a relatively brief period of time, SDI was originally CDI (contractor default insurance) and could be utilized by the owner as an insurance tool to protect against the prime contractor’s default. That opportunity is currently unavailable in domestic markets. CDI was used in lieu of bonds, or in conjunction with bonds, in the construction of two ballparks, PNC Park in Pittsburgh and New Busch Stadium in St. Louis. For a detailed description of the use of CDI on PNC Park, see Appelbaum, “A Brief Examination of a Really Cool Integrated Risk Management and Contractor Default Insurance Program that May Never Again Be Available in the Post-9/11 Era,” Columbus Bar Association Construction Law Seminar, February 4, 2002. See also, Appelbaum, “PNC Park: Structuring a Successful Project Delivery and Risk Management Approach,” ABA Forum on the Construction Industry (Apr. 2001).

Typically, design professionals are required to maintain CGL coverage in addition to professional liability coverage.

Over 50% of the claims dollars paid out by professional liability insurers are classified as “economic loss.” See, e.g., 2004 Loss Data, XL Design Professional.

For additional discussion of elevation of the standard of care (specifically in the context of design-build contracting), see Section III.D.5.a. of Appelbaum, *Insuring and Bonding the Design/Build Project*, ABA Forum on the Construction Industry, TIPS Fidelity & Surety (Jan. 2007).

For example, design professional’s practice policy may have a $25,000 per claim deductible, whereas the project policy has a $100,000. Recognition of this exposure may cause design professionals to negotiate for limited, if any, deductible responsibility. If deductibles are to be
borne by the owner, then the owner may determine to pursue a more cost-effective different option (such as OPPI).

46 The OPPI will also provide excess coverage for other design professionals directly contracted by the owner, such as the geotechnical and environmental engineer and testing and inspection company. Whereas the lead design professional may be required to satisfy a $5M to $10M MIR, only $1M to $2M may be required of other “smaller” players.

47 For additional discussion of the features of OPPI, see Section III.D.6.d. of Appelbaum, *Insuring and Bonding the Design/Build Project, supra.*

48 For a discussion of risk management strategies in the context of design/build project implementation see Appelbaum, *Insuring and Bonding the Design/Build Project, supra.*

49 For more information regarding contractual allocation methods and delay management tools, see Appelbaum, *Delay Risks and Management Tools – A Framework for Drafting and Negotiating Liquidated Damages Clauses, ACREL Plenary Session (March 2015).*

50 Under the standard form of AIA Document A201-2017 General Conditions of the Contract for Construction, the general remedy of contractor for force majeure (and certain other delays) is an extension of time (see excerpt from AIA Document A201-2017, Section 8.3.1 below). Section 8.3.3 of AIA Document A201-2017 leaves open the possibility that delay damages may be provided for elsewhere in the contract documents, but this would need to be added by document users, as the standard forms do not specifically provide for contractor to be entitled to delay damages for events of force majeure.

> “§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor’s control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, the Contract Time shall be extended for such reasonable time as the Architect may determine.”

51 For example, the following provision in a design build contract allows the design builder and its subcontractors to receive direct costs resulting from a force majeure event, and permits an adjustment of the design builder’s general conditions cost, but precludes additional home office overhead or profit:

> “Damage for Delays. Provided that notice is given pursuant to Section ___ hereof and all other conditions precedent to asserting a claim under this Agreement are satisfied, Design-Builder shall be entitled to reimbursement for actual Cost of the Work incurred in the field during any excusable delays caused by Owner or resulting from a Force Majeure Event, but shall not be entitled to reimbursement for home office overhead or profit in respect of such delay, except that an equitable adjustment of the General Conditions Stipulated Sum shall be made; and Design Builder shall be entitled to an extension of time as permitted pursuant to this Article ___. Design-Builder shall assure that a clause is contained in each Subcontract in substantially the following form: “Subcontractor agrees that whether or not any delay shall be the basis for an extension of time, it shall have no claim or cause of action against Design-Builder or Owner for any increase in
the Subcontract price hereunder, nor a claim or cause of action against Design-Builder or Owner for payment or allowance of any kind of damage, loss or expense resulting from delays, hindrances, obstructions or interferences with the Work required under this Subcontract Agreement, except that Subcontractor may be entitled to reimbursement for actual costs incurred in the field (but not home office overhead or profit) during any excusable delays caused by the acts or omissions of Owner or resulting from a Force Majeure Event.”

52 The standard approach taken in AIA Document A201-2017 General Conditions for the Contract for Construction provides for time and compensation increase for the contractor in the event of delay caused by unforeseen conditions, subject to certain exceptions (see excerpt from AIA Document A201-2017, Section 3.7.4 below).

“§ 3.7.4 Concealed or Unknown Conditions
If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor’s cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect’s determination or recommendation, that party may submit a Claim as provided in Article 15.”

53 For more on drafting an enforceable “no damages for delay” clauses beyond the scope of this paper, see Maurice T. Brunner, Validity and construction of “no damage” clause with respect to delay in building or construction contract, 74 A.L.R.3d 187.

54 In many states, this practice is prohibited as a matter of law through so-called “Fairness in Contracting” statutes. For example, Section 4113.62 of the Ohio Revised Code (Construction Contract Provisions Against Public Policy) provides that contract provisions that waive or preclude an owner’s liability for delay damages when the owner caused the delay are void and unenforceable as a matter of public policy.


“§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total
number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days’ notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.”

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days’ notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.”

56 See AIA A201-2017 General Conditions for the Contract for Construction, Sections 14.4.1 and 14.4.3 below.

“§ 14.4 Termination by the Owner for Convenience
§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner’s convenience and without cause.
[…]
§ 14.4.3 In case of such termination for the Owner’s convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.”

58 See Appelbaum, Delay Risks and Management Tools – A Framework for Drafting and Negotiating Liquidated Damages Clauses, supra.
59 For example, on a stadium project, a construction manager at risk may accept a per diem delay assessment for every day that substantial completion is late, and a very large penalty for every “home game” that is missed. Provided that the construction manager is making good-faith efforts to complete, however, the owner may agree to cap cumulative liquidated damages to a percentage (e.g., 75%) of the overall fee earned by the construction manager on the project.
60 The American Institute of Architects (AIA) Documents Committee releases form documents from time-to-time, including over 30 new or updated documents with the 2017/2018 two-phased release.
62 As discussed in the Appelbaum, et al. AIA ,The Next Decade, supra, practitioners will likely want to modify the template, or if an AIA agreement is not used (which is typically the case on large construction projects), the practitioner will want to create its own form setting forth insurance requirements in the construction contract (and the AIA exhibit can be used as a guide in supplementing this form).
64 Id.
65 Id.
Wind risk vulnerability curves represent a relationship between damage level and the wind speed and have been defined and documented for a variety of standard structure types.