



The New Paradigm in Construction...no longer is it simply Cost, Quality and Budget

The Green Paradigm: The old paradigm of construction balanced costs, schedule and quality. This paradigm was often depicted as a triangle or a pyramid with cost at the top of the pyramid supported by schedule and quality at the base. There was attention in achieving the desired quality in a scheduled amount of time for a particular cost. This paradigm has changed as a result of green design and sustainability in design.

The new paradigm involves additional factors beyond cost, schedule and quality. The decision making model in designing a project in order to achieve sustainability requires the balance of the old factors, plus human health, safety and comfort as it relates to the environment. Instead of a triangle or pyramid shape, depicting the decision model, the shape of the decision making model for sustainability construction looks like a pentagon. While the parties will ultimately always consider the cost of the design in construction, they now have to take into account the human factors as well as the environment and how the ecology of the design relates to the overall environment.

Because the decision making model paradigm has shifted with the pursuit of sustainable and green design, new contracts need to be created that reflect the risk associated with design and building green. These contracts have to balance responsibility and risk shifting. There needs to be proper shifting of responsibility throughout the construction documents to assure the participants and contracting parties that they will have control over the risk that are shifted to them that come with design and green construction. It is of paramount importance that these contracts specifically address accountability and provide the pathway and parameters for all involved to reach the goal of proper certification of the project to assure the owner that its sustainable goals have been met throughout the process.

To assure the best quality and the achievement of sustainable goals throughout the design and construction process, you have to understand that it all starts with the contracts that will be put in place that will ultimately govern the relationship of the parties and what gets designed and built. All of the principal player contracts must address risk associated with designing and building green. The failure to address these risks in any one of the major players' contract could be detrimental to the overall outcome. The owner wants the project to be designed with green and sustainable components and believes that if it pays to achieve this goal that such goal should be achieved without any risk to the owner. Basically, owners want to shift the risk of failing to achieve certification or energy goals to the designers and contractors responsible for the project.

In order for the owner to achieve its' goals, the contract provisions must be drafted to address the appropriate certification requirements so there is an objective standard that the parties can point to - to establish that the sustainability goals have been achieved under the terms of the contract.

HOW DOES ONE IMPLEMENT GREEN IN THEIR CONTRACTS? WHAT NEEDS TO BE ADDRESSED?

Green Programming: Most, if not all projects begin with a programming step wherein the owner typically outlines what it would like to include in its design of its new facility in terms of building footprint, use of space, architectural design and interface with the environment. In the case of green construction and design, there are probably more guidelines than generally accepted standards. Therefore, when drafting contracts, particularly in the design phase, distinctions need to be drawn as to what are guidelines or goals versus what standards are to be achieved in the design.

Green Contracts: In today's construction and design world, all contracts generally are based upon the old methods of construction which hardly took into account many of the modern green and sustainability concepts and approaches that are becoming common place in today's build environment. As such, older contracts that do not specifically address green design and construction are essentially of little value as a template for implementing your green project. One of the primary considerations or issues with older modeled contracts is their use of standards and practices that do not address green or sustainable design and construction. It serves little or no purpose to go to great lengths to describe, in the contracts, sustainable goals to be achieved which will only be undermined if the contract is not corrected to eliminate references to standards and practices that are not consistent with or promote the achievability of sustainable construction. Because many of these sustainable and green standards and practices are evolving, it is often difficult to choose an established standard or level of performance supported by standard practice. Accordingly, quality control, related to green building, becomes more of an issue than perhaps in standard construction that does not incorporate sustainability and green methods.

Contract Provisions: The typical contract in the conceptual, programming and design development phases should address and include an overall site assessment, upon which the building is going to be built. There needs to be baseline analysis to establish "what is the baseline from which the project will be measured in terms of achievement in reaching sustainability goals, including energy goals." There are limitations on many specifications when it comes to green design and construction and these need to be identified and dealt with in the contract language. The contract should also include a mechanism for lifecycle assessments of certain equipment that would be used on the project, as well as outlining steps for the commissioning process and scope of work.

Are the Products I Need to be Green Available?: The adoption of green and sustainability standards will impact the typical construction project, because many green and sustainability standards actually dictate the means and methods of construction, which in the traditional contract models were left to the discretion of the contractor or

builder. There is also the practical difficulty of assuring that appropriate green materials are available to accomplish the construction in a timely manner. The availability of green or sustainable materials is of particular concern to the owner because the unavailability of such materials will definitely impact the project in terms of time impacts, potentially delaying an otherwise timely performance which in the end will cost the owner substantial money because such delays are generally considered beyond the control of the contractor. Contracts need to address this situation and properly allocate the risk. There is particular concern in the realm of public construction with respect to green and sustainability specifications. In the area of public contract law, it is generally prohibited to specify a specific product because a specific product gives an unfair competitive advantage to the entity that manufactures the specific product. There are exceptions to this rule, but these types of specifications, also known as proprietary specifications, can lead to problems on the job because many environmentally sustainable approved products are not widely available from many manufacturers. While equivalent performance can be achieved to many of these products, these products may not support overall certification or sustainability goals for a variety of reasons. The drafter of contract specifications needs to be aware of this situation and guard against proprietary specifications in the public works arena.

Recordkeeping Responsibility: Recordkeeping is of critical importance particularly with respect to lien certified projects. In order to achieve certification, there needs to be proper documentation throughout the design and construction process. This documentation to achieve certification levels is unusual in the typical construction project. In the old model of construction contracts, there certainly is no mention of necessary duties and responsibilities for gathering documentation that will lead to certification. It is imperative that the owner make sure its' design and construction contracts adequately address the need for recordkeeping and responsibility for putting the records together and assembling them in a fashion to achieve appropriate certifications for the various components of the project.

Am I Getting What I Paid For?: The owner's greatest concern is "How do I achieve the result for which I contracted for in terms of design and construction?". Few owners have an adequate knowledge base in which to evaluate their own contract documents to assure that they are adequate to meet the performance desired. There needs to be an emphasis on legitimate standards and the use of legitimate certified products. If the owner does not have a sufficient knowledge base, obtaining the services of an appropriate consultant who is knowledgeable in green design and sustainability construction is highly advisable. This consultant needs to be brought on board at the time the contract documents are being drafted to assure that appropriate and legitimate standards are adopted which include proper specifications for certified products.

Measuring Results: No owner wants to spend millions of dollars on a project without any practical reassurance that results can be measured to objectively verify success and results. Therefore, contract documents need to have proper methodologies set forth wherein measureable results and an objective basis can be verified and achievement demonstrated. Of course, this certification and demonstration of results

adds a layer of cost for the project; however, the added cost is clearly outweighed by the results achieved.

Personnel Qualifications: In order to have appropriate assurances that a quality result will be achieved, there are several things that should be included in the contracts. One of the more important things is to require the appropriate documentation that demonstrates that quality was achieved. As the documentation in and of itself is not enough, it is critically important that qualified personnel are assigned to your project to assure that sustainable goals are reached. While many claim to have expertise in green and sustainability design and construction, this expertise is not often deep, given the recent developments and lack of time in which sustainable projects have been constructed. This is a comparatively new area of design and construction and few professionals have a great depth of experience. Therefore, it is critical your construction documents address the qualifications of the personnel who will be overseeing the process to assure that your green and sustainable goals are achieved.

Warranty/Energy Audits: Another concern of the owner is to make sure that the products and equipment incorporated into their project will perform as represented and intended. It is suggested that appropriate warranty language be inserted into the contract to achieve or assure some level of performance in terms of a guaranty upon which the owner can rely. With proper warranties, the owner is protected in terms of performance and assured of a certain quality level which can be enforced or remedied in the event something falls short of the mark established for performance. Often in the case of energy design and construction, the contracts call for an energy audit using objective criteria to establish that the sustainability design goals have been achieved by the energy system put in place.

Liquidated Damages?: Designing and building a green and sustainable project is not without its potential pitfalls. It is a reality of life that that you won't find out until the project is completed whether or not certification will be granted. In the event the project does not receive certification the question becomes, what are the owner's damages, if any? In a practical sense, a building may perform 100% as intended regardless of a specific certification level achieved, but missing a certification level is difficult to translate into actual monetary damages. If the building or facility ends up being used as intended, is the owner really damaged? Can some level of predetermined damages, such as liquidated damages, be established in the event a project does not receive proper certification? These are all open questions that need to be addressed in the contract using traditional contract management risk shifting language and proper indemnities assigning responsibility for the failure to achieve the stated goal.

Performance Measurement: Another potential pitfall in the design and construction of a sustainable project is the ability to measure the performance or success of the final project. It is very difficult to objectively define the result given that such subjective factors of human health, safety and comfort, as they relate to the built environment, often determines whether the proper sustainability or green environment has been achieved in the built facility. This is complicated by the ongoing nature, or the evolving standards, of the design of sustainable construction. Standards are often "living"

meaning that they are constantly developing and being modified. What is acceptable today may be altered down the road by the time the project is built and without a thick standard or reference point it is often difficult to measure success.

Regulatory Considerations: The regulatory environment is in a state of flux making future regulatory changes difficult to predict. One factor, which is currently in the regulatory environment, is the lack of standard building specifications or a uniform rating system to determine sustainability achievement, which hinders the ability to quantify or measure performance. This lack of ability to quantify performance or measure success also hinders an owner's ability to recover any damages in the event the project does not achieve the stated goals. Therefore, the contract needs to make a special effort to quantify and measure performance to achieve the owner's goals.

Contract Tools For Measuring Sustainability Success: Of course, success can be achieved in sustainable design and construction. Certainly the contract documents can set forth the standards that will verify the results have been achieved. There are several tools which can be incorporated into a contract that can be used for measuring success.

Post-Occupancy Evaluation (POE): One such tool for measuring success is a Post-Occupancy Evaluation (POE). This is a powerful tool for gathering information and can consist of an analysis of resource consumption, an assessment of physical condition such as lighting levels or acoustics, and the use of an occupant survey or interviews to determine whether sustainable goals have been achieved.

Progress Reviews: Success does not necessarily have to be determined at the end of the project. Good contract documents addressing sustainable design and construction will set forth different reviews throughout the course of the progress of design and construction. Each step will require that certain documentation be assembled and that sustainable design goals or construction goals have been achieved along the way which assures a quality finished project. These documents can detail environmental performance and, when put together, can be used to determine the project's success.

Green Management Plan: Contract documents should also consider the use of best practice implementation plan. Modern sustainable construction includes provisions for a green management plan for construction. Such a plan should include a provision for the prequalification of bidders to assure that the owner is getting appropriately qualified personnel who are familiar with working within a sustainability construction environment. The owner's contract documents should integrate sustainability goals throughout the process and have a mechanism to enforce compliance. It does little good to have measureable sustainability goals with adequate documentation with qualified personnel if there is no mechanism to enforce compliance with the contract. If the contract enforces compliance, the responsible parties can be held accountable. Overall, the contract documents to assure a successful sustainability contract should include a green management plan for the design and construction process. Serious thought and consideration should be given to prequalifying the principle players and their consultants with an eye towards not only their experience but their depth of experience in working in green construction and sustainable design. The contract documents must integrate

sustainability goals into the process from its conception through any post-occupancy evaluation, commissioning or startup. Above all, the contract documents need to reflect mechanisms to enforce the requirements that are established to achieve the sustainable design and construction and a methodology to determine compliance throughout the process. If the process is kept under control and properly monitored from conception through occupancy, there is more likelihood of success with the overall result.

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