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INDUSTRY CORNER

THE PRAGMATIC APPROACH TO GREEN DESIGN
Achieving LEED Certification from an Architect's Perspective

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INTRODUCTION

LEED is the "yardstick" by which the design and construction industry measures the sustainability of a structure, comparing multiple buildings all on the same scale in an effort to prevent green-washing. It is a nationally accepted benchmark that offers third party verification of sustainable design practices. LEED focuses on the "triple-bottom line," taking people, profit, and planet into consideration. It continues to mature in an effort to respond to new technologies and policies, and affect market transformation. As of mid-2009, The Leadership and Environmental Design (LEED) rating system is in its third version.

There are currently nine different LEED rating systems available to choose from and select the one most applicable to your project type. LEED addresses both the design and construction phase of a building, as well as the maintenance and operations of existing structures. Within the rating systems are various credit categories including sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, location and linkages, regional priority, and innovation in design. There are four certification levels: certified, silver, gold, and platinum.

Changes to the LEED rating systems that appear in the new LEED version 3 guidelines, released in April of 2009, include a strong emphasis on reducing greenhouse gas emissions, addressing climate change issues, along with reducing fossil fuel and resource depletion. Indoor environmental quality has a greater focus than the previous version, as a reaction to the amount of time a typical American spends indoors, which is often over 90 percent. These areas of increased focus are demonstrated through three major differences in this newest version. There are no new credits; however, they are weighted quite differently than before. Previously in version 2.2, 69 points were available in the LEED for New Construction rating system, whereas now 100 points are available. Credits that have a greater impact on greenhouse gas emissions and climate change issues now have more points than before. Another change is that there are new prerequisites in some categories, resulting in all of the credit categories including at least one prerequisite. Previously not all of the credit categories had prerequisites, such as the water efficiency category. The third change is a focus on regional issues. Regional Priority credits are specific to a project's zip code. They are not new LEED credits, but instead are existing credits that USGBC chapters and regional councils have designated as being particularly important for their areas. The incentive to achieve the credits is in the form of a bonus point.

ACHIEVING LEED

LEED certification is achievable through a pragmatic approach and well managed process. The following is a step-by-step guide of how to ensure your LEED registered project becomes LEED certified. This commentary also aims to offer owners, architects, engineers, and contractors insights into the tasks the LEED-AP project administrator will perform throughout the duration of the project in an effort to achieve LEED certification. All aspects of working on a LEED project from pre-design through building occupancy, including LEED documentation and the submittal process, will be addressed.

Pursuing LEED needs to be a fluid process, allowing the team to add credits or remove unattainable credits throughout the project, as needed. There are two key points to certification: commitment of the owner and early integration. The stronger the commitment of the owner to LEED from the onset, the more assured the team will be

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in achieving the goal of certification. It is not to say the architect, engineers, general contractor, subcontractors, and all other team members do not contribute, but each of their roles is a supporting role that provides guidance to the owner's vision. Commitment of the owner is critical; the design team should provide organization paired with good design and green construction practices to offer support to the owner's goals. It is imperative that the process not lie solely on the shoulders of the LEED-AP, but be inclusive of all team members.

Getting back to the basics of design is also an important concept strongly intertwined with incorporating sustainable design strategies into your project. These so-called basics of good design must be recognized first, such as siting and orientation, building mass and form, size and location of window apertures, sunshading, and building envelope design. Consider site placement. Optimize sun in the winter and block it in the summer. Analyze sun and wind patterns for the site. Basic passive strategies should always be incorporated before more costly strategies such as photovoltaics and wind turbines. The next most important consideration in green building design basics is to reduce demand, so systems can be sized down, whether through reducing energy consumption or minimizing the building footprint. The last basic consideration is to take into account the manufacturing processes of selected materials, including life cycles and embodied energy. These best practices are not exclusive of LEED registered projects.

BUDGETING FOR LEED

A possible pitfall to be aware of is assuming LEED can be achieved with no additional cost. Over a decade after the development and release of the LEED rating system, owners and clients still push the design team to pursue LEED if only there is no extra cost associated with it. It is not a realistic viewpoint to believe that going green, especially via a rating system, has no costs implications. There are definite choices one can make that can be more or less costly than others within the LEED checklist and rating system. However, we can no longer think in terms of initial costs when the operating costs of green buildings over many years are less than their comparison baseline models. LEED is project specific as far as cost, due to variables such as the selection of credits, local market conditions, qualifications of the bidding community, and even possible incentive programs, but generally adds some initial cost to the project. The best way to budget for LEED is to initially include appropriate fees during the contractual phase, as well as start providing "hard" and "soft" costs to particular credits early on during the LEED design charettes.

Do not overlook that project fees can be greatly affected by the hours required for documentation. Higher design fees are realistic due to having additional design experts and professionals such as a commissioning agent, energy modeler, daylight modeler, and LEED consultant on your team. Keep in mind these additional "soft" costs can be recouped through reduced operating costs, a reduced mechanical system due to a higher quality building envelope design, tax incentives and grants, and up-charge in lease or sale price. Recent data indicates these can generally be recouped within a year or two of move-in.

On the other hand, it is not necessary for an owner to provide an unlimited budget to pursue a platinum certification with every project. In the decision to go LEED, an ample, yet realistic budget should be included for achieving this goal, based on which rating level is agreed upon. When evaluating credits, the team should avoid considering only first cost premiums. True cost-based decisions to accept or reject credits should consider long-term benefits both tangible and intangible, such as producing solar power on site and increased worker productivity. This type of approach should be integral to the owner's vision. If the owner rejects the life-cycle cost data and makes decisions based only on first cost, the team will slowly see credits slip away, and soon enough there will no longer be enough credits to meet the minimum number required for certification. Only the owner can ultimately decide how to spend his or her money, upon recommendations from the owner's team. Therefore without the owner's support and buy-in to life cycle costing, certifying the building will be an uphill battle.

STEP-BY-STEP GUIDE TO LEED CERTIFICATION

These guidelines outline the LEED for New Construction process, but with slight modifications could be adapted for use with various other LEED rating systems, such as LEED for Schools, Core and Shell, and Commercial Interiors.

Pre-Design

Contractual relationships as well as the programming of spaces, site location, building orientation, and design of a building are all influenced by LEED as a goal. In negotiating contracts, it is important to be clear in not promising achieving certification, nor a minimum standard that the building will operate at. Discuss the objective of pursuing LEED certification with the owner and all team members prior to schematic design, preferably before or while selecting the project site and programming the building(s). This is true for both conventional bid construction and design-build approaches. Improved levels of performance can be impacted greatly in the pre-design phase.

Pre-design tasks include but are not limited to the following. Appoint a LEED-AP to serve as project administrator both online and offline, to serve as coordinator of the entire process and all team members. In my experience this is typically the architect, if he has experience working on LEED projects. In most cases the architect is often the most logical choice because managing the team is already part of the architect's capacity. It is good practice for the architect and LEED-AP to be one in the same. This ensures the design process is fully inclusive of the LEED criteria. However, in some cases it can and probably should be a separate consultant with LEED experience when the design team is working on one of their first LEED registered projects.

The next step is to determine the appropriate LEED rating system for the project. For example, evaluate the applicability of LEED for Schools versus LEED for New Construction, versus LEED for Commercial Interiors. Confirm that all prerequisites can and will be met. The project must comply with all prerequisites, and note that they do not count toward your credit total.

Minimum Program Requirements are required by LEED version 3 (2009). The USGBC describes these as "minimum characteristics that a project must possess in order to be eligible for LEED Certification. These requirements define the types of buildings that the LEED Green Building Rating Systems were designed to evaluate, and taken together serve three goals: to give clear guidance to customers, to protect the integrity of the LEED program, and to reduce complications that occur during the LEED certification process." Before proceeding with registering your project, it is important to confirm your project has met these minimum standards.

Several prerequisites as well as credits must comply with referenced building standards, such as various ASHRAE standards that will affect the design of the building systems. All of these early considerations reinforce initiating the LEED process prior to design of the building.

Another recommendation is to do a LEED feasibility report, attempting to fill out the checklist prior to scheduling the first LEED design charette. List each point within the selected rating system and identify both the proposed design strategy and cost impact. Try to identify all credits that will require further discussion at the charette. Document the credits initially thought to be relevant and achievable. This will be a lengthy document that serves as a record of decisions made through the duration of the project. It is imperative to keep detailed notes on credits selected and proposed design strategies, along with declined credits and why those credits were declined, so you do not revisit inapplicable credits over and over in the many team meetings through the duration of the project.

An example of documenting the feasibility of one credit follows at the top of the next page. This particular example evaluates Sustainable Sites Credit 5.1 for a new construction theater building on the campus of a private college preparatory high school located in suburban St. Louis, Missouri.

The Pre-Design checklist should include the following tasks:

- Appoint a LEED-AP project administrator.
- Determine the appropriate LEED rating system.

LEED-NC Sustainable Sites Credit Evaluation Example

SS 5.1 Site Development—Protect or Restore Open Habitat

Design Strategy: Due to the site being previously developed with multiple residences, the design strategy will include restoring a minimum of 50% of the site area with native and adapted vegetation. The site east of the paved walk and surrounding the lake can be planted with native grasses, and the trees surrounding the lake will be left in place. The native grass landscaping will take the place of a manicured lawn, thus requiring little to no irrigation, and minimal maintenance including minimizing CO_2 emissions from gas powered lawn mowers and toxins from fertilizers. The native plants can also serve as an educational tool for the students.

Cost Impact: The native grasses should be similar in cost to the planned lawn in this area, but will require less maintenance and irrigation than a conventional lawn. If sod is proposed the native grasses will be cost saving; if seeded grass is proposed, the native grass seeds will be comparable in cost. There will be additional cost savings due to the reduced water consumption over the lifetime of the building.

- Enlist a commissioning agent.
- Hold LEED Charette #1.

The first LEED design charette helps establish the tone for the project, including the desired certification level, and budget available to pursue LEED. Another key to achieving LEED certification is making all team members participate and be accountable. Arrange the charette so that all of the design disciplines can be represented, including but not limited to architectural, civil, landscape, mechanical, electrical, and plumbing designers, as well as an owner's representative and facility manager, and the construction manager. Be clear about the objectives and outline which LEED credits will be pursued, and which will need to be researched further to determine applicability.

Establish the LEED site boundary if the project is on a larger parcel of land such as a campus or park land. This is helpful for the LEED-AP project administrator to do prior to the charette. Be sure to comply with the "Minimum Program Requirements" as outlined in LEED version 3 (2009), and on the USGBC web site.

The importance of LEED design charettes is undervalued by some in the industry. If the team uses the charette from the onset as a forum for discussing objectives and alternate scenarios with all team members present, it will be clear to all participants the final objectives for the project, and begin to make team members accountable early in the project. Plan for a minimum of half a day; it takes a bit of time to discuss each credit individually relative to the project. Bring copies of the most recent version of the applicable LEED checklist that can be downloaded directly from the USGBC web site, at www.usgbc.org. A PowerPoint presentation with a slide for each credit is helpful, including the summary and requirements of the credits. This helps clarify credit intent for participants unfamiliar with LEED, while going through each credit on the LEED checklist. The charette process should include a systematic analysis of each and every credit in the form of an open round-table discussion with all design disciplines participating. It is helpful to document which team member will be responsible for each credit, as you proceed through the credit checklist. Discuss paybacks and incentives while discussing cost for each credit in the charette. For example, with the public transportation access credit, if the site is near public transportation and allows employees ease of use, reduced needs for parking could be a cost savings. Assign credits to be researched and reported back on at the second charette. Be very clear who is responsible for specific tasks. Schedule the second charette before you adjourn.

After adjourning from the first charette, the team should perform the following tasks.

- Initiate the energy model prior to reconvening for the second charette.

  Use the energy model to its fullest capabilities. Try multiple scenarios; use the feedback and life-cycle costing data to make practical choices about which credits to pursue. Analyze various building envelope options studying openings, glazing types, insulation types, sunshades, roofing materials, and others.

- Perform preliminary water conservation calculations.
- Optimize building orientation.
- Optimize daylight and views.
- Incorporate passive green technologies into the design such as atriums, light shelves, and appropriately sized and located openings.
- Ensure that any specific items required by LEED prerequisites and credits are incorporated.

Hold LEED Charette #2. Readdress all credits and prerequisites even if they are in the "yes" column to confirm they are still achievable. All team members should have feasibility and cost data to report back on the "maybe" credits they were assigned to research between charettes. Finalize all "maybe" credits as "yes" or "no." There must be a clear scope of the team's priorities. You should aim for 4–6 extra points, allowing for some extra points in the case any errors occur in the design or construction phases, or if any points are rejected during the review process. This point buffer allows for the building to still achieve certification, even if some of the points are not awarded or achieved.

Upon adjourning from the second charette and categorizing all points as "yes" or "no," you are ready to begin moving forward with finalizing the design with schematics. However, the design process needs to remain open to changes in strategy and points as the project develops. The design process needs to allow for a fluid process, when some credits do not fall into a yes/no category. Schematic Design sign-off is too late for LEED charettes and evaluations to occur.

Tools and resources available for Pre-Design include:

1. LEED reference guidebook. It elaborates on potential technologies and strategies, including calculation requirements, as well as examples, case studies; it lists additional resources available. It is a critical tool in achieving certification.
2. LEED credit checklist. This can be downloaded from the USGBC website in electronic format.
3. USGBC web site; www.usgbc.org.
   a. Sustainable Building Technical Manual. You can download this all inclusive, seven part, 300-page manual from the resources page; Go to: Resources > Green Building Research > Research & Publications (right hand side) > USGBC publications.
   b. Abridged guidebooks for each LEED rating system available for download. These condensed versions are good resources for when you are first considering pursuing LEED to gain a general understanding of the credits, or determine which rating system to utilize. It gives a one-page general description of each credit, and outlines both the intent and requirements.
   c. Case studies of already certified projects.
   d. LEED CIRs (Credit Interpretation Rulings). These are used when the reference guide does not specifically address unique, project specific issues. Check the posted previous rulings before submitting your own CIR. There is a cost associated with submitting a CIR.
4. LEED Online. This is currently the only way to submit documentation; https://leedonline.usgbc.org/. Access is gained upon registering your project.
5. Feasibility Study. This document is compiled by the LEED-AP project administrator. It is specific to your project allowing the team to clearly track progress of accepted or denied credits.
6. PowerPoint slide show of credits for the charettes.
7. USGBC Educational workshops.
8. Green Building Certification Institute.
9. Trade and academic magazines and journals such as Journal of Green Building, Eco-Structure, Environmental Design + Construction, and GreenSource, just to name a few.
10. Your local USGBC chapter.

Schematic Design

In schematic design the design team should finalize the orientation of the building, which should be fully programmed and in the space planning phase by now. Applicable LEED requirements should be included, such as the mandatory recycling room, at this time. Design of the building envelope and space planning go hand in hand; locate unoccupied spaces on the north side of the building. Optimize glazing for passive heating. The building envelope decisions made in this phase will impact operating costs of the building for its lifetime, as well as heat

loads and gains, along with the sizing of mechanical and electrical systems in future phases. Begin to research possible materials, both exterior and interior. Narrow down the vast array of products claiming green qualities by selecting products that will contribute to not one, but two or three LEED credits at once. For example, try to use one material that will contribute to not only the rapidly renewable materials, but also recycled content, and local/regional material credits. By setting this guideline of specifying double and triple duty materials, you are ensuring the selection of green materials for the building are not limited to products that heavily market their green characteristics without the depth to back them up. A truly sustainable material should have multiple green attributes. The manufacturing processes and carbon footprints should be considered as well, which can potentially be submitted for innovation points.

Consider a strategy toward LEED certification that acquires more than one credit. For example, although a green roof is more costly than a bike rack and showers, it can contribute to four credits at once by helping to reduce the urban heat island effect, save energy costs by providing a high insulation factor, contribute to storm-water management, and provide a park-like outdoor space for building occupants. Strategies that individually add cost can often be made cost-neutral or even offer savings over time if they offer a synergy with other strategies.

The schematic design checklist should include the following tasks:

- Register the project with the GBCI (Green Building Certification Institute) online at the GBCI web site. Registration is an important step that establishes contact with the GBCI and the USGBC, and provides access to LEED-online and the CIRs (Credit Interpretation Requests and Rulings).
- Finalize building plan, layout, design, and orientation.
- Continue to update the energy model.
- Begin to research and specify green materials. Select products that contribute to more than one credit.
- The LEED-AP should maintain/update the feasibility study report, based on continued communication with all team members and project participants.
- The LEED-AP should set up the LEED-online project page by assigning credits to the responsible parties. These credit assignments should reflect what was agreed upon in the second charette.

Tools available in addition to those previously mentioned include:

1. Book: GreenSpec Directory—Product Directory with Guideline Specifications.
2. Computer simulation energy model.
3. BIM modeling programs such as Revit and Ecotect.

Design Development

Many architectural firms compartmentalize the design process in a separate department. This can result in the LEED-AP trying to make an already designed project work rather than using the process to its fullest capabilities and allowing the LEED-AP and designer to work hand in hand, or better yet, be one in the same. For the owner, it is unfortunate to pay for high quality design services, without getting the full benefits of the LEED-AP's knowledge in the early phases. As a client, you should insist that the LEED-AP be on the project from the onset, through the final documentation submittals. If the firm is a reputable firm committed to LEED and green design, sustainable design will be integral to their design process. However, LEED documentation is an additional service and does require extra time; it is reasonable for LEED documentation and consulting services to be separate, additional fees.

It is also important that the team remain consistent throughout the duration of the project. There needs to be follow-through with the design concepts, especially when it is time to document the credits. Unfortunately if something gets lost in translation, you will lose a credit. You only need one LEED-AP, but you need commitment and buy-in from the whole team from early on in the process.

Design development goals include moving forward with full momentum toward actualizing the agreed upon LEED checklist in the design documents. It is important at this point to verify that

the project is within budget, and perform any cost analysis that is necessary, so that in the next step the construction documents can be completed efficiently and in accordance with the LEED checklist.

The design development checklist should include the following tasks:

- Continue to develop project specifications and incorporate LEED requirements. Masterspec has done a fine job of folding LEED applicable criteria and information into their files. However, most of the time a contractor will not issue the entire spec book to each subcontractor. It is imperative that with each section you specifically identify which credits a particular material needs to meet. Also, MasterSpec section 01352(1995)/018113(2004) LEED Requirements is a must.
- The commissioning agent should perform the preliminary design review of mechanical, electrical, plumbing systems.
- The LEED-AP should review site and interior lighting cut-off requirements and energy efficiency for selected fixtures. It is good practice to request preliminary site lighting foot-candle plot submittals for Sustainable Sites Credit 8 Light Pollution Reduction at this time for review.
- The LEED-AP should perform a quality control check of design development documents to ensure all credits are met before proceeding with CDs. This is a good time to familiarize the team with LEED-online, and require preliminary templates from team members to be completed and uploaded online.

An additional tool I like to use and adapt to each project is a "Materials Matrix" I created. I fold it into the project manual, as an appendix. It lists all of the specification sections, and indicates which materials in each of those sections are contributing to certain LEED points. This tool allows project participants to quickly assess substitutions of materials and their direct impact on LEED points.

Construction Documents

Construction documents tasks include finalizing the contract documents and fully incorporating LEED into the specifications. At this time the team can submit completed documentation for a design review of all applicable credits.

The GBCI (Green Building Certification Institute) allows teams with registered projects to submit documentation for the design credits when the contract documents are complete. So, at this point, complete the LEED Online Design Submittal. This process serves to allow teams the opportunity to assess the likelihood of achieving credits, although no points are officially awarded until the construction submittal. Note that a portion of the total certification fee is to be submitted at this point. A good rule of thumb is to initially give the team two weeks to submit templates and additional documentation online. Once everything is uploaded, the LEED-AP should be sure to conduct a thorough review of all credits and documentation prior to submitting to the GBCI. Note that some submittals simply require filling out templates while others require uploading additional documents.

Bidding

Once the construction documents are complete, and the bidding process has begun, it is important to hold a pre-bid kickoff meeting where the LEED goals are clearly defined. For some general contractors and subcontractors, this may be the first LEED project they encounter. It cannot be assumed that all participants and bidders are familiar with the LEED process. Additionally, it is not unusual for the construction manager and general contractor to hire their own LEED consultant to conduct field observations and assist with their scope of the LEED work if they are working on their first LEED project or need additional help to assist with the process.

The bidding checklist should include the following tasks:

- Include the LEED requirements in the invitation to bid and the bid requirements.
- The LEED-AP can review the bid documents to confirm that the LEED credits are met, as well as assist the general contractor in reviewing bids.

Construction

Prior to breaking ground, hold a LEED kickoff meeting on-site in conjunction with the pre-construction meeting. Invite all participants involved

Materials Matrix Example

Materials		Company Contact	MR 3.1 & 3.2 Resource Reuse	MR 4.1 & 4.2 Recycled Content	MR 5.1 & 5.2 Local Materials (1.)	MR 6 Rapidly Renewable	IEQ 4.1 Low Emitt. Adhesive Sealants (2.)	IEQ 4.2 Low Emitt. Paints (2.)	IEQ 4.3 Low Emitt. Carpets (2.)	IEQ 4.4 Low Emitt. Composite Wood
09 Finishes										
9260	Gypsum Board Assemblies									
	Gypsum Wall Board			✔	✔					
	Tile Backing Panels			✔	✔					
	Steel Framing			✔	✔					
9265	Gypsum Board Shaft Wall Assemblies									
	Gypsum Wall Board			✔	✔					
	Tile Backing Panels			✔	✔					
	Steel Framing			✔	✔					
9310	Ceramic Tile	Crossville		✔	✔					
	Grout	Laticrete-Spectralock			✔		✔			
9402	Terrazzo	Missouri Terrazzo		✔	✔		✔			
9511	Acoustical Panel Ceilings									
	Armstrong Acoustical Tile			✔						
	Armstrong Metal Works			✔						
	Hunter Douglass			✔						
9640	Wood (Cork) Flooring	Duro-Design		✔		✔	✔			✔
9653	Resilient Wall Base & Accessories	Johnsonite		✔			✔			
9654	Linoleum Floor Coverings	Armstrong		✔		✔	✔			
9681	Carpet Tile	Interface		✔			✔		✔	
9726	Tackable Wall Covering	USG Micore 300		✔	✔					
9841	Wood Acoustical Wall Panels	Decoustics - Solo 16		✔		✔				✔
9912	Painting							✔		
9960	High Performance Coatings							✔		
9981	Concrete Floor Cementitious Coating Finish	Bomanite					✔			

in the construction of the project to attend. Don't assume the general contractor will go back and relay every LEED related detail to all of his subcontractors. Make the information available first hand to each of the subcontractors and product suppliers. The general contractor's superintendent and project manager must attend, as well as any of the design team that you may think may be of assistance, such as engineers. The pre-construction meeting is a good time for the general contractor to clarify construction procedures including the construction waste management plan and the indoor air quality plan. It is a good practice for the general contractor to refresh on-site workers of the applicable LEED construction plans during the recurring site safety meetings typically held on a construction site. The general contractor should have a copy of the LEED reference guide in the plan room with the bid documents available to the subcontractors for their use during bidding, and also in the construction trailer on-site for reference during construction.

The construction checklist should incude the following tasks, depending on which credits are being pursued:

- Coordinate IAQ (Indoor Air Quality) and CWM (Construction Waste Management) plans; document monthly.
- Ongoing collection of LEED construction submittals online should occur. The LEED-AP project administrator should clearly outline due dates and deadlines for credit templates, as well as keep tabs on missing information.
- The general contractor should submit recycling and landfill tickets on a regular basis (once a month) by uploading to the LEED-online web site.
- The general contractor should manage and record the Materials and Resources and Indoor Environmental Quality credits routinely (once a month), including the low-emitting materials credits.
- It is helpful for the construction manager/general contractor to maintain his own worksheet documenting multiple LEED credits. It should employ the same method of calculating percentages as a fraction of the construction cost for the materials and resources credits, as will be used for completing the templates.
- The Architect/GC/CM/LEED-AP should conduct all shop drawing reviews and review all project submittals paying close attention, but not limited to, plumbing fixtures, light fixtures, roof, wood, and interior finish products. Substitutions should be very carefully evaluated so as not to inadvertently lose anticipated LEED credits.
- During construction, the LEED-AP should conduct field observation visits with accompanying field reports. Document any deviations in the field that may detract from a LEED credit that is being pursued, and notify the general contractor's project manager and superintendent immediately.

Completion of Construction, Prior to Occupancy

The pre-occupancy checklist should include the following tasks:

- The commissioning agent should perform the commissioning review. See LEED for New Construction Energy and Atmosphere Prerequisite 1 and Credit 3 for further information and credit requirements.
- Engage with the owner's representative and the team to perform the Indoor Air Quality test or building flush-out per the Indoor Environmental Quality Credit 3.2 requirements.

Documentation, LEED Construction Submittals, and Building Occupancy

Documentation tasks include collecting, reviewing, and submitting final documentation. As mentioned previously, all documentation is compiled and once completed, submitted online, allowing for a paperless process.

It is good practice to hold a retainer for the general contractor from the final pay application, in addition to the amount held for substantial completion. In my experience, subcontractors do not want to deal with gathering and submitting documentation until construction is complete. Yet, once construction is complete, they want to be finished with the project. If a retainer is held, it provides a means

to collect the documentation data more quickly. An additional 10–20% should be adequate depending on the size of the project. No payment should be made until certification has been awarded by the USGBC, because additional data will be required of the design team after the preliminary review. It is also good practice to hold a 10% minimum retainer for all design consultants.

The certification process is a two-phase review. The GBCI (Green Building Certification Institute) reviews the documentation once and requests additional information for the credits they select to audit. If any changes to design credits previously submitted occurred, the team must resubmit. Submit verification that design credits were implemented as previously submitted. The team has 25 days to resubmit the further requested information for the final review. So including the design submittal, the team will most likely submit three times to the GBCI for review.

Final action items, upon receiving the final review response from the GBCI include the following:

- Accept or appeal credits (There is a cost to do so.).
- Assist owner with the paperwork to receive the certification plaque.
- Notify team of certification achievement.
- Upon certification, pursue LEED-EB if so desired upon two years of operating the building.

CONCLUSION

LEED is achievable through an integrated approach, as well as early support and commitment from the owner and design team. With a knowledgeable and experienced LEED-AP as an integral member of the team, the LEED process can be a unifying and camaraderie-building element for all of the project participants. Through a systematic and pragmatic approach, LEED certification is an attainable and rewarding process.