# SUSTAINABILITY CHECKLIST

## I. IN THE BEGINNING

**√ - Identify Client's Specific Motivation/Objective For Making Sustainability a Part of Program**

- Competition Driven
- Financial Incentive Driven
  - Tax Incentives
  - Density Incentives
  - Expedited Permitting
  - Who will post bond required by gov't regulations
  - Create responsibility matrix that addresses responsibilities of Parties
- Belief Driven
  - Use sustainable building materials,
  - increasing energy efficiency,
  - improving indoor air quality, or
  - lessening one's carbon footprint
- All of the above

**√ - Identify Participants Required to Assist Owner/Developer and End Users in meeting Sustainability Goals**

- Lender/Funding Source Representatives
- Architect/Consulting Engineers (AE) especially MEP Engineer
  - Commissioning Authority (CxA) (if LEED)
- Landscape Architect
- Construction Manager/General Contractor (initially as consultant)
- Major Trade Contractors (initially as consultants)
- Governmental Representatives Responsible for Implementing Local Sustainable Building Program(s)
- Sustainable Design Criteria Consultant–
  - to guide stakeholders in their decision-making
  - research and utilize data (if any) from other similar projects in similar locale
- Financing Consultant- provides analysis/rates of return re sustainability measures considered for the project
- Tenants

**√ - Engage Experienced AEs and Contractors Capable of Working Together Collaboratively Beginning Early in the Development Process**

**√ - Initial Considerations for Project Team**

- Establish "green" building rating agency and/or system to apply. Examples Include
  - LEED – level of certification (Platinum, Gold, Silver) and division by project type
  - Energy Star –joint program of U.S. EPA and U.S. DOE (focuses exclusively on energy performance)
  - Green Globes – Green Building Institute
  - consider use of performance-based sustainability standards such as those set forth in the Living Building Challenge (see: ilbi.org/lbc)
- Understand minimum requirements for compliance with laws/regulations.
  - NB: many public entities have mandatory requirement to meet LEED standards or equivalent for new or major renovation
  - consequences of failing to meet identified minimum requirements
- Financial Package: How to obtain
  - Tax credits
  - government grants/other funding
- Will Tenant compliance/cooperation be required and, if so, to what Extent
- Establish Clear Project Goals as set forth in next Checklist

**√ - Identify/Establish Clear Project Goals Based Upon Client's Objectives/Sustainability Plan**

- Hold "Sustainability Workshop" Among Owner, Design and Construction Teams:
  - Define "long-term sustainable success" for the Project (can come from below Checklist of Resources to be Conserved)
  - Understand Short and Long-term Goals
  - Assess Risks
  - Ensure each goal for each resource fits with overall priorities
  - Align Strengths/Objectives toward meeting Goals
  - Determine scope of BIM applications

- Consider Resources To Be Conserved/Goals to be met for rating system within the different categories of resources
    - General Considerations
        - Account for Local Climate
        - Account for Site Conditions
        - Understand Massing and Project Type
    - Specific Resources To Consider For Conservation
        - Air Quality Goals
            - Decrease $CO_2$ (Greenhouse) Gas Emissions
            - Improve Indoor Air Quality
        - Energy Use
            - Greater Energy Efficiency in Operation
            - Alternative Fuels
            - Renewable Energy
                - Solar
                - Wind
        - Soil/Land
            - Brownfield vs. Greenfield for new construction
            - Reduce Urban Sprawl
            - Preservation of Habitats of Native Species (Plants and Animals)
        - Water
            - Water Saving/ Water Recycling
            - Flood Protection
        - Transportation
            - Reduce need for transport
            - Increase use of public transport
            - Use of Teleconferencing/Webconferencing
            - Encourage Use of Hybrid Vehicles
        - Waste
            - Reduce
            - Re-use
            - Recycle
- In LEED Environment, Workshop Should:
    - Examine each LEED credit utilizing the appropriate Green Building Rating System Project Checklist as a template for establishing green building goals
    - identify potential LEED points

    - examine strategies for implementation
        - Consider the credit for Enhanced Commissioning (EC). EC may increase probability that project will achieve LEED goals on time/within budget/maintain performance benefits after construction
    - assess the impact of pursuing particular LEED credits on the Owner's program and budget
    - determine the LEED points to be targeted
    - consider strategies for addressing potential coordination, delays and sequencing conflicts of long lead-time "green" materials;
    - identify and recruit subcontractors/suppliers with experience and skills in "green" construction;
    - avoid "green washing" and unnecessary "green premiums" on materials and equipment;
    - establish processes and systems for collecting and maintaining LEED submittal documentation
    - establish milestones in the Project Schedule
        - Identify date for move-in/opening for end-user (can occupancy/use prior to final completion be accomplished?)
        - Analyze LEED's Two Phase Certification Process as it affords project teams the opportunity to assess the likelihood of credit achievements, correct any deficiencies or modify the targeted credits before a point in construction is reached that could jeopardize achieving the desired rating or significantly increase the cost of doing so
- Workshop Should Result in "Sustainability Plan" or "LEED Certification Plan," discussed in more detail in Part II, and contain:
    - written consent of each member or note disagreement to any element of the Plan and list reasons for disagreement
    - a description of the green building goals established, and/or the LEED credits and points targeted that include a reasonable number of additional credits and/or points
    - a description of how the plan is to be implemented including design schedule,

- list of participants and their roles and responsibilities,
- list of systems and components to be commissioned and documentation required

## II. DEVELOP A SUSTAINABILITY PLAN

**√ -Layout strategies for accomplishing particular activities**

**√ -Prepare a detailed evaluation plan for meeting goals established in Sustainability Workshop/Sustainability Plan**

- Make Decisions regarding inclusion of Developing/Newer Technologies
- Take Baseline measurements in Existing Buildings
- New Construction – determine baseline to be utilized - e.g. better than standard bldg. in same climate/environment; ASHRAE standards; or other recognized performance measurements
- Review and Incorporate these additional details into Part I's Sustainability Plan

**√ -Understand Restrictions in Detail**

- Legal
- Funding/Budget
- Procurement/Delivery

**√ -Incorporate the elements of the Sustainability Plan into Drawings and Specifications with Sufficient Detail for Implementation – consider incorporating Sustainability Plan as a Contract Document for Project**

## III. Procurement of Design and Construction Services and Insurance

**√ - Owners Should Not Rely on Industry Standard Forms of Agreement in Negotiating Owner/AE Contract or Owner/GC or CM Contract**

- AIA® Forms B101™ and B214™ only scratch the surface of the A/E's role and its ramifications and in no way addresses the responsibilities of contractors, subcontractors, or suppliers
- AIA Forms A101™, A102™, A133™ and A201™ are devoid of references to LEED
- See Appendix "A" for Discussion of AIA Forms B101/A201

**√ -Provide mechanism in all contracts to change Sustainability Plan as needed – including, e.g., hourly rates for additional services, parameters for sustainability related change orders, etc.**

**√ -Purchase Property Insurance that Covers Losses Associated with Green Buildings**

- Check the Coverage under Your Property/Builder's Policy
- Traditional insurance products may fall short of providing adequate coverage for materials and systems used in green buildings.
- Look for coverage on:
  - non-toxic, low odor paints and carpeting;
  - interior lighting systems that meet LEED standards;
  - water-efficient plumbing;
  - Energy Star qualified roof and insulation materials;
  - additional cost of having a building certified.
  -

**√ - Owner/AE Agreement**

- Incorporate Sustainability Plan/Goals/Guarantees into Owner/AE contract
- If any other design professionals are contracting directly with the owner, requirements must be consistent among all
- One design professional (typically the architect) must have overall responsibility to coordinate all other designs for consistency
  - If architect, should incorporate same responsibilities into its sub-consultant contracts –
- A/E Scope: If LEED certification is pursued, the scope of the AE's services in the Owner/AE Agreement can be modified to include the following:
  - informing the owner about the LEED rating system and its available options
  - recommending designs and alternatives that are consistent with the owner's approved LEED-related objectives, program, and applicable law;
  - collaborating with the CxA and contractors to arrive at a plan targeting LEED credits and strategies for achieving them;
  - including LEED points in excess of the number required to achieve the desired LEED rating;
  - preparing the Owner's Program Requirements and Basis of Design;
  - scheduling design services to utilize the USGBC's two-phase application process;
  - providing services required to appeal the denial of any claimed credit;

- referencing LEED requirements in Division 1 of the specifications, in the applicable technical division, and on the plans;
- managing the collection and submittal of required LEED® information;
- using commercially reasonable efforts to prevent "green washing"—i.e., the practice of some product manufacturers to make inaccurate claims about the "green-ness" or performance of their products; and
- denying certification of payment to contractor not in compliance with its LEED-related obligations

- A/E Liability and Remedies - if LEED certification is pursued, the owner should consider the following with respect to AE liability and remedies:
    - Address Owner-directed substitutions/design changes and affect on certification requirements
    - re-defining the standard of care to include AEs experienced in the design and administration of LEED projects;
    - withholding retainage from AE's fees and releasing it upon a successful design phase review and eventual certification of the project;
    - Retain independent "Dispute Resolutions" Professional to address disputes during construction, quickly and efficiently; and
    - in the event that the Desired Rating is not achieved due to AE negligence, consider:
        (i) establishing an amount of liquidated damages if the consequences of a denial of certification would be difficult to determine;
        (ii) making the financial consequences of a denial of certification recoverable for a breach; or
        (iii) leaving remedy options open by not waiving consequential damages.

√ - **Owner/GC-CM Agreement**

- Prepare the construction contract(s) to incorporate the drawings and specifications prepared in accordance with the Sustainability Plan
- Owner/GC-CM Scope: If LEED certification is pursued, the scope of the **GC-CM'**s services in the Owner/ **GC-CM Agreement** can be modified to include the following:
    - recruiting subcontractors and suppliers with validated experience and skills in green construction (avoiding bids that contain unjustified green premium)

- recommending appropriate modifications to the drawings, specifications, and subcontractor bid documents to facilitate compliance with the targeted credits
- Address construction schedule impacts re learning cost/curve of new products, including installation of same
- Address product substitutions
- complying with the requirements of targeted credits which depend upon the contractors' performance
- implementing system for submitting the required LEED® information
- training operating personnel in utilization of systems and equipment

- GC-CM Liability and Remedies: If LEED certification is pursued, the Owner should consider the following with respect to GC-CM liability and remedies:
  - making submittal of LEED information a condition precedent to payment;
  - re-defining substantial completion to include successful commissioning;
  - holding the contractor accountable for remediation resulting from unauthorized substitutions, changes, or "value engineering" that prevent a project from achieving its desired level of LEED certification;
  - Retain independent "Dispute Resolutions" professional to address disputes during construction, quickly and efficiently.
  - releasing final payment in installments: for example, half upon final completion and the balance upon certification of the project;
  - establishing an amount of liquidated damages (or not) under similar circumstances as set forth above for the A/E
  - Consider inclusion of performance guarantee
  - Consider extent to which contractor will maintain any responsibility for operation and maintenance – through warranties or other mechanisms, particularly if energy audit will be performed after 1st year of operation
  - Analyze affect of force majeure event (and clause) on incentives, goals, and certification requirements.

## IV. DESIGN THE PROJECT

**√ -Incorporate specifics from the Sustainability Plan comprehensively and consistently into all drawings and specifications for project**

**√ -Identify/review effects that sustainable measures will have on building systems and other aspects of project –**

- e.g. - with use of HVAC system – be sure that in a humid climate it operates often enough to remove sufficient moisture from the air so that occupants are comfortable and building finishes, furniture, equipment do not get moldy, operate poorly, etc. **–**

**√ -Be clear on fallback options for untested materials and equipment – if they do not meet the sustainable objective, identify what will be done, instead.**

**√ -Monitor and enforce AE and GC/CM contractual obligations**

## V. PERFORM THE PROJECT

**√ -Evaluate progress/revise activities of Sustainability Plan as needed**

**√ -Regularly report progress to funders and stakeholders**

- Encourage participation of end-users so the post-construction implementation needed is clear to attain/maintain the sustainability standards/objectives of the Sustainability Plan

**√ -Monitor and enforce AE and GC/CM contractual obligations**

## VI. POST CONSTRUCTION

**√ - Perform Energy Audit**

**√ - Training end-users**

- Energy Saving Measures
- Recycling
- Use of Specialized Technology

**√ - Perform "warranty" inspection before end of first year after substantial completion**

## ▪ APPENDIX "A"

▪

- If using AIA form of documents, remember the architect does not have a specific standard of care, and see, e.g., the following standard/unaltered provisions in the AIA family of documents that should be considered carefully and potentially modified for an owner's benefit:

    - **(AIA B101-2007 SP) § 10.9** The Owner and Architect acknowledge that achieving the Sustainable Objective is dependent on many factors beyond the Architect's control, such as the Owner's use and operation of the Project; the Work provided by the Contractor or the work or services provided by the Owner's other contractors or consultants; or interpretation of credit requirements by a Certifying Authority. Accordingly, the Architect does not warrant or guarantee that the Project will achieve the Sustainable Objective.

    - **(AIA B101-2007 SP) § 5.13** The Owner shall perform those Sustainable Measures specifically identified as the responsibility of the Owner in the Sustainability Plan, including any approved changes or as otherwise required by the Contract Documents. The Owner shall require that each of its contractors and consultants perform the contractor's or consultant's services in accordance with the Sustainability Plan.

    - **(AIA B101-2007 SP) § 3.3.4.2** The Architect shall perform those Sustainable Measures identified as the responsibility of the Architect in the approved Sustainability Plan and any approved changes to the Sustainability Plan. If the Sustainability Plan requires the Architect to provide services beyond those based on the Initial Information, those services shall be provided pursuant to Section 4.3.1.1 *(Note that those are Additional ($$$) Services)*.

    - **Note also that the decisions made regarding the Sustainability Plan carry through to the construction contract: See, e.g., (AIA A201-2007 SP) § 3.1.2** The Contractor shall perform the Work in accordance with the Contract Documents, including any Sustainable Measures identified as the responsibility of the Contractor in the Sustainability Plan.