DESIGN GUIDELINE 3.1
SUSTAINABLE DESIGN AND LEED® REQUIREMENTS

Scope

The University of Michigan is committed to environmental stewardship and promotes implementation of sustainable design concepts. Many of these concepts are incorporated directly into various sections of the U-M Design Guidelines and Master Specifications. This section addresses additional requirements and resources with respect to sustainable design and LEED requirements.

Related Sections

U-M Design Guideline Section:
2.1 - Owner's Project Requirements and Basis of Design Documents

U-M Master Specification Sections:
7.0 MS015719 - Construction Air Quality
7.0 MS017420 - Construction and Demolition Waste Tracking

Related Documents:
AEC Title Block and Sustainable Facts Diagram
Building/Project Sustainability Summary
U-M LEED Project Registration Procedure

Reference Documents:
USGBC, "LEED® Reference Guide for Green Building Design and Construction"
USGBC, "LEED® Reference Guide for Building Design and Construction - Healthcare"

Sustainable Design Requirements

All Projects

Prior to beginning Schematic Design, clarify the design objectives with respect to sustainable design, in conjunction with the U-M Design Manager. It is the University's expectation that sustainability be a consideration for all projects.

U-M Master Specification 015719 - Construction Air Quality shall be included in the contract documents and edited to be project specific. This specification provides requirements for construction air quality including requirements for bio-diesel fuel and exhaust after-treatment devices on construction equipment.

U-M Master Specification 017420 - Construction and Demolition Waste Tracking shall be included in the contract documents. This specification documents the disposal of waste

through use of the U-M Waste Tracking Report. This specification shall not replace construction waste management specification sections and shall not be edited by the A/E.

Document all sustainability design concepts in the project OPR/BOD (Owner's Project Requirements/Basis of Design) document. 2.1 - Owner's Project Requirements and Basis of Design Documents provides a complete description of OPR/BOD requirements.

Upon completion of the Construction Documents phase, use the EPA website to determine if the project is eligible for Designed to Earn ENERGY STAR. A/E to process all required paper work should the project be eligible.

Integrative Design Process Requirements

Required for new buildings and building additions as well as major renovation projects over $10 million construction cost

The Integrative Design Process is a collaborative effort across disciplines to identify synergies and support high performance and cost-effective project outcomes. The process starts in pre-design and continues throughout the design process. Outcomes determined as part of the Integrative Design Process are to be documented in the OPR/BOD.

At the start of Pre-Design, perform and document early research and analysis of the project's site conditions; potential options for building massing and orientation, utility and mechanical systems, water systems, building envelope systems; occupant comfort goals; and sustainability goals.

Work with the Design Manger to set up the Integrative Design kick-off meeting, determine the participants and stakeholders, and set up a timeline for integrative workshops throughout the project.

- To maximize involvement work with the Design Manager to distinguish participants (U-M representatives that are required to be in the Integrative Design meetings) and stakeholders (U-M representatives that are not required to be included in the actual meetings but are to be notified of meeting topics and outcomes).
- Prior to each meeting, presentation materials are to be provided to participants and stakeholders.
- At the conclusion of each meeting, meeting minutes are to be provided to participants and stakeholders.
- A timeline for Integrative Design meetings is to be established at the start of SD phase.
- At a minimum, one Integrative Design meeting is to be scheduled per phase (SD, DD, and CD).

At a minimum, the following items are to be addressed throughout the Integrative Design Process, as applicable to the project:

- Investigate the potential of the project site as it relates to preservation of existing habitats, occupant views, renewable energy production and stormwater management.
- Consider the impact that building height, massing and orientation may have on energy use and occupant comfort.
- Use energy modeling to identify heating and cooling load demands, energy conservation measures, and energy consumption of end uses (such as, space heating, space cooling, ventilation, process loads, lighting, domestic hot water, etc.).
- Identify opportunities for reductions in indoor and outdoor potable water use.
- Consider the impact fenestration may have on energy use, systems sizing and occupant comfort. Investigate the impact of window and door locations and types, the overall window-to-wall ratio, and potential window treatments.
- Develop building envelope design and systems.
- Optimize and size building mechanical and electrical systems
- Determine and evaluate sustainability goals including carbon emissions targets, energy cost savings over an ASHRAE 90.1 baseline, Energy Use Intensity (EUI) benchmarking by building type, water savings, LEED certification and other certifications and/or green building programs as determined by the project team.

Visual Display Requirements

To be determined on a project-by-project basis (typically required for projects over $10M construction).

Produce a visual display. Include, at a minimum, the following:

- Building name
- Project name
- Project description
- Photo or rendering of project (cross section, perspective, or elevation)
- Site plan to depict project location
- AEC Title Block and Sustainable Facts Diagram (revise to be project specific)
- Simplified, project specific visual graphics to depict sustainability features (e.g. diagrams to explain how system work). Do not provide generic LEED credit descriptions.
- Energy conservation measures
- Overall energy savings when compared to ASHRAE 90.1 baseline. Include ASHRAE 90.1 version used.
- Overall water savings based on the Energy Policy Act of 1992 fixture performance requirements.
- **CD Phase Visual Display:** Recognitions and certifications being pursued (e.g. LEED, Designed to Earn Energy Star).
- **Project Completion Visual Display:** Recognitions and certifications received (e.g. LEED, Designed to Earn Energy Star). Include certification logos.

Design Manger to coordinate review and approval of visual display.

Submit a digital copy of the visual display with Design Deliverables at CD phase for Owner's Review.

Upon completion of the CD phase the visual display to be updated to reflect all Owner's Review comments and the following files are to be provided:

- Complete data files (including all file links necessary to make updates to the visual display) from the graphics program.
- 11x17 digital pdf file in high resolution (minimum 300 pixels/inch resolution) of visual display
- 24x36 digital pdf file in high resolution (minimum 300 pixels/inch resolution) of visual display

After project completion, CD phase visual display to be updated to reflect all accepted Alternates and Owner's Options, recognitions and certifications received. Final visual display to be submitted in the following format:

- Complete data files (including all file links necessary to make updates to the visual display) from the graphics program.
- 11x17 digital pdf file in high resolution (minimum 300 pixels/inch resolution).
- 24x36 digital pdf file in high resolution (minimum 300 pixels/inch resolution).

Contact the AEC Sustainability Coordinator for example visual displays.

Sustainability Summary

Required for projects over $10M construction cost.

At the **start** of Schematic Design (SD) phase, assist the Design Manager with completing a Building/Project Sustainability Summary for posting on the AEC website. The Building/Project Sustainability Summary is to be updated at each design phase. A final summary shall be submitted at project completion.

LEED Requirements

New Buildings and Additions over $10M construction cost (new construction only)

All new buildings and additions with an estimated construction budget greater than $10 million shall be designed to achieve a minimum of Leadership in Energy and Environmental Design (LEED) Silver certification using the appropriate rating system. Certification shall be obtained from the Green Building Certification Institute, Inc. (GBCI®).

LEED Registration

All projects pursuing LEED certification will be registered with LEED Online by the U-M AEC Sustainability Coordinator; from that point on the A/E's designated LEED Administrator will be responsible for assigning and managing the attempted credits within LEED Online. See the U-M LEED Project Registration Procedure for complete details.

LEED Checklist and Communication Process

The A/E's designated LEED Administrator shall be responsible for the management and execution of the following checklist and communication process, in addition to other documentation, calculations and processes required for LEED certification:

(a) At the conclusion of schematic design, develop a preliminary LEED Checklist utilizing the most current LEED Reference Guide for the appropriate rating system, including Addenda.
(b) The checklist should identify all items for which credit can be achieved, items for which credit is under consideration, and items for which no credit can be achieved.
(c) For items "under consideration", clarify steps required for this review and analysis, potential options, and potential cost and benefit. The U-M AEC Sustainability Coordinator and U-M Design Manager will assist in refining this list and provide direction on further action as design progresses to DD and CD phases.
(d) At the conclusion of DD phase, update the LEED Checklist. A clear direction should be established for "under consideration" items. Items should be included in scope, deleted from consideration, or included as bid alternates.
(e) At the conclusion of CD phase, update the LEED Checklist. The updated checklist should include any additions and/or subtractions to the project scope that may have occurred during design development and affect the total score anticipated at the conclusion of DD.
(f) At the conclusion of Bid Award, the A/E's designated LEED Administrator is responsible for the submittal of design phase credits to GBCI® for LEED Review. LEED submittal fees shall be paid by the A/E and listed as a reimbursable expense.
(g) After GBCI® completes its review of the LEED application, the A/E's designated LEED Administrator shall conference with the project team and the U-M AEC Sustainability Coordinator and present all technical advice received from the GBCI® reviewers. Describe strategies to respond to points denied or information forms not approved. Conduct such conferences after every LEED review phase.
(h) At the completion of the construction phase, update the LEED Checklist. The updated checklist should include any additions and/or subtractions to the project scope that may have occurred during construction and affect the total score anticipated at the conclusion of CD.
(i) At the conclusion of the construction phase, the A/E's designated LEED Administrator is responsible for the submittal of design phase to GBCI® credits for LEED Review. LEED submittal fees shall be paid by the A/E and listed as a reimbursable expense.
(j) Upon receipt of LEED certification, the A/E's designated LEED Administrator shall notify the U-M AEC Sustainability Coordinator. A/E to obtain authorization from the AEC Sustainability Coordinator prior to publishing LEED certification results on any media platform.
(k) Upon receipt of LEED certification, the A/E's designated LEED Administrator shall notify the U-M AEC Sustainability Coordinator. A/E to obtain authorization from the AEC Sustainability Coordinator prior to publishing LEED certification results on any media platform.

Existing LEED Certified Buildings

Projects within LEED certified buildings shall be implemented so as not to jeopardize sustainable design and the LEED certification. A complete list of LEED certified buildings is located in the Sustainability Section of the AEC website. Contact the AEC Sustainability Coordinator with specific questions related to existing LEED certified buildings.