UAB FACILITIES

DESIGN AND CONSTRUCTION STANDARDS

Title: Section 018113 – Sustainable Design Requirements		*Active Version*
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Approved By: _____ Robert E. McMains Date	Approved By: _____ Robert E. McMains Date	
Cross-Reference (CR): Sections 015639, Section 265100, Section 328400, Section 265600		

A. Purpose:

Sustainability is a movement designed to bring human activities into balance with global resource availability. This effort attempts to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. In evaluating the true cost of development, social and environmental performance can be valued along with financial performance. This three-pronged framework of social, environmental, and economic aspects of development is known as the triple bottom line, and should be considered in all UAB design and construction projects.

As the largest employer in the state and as an academic, healthcare, and research beacon for the community, UAB has established sustainability as an institutional priority. As such, UAB is obligated to promote sustainable, whole building and systems design practices. Architects, Engineers, Consultants and Contractors are encouraged to think in innovative ways to create buildings and systems that will conserve the natural environment of the building site and beyond, in addition to considering the responsibility of the materials supply chain and future operating costs of the building. All facilities studies as well as building and systems designs shall assess sustainable strategies that can be used on a project and shall incorporate such features as approved by UAB Facilities.

Sustainability Goals:

While UAB does not participate in the U.S. Green Building Council's LEED building rating system, LEED standards are referenced as a guiding principle in projects, both new and renovation. Complementary standards referenced herein set selected requirements for sustainability-related metrics. In addition, Architects, Engineers, Consultants, and Contractors shall use the information offered within this standard to discuss additional, specific sustainability goals for each project. This may include investigation on the technical merits and life cycle costs of some proposed elements. These goals will be included in the published goals for the project team. With these goals, the project team shall complete the attached *Sustainable Building Design Parameter Checklist* and submit it to the UAB Project Manager upon completion of the **Design Development Documents** for review and approval.

B. Requirements:

Refer to individual sections contained within these Design and Construction Standards for requirements on specific materials, practices, or strategies that may also relate to sustainable design principles. Additional information is included below for items not specifically addressed by an individual standard, but relevant in sustainable design.

Site:
Building sites are typically determined during the master planning process and therefore the design team will have little or no influence on the location of the building. However, the orientation of the building on the site and its relationship to adjoining buildings can be reviewed and discussed with the project team to consider the benefits of passive solar design.

In addition, the hydrology of the site should be evaluated early in design to consider existing hydrologic site challenges as well as options for building footprint as it relates to managing storm water on-site through rainwater collection and reuse, bio-swales, and other forms of low-impact development. Many municipalities with aging and undersized stormwater infrastructure have implemented benchmarks for delayed flows, quantity reductions, and quality improvement. Project teams should set a hydrology goal for the project, such as 20% reduction in quantity outflow from the pre-development state or managing the first inch on site before outflows occur.

Landscape:

Early in design, the site should be evaluated by a member of the project team and the University Landscape Architect. Per the UAB commitment to Tree Campus USA, this should include an evaluation of the feasibility of preserving existing heritage trees on the site, as well as assigning a monetary value to the trees that will be removed for construction.

Care of trees that will be affected by construction should be directed by the UAB Hardscape Landscape Projection Standard 015639. New landscape designs should consider low water-use, native, and adapted vegetation from the UAB Preferred Plant List selected to promote habitat and biodiversity. In addition, tree selection shall be designed to cover a portion of the site with canopy; particularly where occupants and visitors will walk, recreate, or where surface parking is provided. Where feasible, outdoor spaces should be constructed with physical site elements to promote social and recreational activities with pedestrian-oriented accesses.

Landscape Irrigation Systems:

Landscape irrigation systems should be directed by the UAB Irrigation Standard 328400. Where feasible, drip irrigation and irrigation zones specific to the water requirement of like plant materials should be used. Rain and/or soil moisture sensors are encouraged so irrigation water is applied only as needed. Consideration of use of cisterns to collect stormwater runoff for irrigation water is strongly encouraged to reduce potable water demand in irrigation systems.

Multimodal Transportation:
There are public transportation routes through the UAB campus along with a UAB bus service, the Blazer Express. Building access points should be designed such that occupants and visitors utilizing bus service gain access to the service safely and within short walking distance. In addition, short-term bicycle storage (see UAB Bike Rack Standard *XXXXX*) shall be visible from any main entrance.

Interior Lighting:

In addition to the Interior Lighting standard 265100, innovative design components that reduce lighting needs, such as daylighting, daylight sensors, and occupancy sensors should be considered.

Active Design:

Innovative ways to permit occupants and areas to have a line of sight to the outdoors are encouraged in the design process, where functionality will not be overly compromised. In addition, at least one stairway should be prominent within the interior design to encourage use in lieu of elevators. This improves connectivity among occupants, reduces energy consumption from elevators, and increases worker wellness and efficiency.

Heat Island Effect:

UAB has built vegetated roofs on campus and actively encourages light-colored, reflective material on roofs of campus buildings (UAB Roofing Standard 07500). For ground and plaza areas, shade should be provided on the site using canopy-forming vegetation and/or shade structures. Paving materials with solar reflectance (SR) value of at least 0.28 are preferred where possible. For parking lots, refer to UAB Surface Parking Lot Standard *XXXXX* and for streetscapes refer to UAB Streetscape Standard *XXXXX*. The design team should discuss additional strategies to reduce heat island effects and their applicability with the UAB Project Manager early in **Schematic Design**.

Light Pollution Reduction:

Providing a safe environment to our students, faculty and visitors is very important at UAB. Evening classes are taught on campus and many of our buildings are occupied late into the evening. Additionally, the campus borders a residential area on the South and Western sides, so the design team must take into consideration the need to provide a well-lighted campus while reducing light spillage onto adjacent properties and into the sky. Exterior lighting strategies and solutions should be discussed with the Project Manager, the UAB Energy Management Department, and the University Landscape Architect during **Design Development** to determine the proper exterior lighting design, including reference to the UAB Exterior Lighting Standard 265600.

Water:

UAB has both Fin and Ground Water Recovery Systems to utilize wastewater in the chill water system. The design team should discuss these water reduction programs, as well as innovative efforts with greywater for non-potable uses like toilet flushing, with the UAB Project Manager early in **Schematic Design** to determine applicability. In addition, selection of hands-free faucets and water-saving dual-flush toilets is encouraged. Water fountains with water bottle filling stations toppers should be installed in common spaces on each floor.

Optimize Energy Performance:

The following strategies should be reviewed early during **Design Development** to determine:

1. Optimization of the building envelope including wall and roof insulation.
2. The type and location of exterior windows and doors.
3. The use of high efficiency lighting systems that maximize lighting levels at the lowest possible power density.
4. The use of ASHRAE 90.1-2007 when designing lighting and ASHRAE Standard 55-2004 when designing HVAC systems.
5. Use of energy recovery for outside air conditioning and optimizing the efficiency of HVAC equipment (chillers and boilers).
6. Occupancy sensors and/or building automation that can reduce air exchanges when rooms are unoccupied.

Enhanced Refrigerant Management:

Most buildings at UAB are served by the existing chill water plants. Additionally, several of the buildings on campus are also served by the steam plant. The project Engineers should discuss the possibility of connecting their project onto the University's chill water and steam plant early in the design process to confirm that the anticipated load requirements can be adequately served.

Construction Indoor Air Quality Management Plan – During and Post Construction:

When a renovation project occurs at UAB, the adjacent spaces are normally occupied during construction, therefore indoor air quality management is extremely important. This includes dust control as well as noise and vibration control. The Project team shall discuss and develop a plan to manage the control of air quality during construction of the project that includes construction-designated filtration media in any permanently installed air handling equipment. While UAB specifies low-VOC carpets, paints, etc. in other standards, this air-quality management plan should also include any considerations for off-gassing periods before the building is occupied. This management plan shall be incorporated into the bidding and contract documents so that the contractor is aware of these requirements.

Recycling:

UAB has an active recycling program to collect paper, cardboard and other recyclable goods in and around campus buildings. The project team should discuss location(s) for recycling collection alongside normal waste collection, particularly in public spaces within the building.

Supply Chain

Designs should specify materials, from lumber to hardscape to furniture and finishes, which are sustainably sourced, within the project budget.

Construction Waste Management:

It is UAB's intent to recycle as much construction waste as possible, with a goal of 100% diversion of roadway materials and at least 50% of all other materials such as carpet, door hardware, concrete, and reinforcing steel. In order to achieve these goals, the following guidance should be followed:

1. A recycling plan shall be prepared and submitted to the UAB Project Manager prior to commencement of constructions activities.
2. Hazardous materials are normally disposed of prior to the commencement of construction activities. The UAB Project Manager shall be notified if any suspected hazardous materials are identified and/or uncovered during construction so that proper disposal can be addressed.
3. Both costs and profits from recycled wastes shall be incurred by the contractor.
4. Quantities of each recycled material shall be documented by the receiving agent and submitted to the UAB Project Manager.
5. Reuse of materials is encouraged, as approved by the project Architect and/or Engineer.

C. Products:

Not used in this Standard.

D. Execution:

All sustainability strategies shall be presented to, discussed with, and approved by the UAB Project Manager before implementation.

End of Standard