

**Section 018113 – Sustainable Design Requirements**Sustainability:

Sustainability is a worldwide movement designed to bring human activities back in balance with global resources by balancing the needs of society with the impact on the environment and economy, or, in short, People, Planet and Profit. As the largest employer in the state and as an academic, healthcare and research beacon for the community, UAB is accepting responsibility for being a leader in sustainability. As such, UAB is obligated to promote environmentally friendly, whole building and systems design practices. Architects, Engineers, and Contractors are encouraged to think in new and different ways to create buildings and systems that will conserve energy, water, the natural environment of the building site. All facilities studies, 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 major construction projects, both new and renovation, our goal is to strive to balance environmental responsibility, resource efficiency, occupant comfort and well-being, and community sensitivity. Architects, Engineers, and Contractors shall discuss specific sustainability goals which may include investigation on the technical merits and life cycle costs of all measures with UAB Facilities and 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.

Specific Requirements:

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

Site Selection:

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.

Alternative Transportation:

There are public transportation routes through the UAB campus along with an on-campus taxi service.

Heat Island Effect – Roof:

UAB has built vegetated roofs on campus and actively uses “white roofs” on their campus buildings. The design team should discuss the potential use of sustainable type roofs to determine 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 on to adjacent properties. Exterior lighting strategies and solutions should be discussed with the Project Manager and the UAB Energy Management Department to determine the proper exterior lighting design.

### Water Use Reduction:

UAB is currently implementing the use of a Water Fin Recovery System to recover chill water from the cooling towers that would normally be lost and recovers it and recirculates it back into the chill water system. Additionally the use of condensate water to irrigate plant material around buildings is being used. The design team should discuss these water reduction programs with the UAB Project Manager early in the project to determine it applicability.

### Optimize Energy Performance:

The following strategies should be reviewed as early as possible during the design process:

- Optimization of the building envelope including wall and roof insulation.
- The type and location of exterior windows and doors, the use of high efficiency lighting systems that maximize lighting levels at the lowest possible power density.
- The use of ASHRAE 90.1-2007 when designing lighting and ASHRAE Standard 55-2004 when designing HVAC systems.
- Use of energy recovery for outside air conditioning and optimizing the efficiency of HVAC equipment (chillers and boilers).

### 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 on to the University's chill water and steam plant early in the design process to confirm the anticipated load requirements can be adequately served.

### 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 below should be followed:

- A recycling plan shall be prepared and submitted to the UAB Project Manager prior to commencement of constructions activities.
- 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.
- Recycled wastes shall be paid for by the contractor.
- Quantities of each recycled material shall be documented along with the receiving agent. Documentation shall be submitted to the UAB Project Manager.
- Some materials can be reused as approved by the project Architect and/or Engineer.

Construction Indoor Air Quality Management Plan – During Construction:

When a renovation project occurs at UAB, the adjacent spaces, above, below, and to the sides, are normally occupied during construction, therefore indoor air quality management is extremely important. This includes not only dust control, but noise, and vibration control as well. The Project team shall discuss and develop a plan to manage the control of air quality during construction of the project. This management plan shall be incorporated into the bidding and contract documents so that the contractor is aware of these requirements.

## SUSTAINABLE BUILDING DESIGN PARAMETER CHECKLIST

### BUILDING

Name: \_\_\_\_\_ Type: \_\_\_\_\_ # of floors: \_\_\_\_\_ GSF: \_\_\_\_\_ sqft

### BUILDING ENVELOPE

#### Roof System

- White Reflective
- Other color: \_\_\_\_\_
- Vegetative
- Insulation – inside ceiling
- Insulation – outside on roof
- Insulation thickness: \_\_\_\_\_
- Total R-rating: \_\_\_\_\_

#### Walls & Exterior Covering

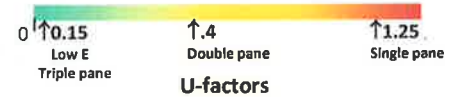
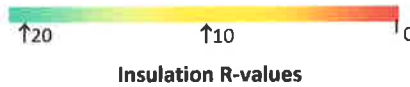
- Brick exterior
- Other: \_\_\_\_\_
- Wall Construction: \_\_\_\_\_

#### Ceiling & Wall Insulation

- Fiberglass
- Cellulose
- Other: \_\_\_\_\_

#### Windows

- Single Pane Glass
- Double Pane Glasses
- Glazing (in.) \_\_\_\_\_
- Caulking
- U-factor: \_\_\_\_\_



### BUILDING AUTOMATION SYSTEMS

- None
- Stand Alone System
- Connected to Pre-existing System

- Capable of non-occupied setbacks
- Programmable Thermostats
- Programmable Lighting Schedule

#### Outside Air – Air Exchange per Hour

- Occupied Conditions: \_\_\_\_\_
- Unoccupied Conditions: \_\_\_\_\_

### HVAC SYSTEMS

#### Configuration

- Centralized
- Decentralized

#### Air Volume

- Constant
- Variable
- Design reviewed by UAB CAMS committee

#### Cooling

- Chiller(s): Qty \_\_\_\_\_, Tonnage \_\_\_\_\_, kW/Ton \_\_\_\_\_
- Direct Expansion (DX) unit(s): SEER \_\_\_\_\_
- Economizer Method \_\_\_\_\_
- Heat Recovery Method \_\_\_\_\_
- Server Rooms – stand alone cooling

#### Heating

- Boiler(s)
- Electric – heat strips only
- Heat Pump(s) – electric heat strips
- Hot water & boiler efficiency \_\_\_\_\_
- Natural Gas
- Vent-less Fireplace
- Hot water temp reset – based on outside air temperature

#### Outside Air

- Design percentage: \_\_\_\_\_
- Min. required for type of Occupancy: \_\_\_\_\_
- CO<sub>2</sub> sensor limited

#### Reheat Method

- Steam
- Hot water
- Electricity

- Exhaust attic space

### LIGHTING SYSTEMS

Watts/GSF: \_\_\_\_\_

#### Interior Lighting

- Fluorescent T8: \_\_\_\_\_ % of bldg interior lighting
- LED: \_\_\_\_\_ % of bldg interior lighting
- Incandescent: \_\_\_\_\_ % of bldg interior lighting
- Exit Lights – LED
- Timers for light switches in electrical and machine rooms

#### Exterior Lighting

- Fluorescent T8: \_\_\_\_\_ % of bldg exterior lighting
- LED: \_\_\_\_\_ % of bldg exterior lighting
- Incandescent: \_\_\_\_\_ % of bldg exterior lighting
- Photo-cell controlled
- Timer controlled

#### Occupancy Sensors: \_\_\_\_\_ % of building

- Corridors (with exception to Egress lighting)
- Restrooms
- Common Areas (Conference rooms, break rooms, copier rooms, closets, storage, etc.)
- Offices

### WATER

- Irrigation  Yes  No
- Sewer credit meter(s) possible  Yes  No
- Rain Water Collection System  Yes  No
- AHU Fin Water Condensate System  Yes  No
- Steam Condensate Return System  Yes  No

#### List single pass water-cooled equipment (i.e. pumps, icemakers, etc.)

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### UTILITY SUB-METERING

- Electricity
- Natural Gas
- Steam
- Chilled Water
- Domestic Water
- Steam Condensate

### PROJECTED ANNUAL ENERGY USAGE

- Electricity (kWh): \_\_\_\_\_
- Natural Gas (MCF): \_\_\_\_\_
- Steam (MLB): \_\_\_\_\_
- Chilled Water (MMBTU): \_\_\_\_\_
- Domestic Water (CCF): \_\_\_\_\_

Projected annual energy cost: \$ \_\_\_\_\_

Projected annual energy cost/sqft: \$ \_\_\_\_\_

Per UAB Facility Standard 15000.3 "System designs shall meet or exceed the energy utilization requirements of ASHRAE90.1 latest edition. The plans and/or specifications shall demonstrate compliance to ASHRAE90.1" Peer building data to be provided by UAB Energy Management Department.

Comparative Peer Building(s): \_\_\_\_\_ Comparative Peer Building(s) \$/GSF: \_\_\_\_\_/year

On the following graphs, Mark (X) to show %'s for less usage and Energy Star Rating for this building:

Design criteria: 20% less usage for similar existing UAB peer building (10% minimum)



#### Energy Star Rating



Approved by: \_\_\_\_\_

Office of Associate Vice President - Facilities