

# Duke Sustainability

## Sands Parking Garage



### Building Information

Architect: [Walker Parking Consultants](#) (with design teams from [Ratio Architects](#) and [Stewart Engineering](#))

Construction: [Bovis Lend Lease](#)

Purpose: Parking Garage

Footprint: 690,000 sq ft.

LEED™ Certification Standard: Certified (31 points)

The Sands Parking Garage is the nation's first single-use, stand-alone LEED™ certified parking facility. The design, which has allowed the garage to be 50 percent more energy efficient than Duke's existing garages, was also cost-neutral compared to traditional parking structure projects. The garage contains 1,920 parking spaces and opened in early 2010. Sustainability design features of the Parking Garage include landscaping with native species that require minimal or no irrigation, using recycled content, concrete and steel, for construction and providing carpool and vanpool dedicated parking spaces.

[View the Sands Parking Garage's LEED™ Scorecard](#)

---

### Sustainable Site Features

The site replaces an existing surface parking lot, allowing remaining portions of the site to be reforested with native vegetation and protected from future development. Rooftop Teflon fabric sun canopies and plants were installed to reflect sunlight and dissipate the heat island effect. Owners of low-emitting and fuel-efficient vehicles are given preferred parking spaces and discounted passes. There are also power outlets that act as refueling stations for electric cars. Alternative transportation is encouraged with the allocation of 100 parking spaces for bicycles. Furthermore, there are 11 bus stops serving two routes within ¼ mile of the project site.

---

### Water Efficiency

Rain gardens were planted with native plants that naturally clean run-off water and require minimal or no irrigation. No potable water is used for irrigation. Instead, two 10,000 gallon cisterns collect stormwater and provide drip irrigation for the vertical vegetated trellis walls and rooftop trellises on the facility. Low-flow water closets and ultra low-flow lavatories were installed in bathrooms. These features have reduced water consumption by 77% and potable water use by 39.2%.

---

### Energy Efficiency

An energy efficient LED lighting system was installed. Both the lighting power density of interior lighting and exterior lighting were reduced. These features have achieved an energy savings of 29.9%.

---

### **Resource Management**

During construction, waste was minimized by using recycled building materials and recycling waste. About 11.83% of the total building materials content was manufactured using recycled materials such as concrete and steel. Of on-site generated construction waste, 75.64% was diverted from the landfill. Building materials were also sourced regionally. Of the total building materials, 24.31% were extracted, harvested and manufactured within 500 miles of the project site. Currently, on-site recycling collection for the garage is incorporated into the Duke Medical campus' recycling system.

---

### **Indoor Air Quality**

All indoor adhesive and sealant products comply with the Volatile Organic Compounds limits.

---

### **Integration of Sustainability in Design & Construction Process**

The building's architects used a mix of sustainable design elements and new methodologies to design a garage that could qualify for LEED™ status. The building features additional sustainable design elements, such as preferred parking for low-emission, fuel-efficient and carpool vehicles and an operations and payment system that reduces idling and excessive driving when entering, exiting and searching for a parking spot. About 82% of the non-building area was reforested with native or adaptive species, exceeding the minimum requirement of 75%. Frequent parkers have been provided with automotive vehicle identification tags for efficient garage access, cutting down the time taken for exit by 50%, nearly eliminating idling at the garage entrance and exit. Visitors use a pay-on-foot system with a central cashier rather than from an idling car, reducing the processing time at exits by 60%.



# LEED-NC

## How to Interpret this Report

**Purpose** The Leadership in Energy and Environmental Design (LEED) Rating System was designed by the US Green Building Council to encourage and facilitate the development of more sustainable buildings.

**Environmental Categories** The report is organized into five environmental categories as defined by LEED including:  
Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Enviro

**LEED Prerequisites** Prerequisites must be achieved. Non-compliant prerequisites must be resolved before a certification can be awarded.

**LEED Credits** The environmental categories are subdivided into the established LEED credits, which are based on desired performance goals within each category. An assessment of whether the credit is earned or denied is made and a narrative describes the basis for the assessment.

**Achieved** The applicant has provided the mandatory documentation which supports the achievements of the credit requirements, achieving the associated points. Currently the project has scored the adjacent points in this category.

**31**

**Denied** The applicant has applied for a point in a particular credit, but has misinterpreted the credit intent or cannot substantiate meeting the requirements. Currently the project has the adjacent points in this category.

**3**

**Rating** This Project has achieved enough points for Certified Rating.

**Official Scores** Official LEED v2 Scores: Certified: 26-32 Silver Rating: 33-38 Gold Rating: 39-51 Platinum Rating: 52+

Earned	Denied		
8	1	Sustainable Sites	Possible Points 14
0	0	<b>Construction Activity Pollution Prevention</b>	Prerequisite 1-Version 2.2
		<b>Construction Application</b>	7/23/2010
		<p>The LEED Submittal Template has been provided stating that the project has followed local erosion and sedimentation control standards and codes, which are more stringent than the NPDES program requirements. Copies of the project erosion and sedimentation control plans and a narrative have been provided describing the local code and the implemented erosion and sedimentation control measures.</p>	
1	0	<b>Site Selection</b>	Credit 1-Version 2.2
		<b>Design Application</b>	9/21/2009
		<p>The LEED Submittal Template has been provided stating that the project site does not meet any of the prohibited criteria. A site plan has been provided in support of credit compliance.</p>	
1	0	<b>Development Density &amp; Community Connectivity</b>	Credit 2-Version 2.2
		<b>Design Application</b>	9/21/2009
		<p>The LEED Submittal Template has been provided stating that the average site development density for the project and surrounding areas is 95,442.7 s.f. per acre. A calculation spreadsheet and scaled site vicinity plan with development radius have been provided to support achievement of this credit. Additionally, the project site and building areas have been provided, along with a listing of site and buildings areas for all surrounding sites within the density radius.</p>	
		<b>Brownfield Redevelopment</b>	Credit 3-Version 2.2

1	0
---	---

**Alternative Transportation: Public Transportation Access**

Credit 4.1-Version 2.2

**Design Application**

9/21/2009

The LEED Submittal Template has been provided stating that the project is served by 2 bus lines within 0.25 miles of the project site. A scaled drawing showing the location of the transit stops and bus routes has been provided.

However, the provided site map does not have a graphic scale. Also, pedestrian routes and distances to the each bus stop have not been provided.

TECHNICAL ADVICE: Please provide a revised site map with a graphic scale. Also, please provide pedestrian routes and distances from the project entries to each bus stop.

**Design Application**

12/9/2009

The project team has provided a site plan and a copy of Durham's comprehensive transportation plan demonstrating that there are 11 bus stops serving at least two routes within 0.25 miles of the project site. The documentation demonstrates credit compliance.

--	--

**Alternative Transportation: Bicycle Storage & Changing Rooms**

Credit 4.2-Version 2.2

1	0
---	---

**Alternative Transportation: Low-Emitting & Fuel Efficient Vehicles**

Credit 4.3-Version 2.2

**Design Application**

9/21/2009

The LEED Submittal Template and project drawings have been provided stating that 100 preferred parking spaces for low-emitting and fuel efficient vehicles have been provided on-site which represents 5% of the total on-site parking.

1	0
---	---

**Alternative Transportation: Parking Capacity**

Credit 4.4-Version 2.2

**Design Application**

9/21/2009

The LEED Submittal Template has been provided stating that the on-site provided parking does not exceed the minimum local zoning requirements and that car/van pool parking has been provided for a minimum of 5.2% of the total provided parking spaces. A parking plan and carpooling incentive program information have been provided in support of this credit.

However, the project team has not provided specific information regarding the amount of parking required by the local zoning requirements.

TECHNICAL ADVICE: Please provide a revised Template including the minimum number of parking spaces required by the local zoning requirements and narrative explaining the local zoning requirements.

**Design Application**

12/9/2009

The project team has provided a revised LEED Submittal Template with a narrative, a site plan, and Durham city/county regulations demonstrating that the project team has met the requirements for providing the minimum number of parking spaces, since it is under the jurisdiction of the university as stated in the narrative. The documentation demonstrates credit compliance.

1	0
---	---

**Site Development: Protect or Restore Habitat**

Credit 5.1-Version 2.2

**Construction Application**

7/23/2010

The LEED Submittal Template has been provided stating that the site has been previously developed and that at least 50% of the site area that does not fall within the building footprint has been restored with native or adaptive planting. Calculations have been provided claiming that 109,279 square feet of the site area (approx. 82% of the non-building area) has been planted with native or adaptive species as required by this credit. Site plans, landscape plans, and details have been provided showing the restored area. In addition, a narrative has been provided describing the project's approach to this credit.

1	0
---	---

**Site Development: Maximize Open Space**

Credit 5.2-Version 2.2

**Design Application**

9/21/2009

The LEED Submittal Template has been provided stating that the project has been developed in an area with no minimum local zoning code requirements for open space. The Template further states that 109,279 sq. ft. of dedicated open space, compared to 107,074 sq. ft. of the building footprint has been provided adjacent to the building. Site drawings, planting plans, and planting schedules have been provided in support of this credit.

0	0
---	---

**Stormwater Management: Quantity Control**

Credit 6.1-Version 2.2

--	--

**Stormwater Management: Quality Control**

Credit 6.2-Version 2.2

1	0
---	---

**Heat Island Effect: Non-Roof**

Credit 7.1-Version 2.2

**Construction Application**

7/23/2010

The LEED Submittal Template has been provided stating that 86.020% of the on-site parking stalls are located under cover. Parking plans for each tier of the parking deck, a site plan, planting plans, a roof plan, and an excerpt from a maintenance manual have been provided to support this claim. The Template narrative states that the top level of the parking garage is made of new, gray concrete with an SRI of at least 29.

--	--

**Heat Island Effect: Roof**

Credit 7.2-Version 2.2





0

1

### Light Pollution Reduction

#### Design Application

9/21/2009

The LEED Submittal Template has been provided stating that the project's interior and exterior lighting has been designed in accordance with the requirements of this credit.

Interior Lighting: The Template indicates that interior lighting fixtures were located to maintain the maximum candela output, from fixtures near exterior glazing, within the building. Interior lighting plans have been uploaded to support this claim.

Exterior Lighting Power: The Template indicates that the lighting power densities for exterior area fixtures do not exceed 80% of the ASHRAE recommendations and that the LPD of exterior facade/landscape lighting does not exceed 50% of the referenced ASHRAE Standard recommendations. Exterior lighting plans have been uploaded to support this claim.

Light Trespass: The Template indicates that the project is located in LZ-3.

However, the entire LEED project boundary has not been clearly indicated on the provided site plan. Also, further clarification is needed for areas where light trespass requirements are not met.

In addition, a Site Lumen calculation has been provided, along with a narrative explaining the light trespass analysis undertaken for the project. Also, the narrative explains that the project entrance does not comply for safety reasons.

However, the exterior lighting power is not consistent in SSc8 (7.92 kW for the proposed design and 19.61 kW for the baseline design) and EAc1 (7.8 kW for the proposed design and 18.5 kW for the baseline design).

TECHNICAL ADVICE: Please provide a revised photometric site plan which clearly indicates the entire LEED project boundary. Please provide a narrative describing any areas where light trespass requirements are not met and the reason for this lighting. Please note, per LEED NC v2.2 SSc8 CIR ruling dated 5/06/2009, security lighting must meet light trespass requirements. Alternatively, a campus approach may be appropriate. Please see the AGMBC for additional requirements and submittals required for this approach (<http://www.usgbc.org/ShowFile.aspx?DocumentID=1097>). Please provide a revised Template with consistent exterior lighting power across all credits.

#### Design Application

12/9/2009

The project team has provided a revised LEED Submittal Template with a narrative, a supplemental narrative, and an updated photometric site plan demonstrating that all areas meet the light trespass requirements for LZ-3 with the exception of the garage entrances. The narrative also states that these areas require additional lighting for pedestrian safety. In addition, the supplemental narrative states that the lighting power has been updated and is consistent with EAc1, Optimize Energy Performance.

However, the light trespass requirements were not met at the project boundary. Per the LEED-NC v2.2 SSc8 CIR dated 10/16/2008, campus compliance should be pursued if light trespass requirements are not met at the parcel lines. Please note that not all credits are applicable to all projects. The documentation does not demonstrate credit compliance.

#### Construction Application

7/23/2010

.

#### Construction Application

10/11/2010

.

Earned	Denied	Water Efficiency	Possible Points	5
4	0			
2	0	<b>Water Efficient Landscaping</b>	Credit 1.1-1.2-Version 2.2	

**Design Application** 9/21/2009

The LEED Submittal Template has been provided stating that the installed irrigation systems use only captured rainwater. A narrative has been included describing the landscape and irrigation design strategies employed by the project. Specific information regarding source and available quantity of non-potable supplies has been provided as well. Also, planting plans and irrigation calculations have been provided in support of this credit.

However, the baseline irrigation case includes about twice the amount of turf area as the design irrigation case.

TECHNICAL ADVICE: Please provide a revised Template and irrigation calculations in which, "the planting types approximately correspond in both the baseline and the proposed strategy", per LEED-NC v2.0-2.1 WEc1.2 CIR ruling dated 03/11/2003.

**Design Application** 12/9/2009

The project team has provided a revised LEED Submittal Template and revised irrigation calculations demonstrating, with planting types which approximately correspond in both the baseline and the proposed, that the percentage reduction of total water is 77%. In addition, the project team has provided information regarding onsite non-potable water storage for irrigation which reduces the use of potable water by 100%. The documentation demonstrates credit compliance.

		<b>Innovative Wastewater Technologies</b>	Credit 2-Version 2.2	
--	--	---	----------------------	--

2	0	<b>Water Use Reduction</b>	Credit 3.1-3.2-Version 2.2	
---	---	----------------------------	----------------------------	--

**Design Application** 9/21/2009

The LEED Submittal Template has been provided stating that the project has reduced potable water use by 39.2% from a calculated baseline design through the installation of low-flow water closets and ultra low-flow lavatories.

For future applications, please use the standard 3 uses per FTE, in the baseline and design case, as listed in the LEED-NC v2.2 (3rd edition) Reference Guide. In this case, the changes actually increase savings.

Earned	Denied	Energy & Atmosphere		Possible Points	17
8	0				

11/9/2010

Construction Application Review

0 0

**Fundamental Commissioning of the Building Energy Systems** Prerequisite 1-Version 2.2

**Construction Application** 7/23/2010

The LEED Submittal Template has been provided stating that the fundamental commissioning requirements have been completed. In addition, a narrative and commissioning final report have been provided describing the commissioned systems, as well as the results of the commissioning process.

0 0

**Minimum Energy Performance** Prerequisite 2-Version 2.2

**Design Application** 9/21/2009

The LEED Submittal Template has been provided stating that the project complies with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) of ASHRAE 90.1-2004. For projects pursuing points under EA Credit 1, a computer simulation model may be used to confirm satisfaction of this prerequisite.

However, the project was registered after June 26, 2007 and has not earned the two required points in EAc1.

TECHNICAL ADVICE: Please provide the requested clarifications for EAc1 to verify compliance with this prerequisite.

**Design Application** 12/9/2009

The project team has provided the requested clarifications for EAc1. The documentation demonstrates prerequisite compliance.

0 0

**Fundamental Refrigerant Management** Prerequisite 3-Version 2.2

**Design Application** 9/21/2009

The LEED Submittal Template has been provided stating that base building HVAC and R systems use no CFC-based refrigerants.

8

0

**Optimize Energy Performance**

Credit 1-Version 2.2

**Design Application**

9/21/2009

The LEED Submittal Template and supporting documentation have been provided stating that the project has achieved an energy cost savings of 29.9% using the ASHRAE 90.1-2004 Appendix G methodology. Energy efficiency measures include reduced interior lighting power density and reduced exterior lighting.

However, several issues should be addressed for the final review. Please see the following 7 comments.

TECHNICAL ADVICE: Please provide revised energy models, Submittal Template, and supporting documentation in the form of compliance reports and/or input and output summaries demonstrating that the following issues have been corrected. In addition, please provide a narrative to each of the review comments and a narrative to describe any changes made in addition to the review comments.

Please note that the project was registered after 06/27/2007, and is therefore required to achieve a minimum of 2 points to qualify for LEED certification based on the following document (<http://www.usgbc.org/ShowFile.aspx?DocumentID=2303>).

1. The baseline design case exterior wall construction was not modeled using steel framed walls as required by Table G3.1.5(b) as indicated in Table 1.4 and "Library Members" report. Please revise the wall construction in the baseline building for the conditioned office spaces to steel framed walls with the assembly U-value from the table for the corresponding climate zone Table 5.5-4. In the case of this building the wall construction U-value should be 0.124 (R-13.0). In addition, please update the baseline wall construction U-value in Table 1.4 to reflect these changes.
2. Table 1.4 indicates that the perimeter deck lighting power was included in the 100% on schedule for the baseline design; however, Appendix G requires that schedules be modeled identically in the baseline and proposed case. Please revise the garage lighting schedule to be identical in the baseline and proposed case. An exceptional calculation measure may be used to demonstrate the benefit of garage lighting controls if the exceptional calculation method includes sufficient information to justify that perimeter off controls are consistent with standard practice for new construction of parking garage facilities. Please revise the baseline model by changing the lighting schedule for perimeter deck lighting from 100% on to reduced hours of operation schedule. In addition, please update the Template and Table 1.4 with the total amount of exterior lighting power in kW included in the baseline perimeter deck lighting power. Please also revise the model to reflect an exceptional calculation method for garage lighting controls if credit is taken for these controls.
3. The exterior lighting power is not consistent in SSc8 (7.92 kW for the proposed design and 19.61 kW for the baseline design) and EAc1 (7.8 kW for the proposed design and 18.5 kW for the baseline design). Please revise the proposed design and baseline design energy models and update Table 1.4 so the exterior lighting power is consistent across credits. Please ensure that the baseline exterior lighting power in Table 1.4 is equal to the ASHRAE allowable in SSc8 (not the LEED allowable). Please ensure that no credit is taken in the proposed design case for lighting reductions on non-tradable surfaces per a LEED-NCv2.2 EAc1 CIR ruling dated 4/25/2007.
4. It appears based on the information provided that the lighting in the office space is on 8,760 hours per year. Please verify that the office is anticipated to be continuously occupied, or revise the model to reflect anticipated operating schedules for the office.
5. The baseline HVAC systems were modeled exactly the same as the proposed design as indicated in Table 1.4 and "System Checksums" reports; however, the baseline systems should be based on Section G3.1.1 and Table G3.1.1A. Please revise the baseline design energy model by modeling systems consistent with Section G3.1.1 and Table G3.1.1B. Based on the number of floors, conditioned floor area (1,317 s.f.), and heating source (electric) for this project, system type 4 ? packaged rooftop heat pump should be modeled for the baseline system. In addition, please include the heating efficiency used for the heating capacity range and cooling efficiency used for the cooling capacity range in Table 1.4. Further, please model and indicate in Table 1.4 that the packaged rooftop heat pumps are modeled according to Section G3.1.3.1, which requires that the electric air-source heat pumps are modeled with electric auxiliary heat that only energizes when the outdoor air temperature is less than 40 degrees-F.

<input type="checkbox"/>	<input type="checkbox"/>	<b>On-Site Renewable Energy</b>	Credit 2-Version 2.2
<input type="checkbox"/>	<input type="checkbox"/>	<b>Enhanced Commissioning</b>	Credit 3-Version 2.2
<input type="checkbox"/>	<input type="checkbox"/>	<b>Enhanced Refrigerant Management</b>	Credit 4-Version 2.2
<input type="checkbox"/>	<input type="checkbox"/>	<b>Measurement &amp; Verification</b>	Credit 5-Version 2.2
<input type="checkbox"/>	<input type="checkbox"/>	<b>Green Power</b>	Credit 6-Version 2.2

Earned	Denied		
5	0	<b>Materials &amp; Resources</b>	Possible Points 13
0	0	<b>Storage &amp; Collection of Recyclables</b>	Prerequisite 1-Version 2.2

**Design Application** 9/21/2009

The LEED Submittal Template has been provided stating that the project has provided appropriately sized dedicated areas for the collection and storage of recycling materials, including cardboard, paper, plastic, glass, and metals. A floor plan has been provided showing the location of the recycling.

<input type="checkbox"/>	<input type="checkbox"/>	<b>Building Reuse</b>	Credit 1.1-1.2-Version 2.2
<input type="checkbox"/>	<input type="checkbox"/>	<b>Building Reuse, Non-Structural</b>	Credit 1.3-Version 2.2
<input type="checkbox"/>	<input type="checkbox"/>	<b>Construction Waste Management</b>	Credit 2-Version 2.2

**Construction Application** 7/23/2010

The LEED Submittal Template has been provided stating that the project has diverted 218.12 tons (75.642%) of on-site generated construction waste from landfill. Calculations have been provided to document the waste types and receiving agencies for recycled materials. A narrative and a copy of the waste tracking log have been provided describing the project's construction waste management plan.

		<b>Resource Reuse</b>	Credit 3-Version 2.2
--	--	-----------------------	----------------------

1	0	<b>Recycled Content</b>	Credit 4-Version 2.2
---	---	-------------------------	----------------------

**Construction Application** 7/23/2010

The LEED Submittal Template has been provided stating that 11.834% of the total building materials content, by value, have been manufactured using recycled materials.

2	0	<b>Regional Materials</b>	Credit 5-Version 2.2
---	---	---------------------------	----------------------

**Construction Application** 7/23/2010

The LEED Submittal Template and calculation have been provided stating that 24.312% of the total building materials value is comprised of building materials and/or products that have been extracted, harvested or recovered, as well as manufactured within 500 miles of the project site. Product data sheets, mix design submittals, and manufacturers' letters have been provided to support this claim. The Template narrative states that the distance indicated for the concrete assembly is for the component extracted the farthest distance from the project, and that all other components also comply.

		<b>Rapidly Renewable Materials</b>	Credit 6-Version 2.2
--	--	------------------------------------	----------------------

		<b>Certified Wood</b>	Credit 7-Version 2.2
--	--	-----------------------	----------------------

Earned	Denied		
4	0	Indoor Environmental Quality	Possible Points 15

1	0
---	---

**Minimum IAQ Performance**

Prerequisite 1-Version 2.2

**Design Application**

9/21/2009

The LEED Submittal Template has been provided stating that the project complies with the minimum requirements of ASHRAE Standard 62.1-2004. A supplemental narrative has been provided to describe the project's ventilation design based on natural open parking garage design. The narrative also includes specific information regarding fresh air intake volumes. Project floor plans and details have been provided. The provided narrative states that the design meets the requirements of the local code.

However, the project team has not provided the minimum ASHRAE 62.1-2004 required supply volumes for the mechanically ventilated zone. Also, specific information has not been provided demonstrating that the local code is more stringent than ASHRAE 62.1-2004.

TECHNICAL ADVICE: Please provide a detailed narrative or calculation table with the actual outdoor air supply volume for each zone compared to minimum ASHRAE 62.1-2004 required outdoor air supply volumes for each zone. Also, please ensure that the outdoor air intake volumes are calculated using the ventilation rate procedure. Please provide specific data and information demonstrating that the local code requirements are more stringent than ASHRAE 62.1-2004.

**Design Application**

12/9/2009

The project team has provided a revised LEED Submittal Template with a narrative, International Building Code information, and a calculation table with the actual outdoor air supply volume for each space compared to the minimum ASHRAE 62.1-2004 requirements. The documentation demonstrates prerequisite compliance.

0	0
---	---

**Environmental Tobacco Smoke (ETS) Control**

Prerequisite 2-Version 2.2

**Design Application**

9/21/2009

The LEED Submittal Template has been provided stating that smoking is prohibited inside buildings within the project and that designated smoking areas have been located 25 feet away from building openings and air intakes. Construction drawings documenting the location of the smoking rooms, designed area separations, and dedicated ventilation systems have been provided.

--	--

**Outdoor Air Delivery Monitoring**

Credit 1-Version 2.2

--	--

**Increased Ventilation**

Credit 2-Version 2.2

--	--

**Construction IAQ Management Plan: During Construction**

Credit 3.1-Version 2.2

--	--

**Construction IAQ Management Plan: Before Occupancy**

Credit 3.2-Version 2.2

1	0	<b>Low-Emitting Materials: Adhesives &amp; Sealants</b>	Credit 4.1-Version 2.2
---	---	---	------------------------

**Construction Application** 7/23/2010

The LEED Submittal Template has been provided stating that all indoor adhesive and sealant products comply with the VOC limits of the referenced standards for this credit. The Template includes a list of the required product details. A narrative has been provided to support this claim.

0	0	<b>Low-Emitting Materials: Paints &amp; Coatings</b>	Credit 4.2-Version 2.2
---	---	--	------------------------

		<b>Low-Emitting Materials: Carpet Systems</b>	Credit 4.3-Version 2.2
--	--	---	------------------------

		<b>Low-Emitting Materials: Composite Wood &amp; Agrifiber</b>	Credit 4.4-Version 2.2
--	--	---	------------------------

		<b>Indoor Chemical &amp; Pollutant Source Control</b>	Credit 5-Version 2.2
--	--	---	----------------------

		<b>Controllability of Systems: Lighting</b>	Credit 6.1-Version 2.2
--	--	---	------------------------

1	0	<b>Controllability of Systems: Thermal Comfort</b>	Credit 6.2-Version 2.2
---	---	--	------------------------

**Design Application** 9/21/2009

The LEED Submittal Template has been provided stating that a sufficient quantity of thermal controls are provided for individual workstations, and states appropriate thermal controls are available for all shared multi-occupant spaces. A narrative has also been provided describing the project's thermal control strategy with a description of the type and location of the thermal controls.

For future applications, please complete the multi-occupant spaces portion of the Template. In this case, the narrative clarifies the compliance of the breakroom.

1	0	<b>Thermal Comfort: Design</b>	Credit 7.1-Version 2.2
---	---	--------------------------------	------------------------

**Design Application** 9/21/2009

The LEED Submittal Template has been provided stating that the HVAC systems and building envelope have been designed to meet the requirements of the ASHRAE Standard 55-2004. The project team has provided a narrative describing the method used to establish thermal comfort criteria for the project and how the systems address the design criteria. Data has also been provided regarding the specific seasonal temperature and humidity design criteria.

1

0

**Thermal Comfort: Verification**

Credit 7.2-Version 2.2

**Design Application**

9/21/2009

The LEED Submittal Template has been provided explaining that a thermal comfort survey will be distributed to building occupants within the first 6 to 18 months of occupancy. The narrative includes an appropriate corrective action plan if the survey results indicate that the building occupants are dissatisfied with thermal comfort based on the environmental variables outlined in ASHRAE 55-2004.

However, the survey only addresses the temperature. Also, the corrective action plan is not specific regarding other issues beyond the HVAC system.

TECHNICAL ADVICE: Please provide a survey or narrative describing the survey which addresses all environmental and personal comfort factors. Please provide a more detailed corrective action plan addressing all the environmental and personal comfort factors.

**Design Application**

12/9/2009

The project team has provided a revised LEED Submittal Template, a narrative response, the survey questionnaire, and the corrective action plan for each question. The documentation demonstrates credit compliance.

0

0

**Daylighting & Views: Daylight 75% of Spaces**

Credit 8.1-Version 2.2

0

0

**Daylighting & Views: Views for 90% of Spaces**

Credit 8.2-Version 2.2

Earned

Denied

2

2

Innovation & Design Process

Possible Points

5

0

1

### Innovation in Design

Credit 1.1-Version 2.2

#### Design Application

9/21/2009

The LEED Submittal Template has been provided stating that an education program has been developed to present the project's sustainable design practices to occupants and visitors to the facility. As required per IDc1.1 CIR ruling dated 9/24/2001, the program includes at least two educational components, including an educational display highlighting the building's sustainable design features and public tours.

However, in order to obtain an ID point for an educational program, supporting documentation is needed for the educational elements.

TECHNICAL ADVICE: Please provide a narrative and photographs, tour outline, sign graphics demonstrating commitment to the educational elements described in the submittal documentation.

#### Design Application

12/9/2009

The project team has provided copies of two published articles about the project as well as a narrative describing the project team's approach to an educational signage program.

However, the project team has not provide sign graphics demonstrating commitment to an education signage program.

TECHNICAL ADVICE: The project team may submit a different Innovation in Design credit for the Construction Phase Review. Please note that an Innovation in Design strategy may only be attempted twice.

#### Construction Application

7/23/2010

.

#### Construction Application

10/11/2010

.

0

1

**Innovation in Design**

Credit 1.2-Version 2.2

**Design Application**

9/21/2009

The project team has provided an ID credit proposal for development and implementation of a Green Housekeeping program.

However, the proposal, the list of office, and the lab products do not meet the requirements set forth in LEED-NC v2.0-2.1 IDc1.1 CIR ruling 4/8/2004 for achievement of an ID point for a Green Housekeeping program. Also, it is unclear how green research lab and office products are applicable for a Green Housekeeping program.

TECHNICAL ADVICE: If the project team is attempting a Green Housekeeping program, please provide the required documentation listed in LEED-NC v2.0-2.1 IDc1.1 CIR ruling 4/8/2004. Also, please provide a narrative describing the project team's approach as it applies to this building. Alternatively, please attempt a different innovation in design approach.

**Design Application**

12/9/2009

No new information has been provided.

TECHNICAL ADVICE: The project team may submit a different Innovation in Design credit for the Construction Phase Review. Please note that an Innovation in Design strategy may only be attempted twice.

**Construction Application**

7/23/2010

.

**Construction Application**

10/11/2010

.

1

0

**Innovation in Design**

Credit 1.3-Version 2.2

**Construction Application**

7/23/2010

The LEED Submittal Template has been provided stating that the project achieves exemplary performance for SSc5.1: Site Development, Protect or Restore Habitat as specified in the LEED-NC v2.2 Reference Guide, Third Edition. The guideline for exemplary performance in SSc5.1 is to restore or protect a minimum of 75% of the site area (excluding the building footprint). The project team has provided documentation demonstrating that 82% of the non-building area has been planted with native or adaptive species, which meets the exemplary performance requirement.

**Innovation in Design**

Credit 1.4-Version 2.2

1

0

**LEED Accredited Professional**

Credit 2-Version 2.2

**Construction Application**

7/23/2010

The LEED Submittal Template has been provided stating that a LEED AP has been a participant on the project development team. A copy of the LEED AP award certification for Sandra Yencho has been included as required.

Earned	Denied		
0	0	Administrative Inquiries	Possible Points 0