MEMORANDUM

To:                        Janet Wieland, University of Iowa
From:                      Lauren Huynh
Project Name:              UI Data Center - ITF
Date:                      January 11, 2013
Subject:                   UI Data Center - ITF LEED Certification Summary

On July 2012, the UI Data Center – ITF project received notification from GBCI that LEED-NC v2.2 Platinum Certification was achieved. Attached documents illustrate points pursued, points awarded, and the point denied.

On your review of the LEED checklist and GBCI Construction Application Review report, you’ll notice that a total of 54 credits were submitted. 53 credits were awarded and only one credit was denied.

GBCI denied SS Credit 8 Light Pollution Reduction due to the location of the project boundary which triggered non-compliance with the light trespass guidelines. An alternative campus-wide option was available; however, additional costs associated with increased design team fees and retrofitting of existing light fixtures was not pursued by the project team. As part of this action, UI would need to commit to updating the entire campus-wide lighting master plan beyond the project site. Specific language addressing the denial of SS Credit 8 Light Pollution Reduction is on pages 5 and 6 of the Construction Application Review report.

Lastly, additional credits not pursued by the project team were either not applicable or too cost prohibitive. For example, MR Credit 1.1 Building Reuse, Maintain 75% of Existing Walls, Floors & Roof applied to major project renovations and not new construction. For other credits such as EA Credit 2 On-Site Renewable Energy or EA Credit 5 Measurement & Verification required additional costs estimated at $100,000 to $400,000. These credits were not pursued by the project team.
LEED for New Construction

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 and Atmosphere, Materials and Resources, Indoor Environment

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.

53

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.

1

Rating
This Project has achieved enough points for Platinum Rating.

Official Scores
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. A narrative describing the implemented erosion and sedimentation control measures, specific documentation demonstrating that the local standard is equal to or more stringent than the referenced NPDES program, and a copy of the project's erosion and sedimentation control plan have been provided. Additionally, a copy of the project's stormwater pollution prevention plan has been provided.

The LEED Submittal Template has been provided stating that the project site does not meet any of the prohibited criteria.

The LEED Submittal Template has been provided stating that bicycle storage facilities have been provided to serve 31.57% of FTE and transient building occupants, measured at peak occupancy, and that shower facilities have been provided for 16.66% of the FTE building occupants. Plans have been provided showing the location of the shower/changing facilities and the bike storage facilities. Occupancy calculations, product information, and a copy of the site furnishings with specifications for the bike racks have been provided.
**Design Application**

The LEED Submittal Template and project drawings have been provided stating that 1 preferred parking space for low-emitting and fuel efficient vehicles has been provided on site, which represents 6.66% of the total on-site parking. A drawing of the parking signage has been provided. However, as noted in SSc4.4 Alternative Transportation: Parking Capacity, the required parking capacity is unclear, and therefore the total parking capacity cannot be confirmed.

TECHNICAL ADVICE:
Please resolve the pending issues surrounding SSc4.4. If necessary, revise the Submittal Template to accurately reflect the total on-site parking capacity for the project and the appropriate number of preferred parking spaces for low-emitting and fuel efficient vehicles.

**Design Application**

A revised LEED Submittal Template has been provided indicating that of the 15 parking spaces on site, one preferred parking space has been provided, representing 6.66% of the total on-site parking. A site plan has been provided to confirm that the space meets the LEED definition of preferred parking. The documentation demonstrates credit compliance.

**Alternative Transportation: Parking Capacity**

**Credit 4.4-Version 2.2**

**Design Application**

The LEED Submittal Template has been provided stating that preferred parking has been included for a minimum of 6.66% of the total provided parking spaces. The Template narrative indicates that there no local zoning requirements. A parking plan and signage drawings have been provided. However, per the Requirements section of the LEED-NC v2.2 Reference Guide, 2008, page 65, when parking minimums are not defined by relevant local zoning requirements, or when there are no local zoning requirements, in order to demonstrate that the parking amount does not exceed the minimum local zoning requirements, the project must either:
A) Meet the requirements of Portland, Oregon, Zoning Code: Title 33, Chapter 33.266 (Parking and Loading) OR, if this standard is not appropriate for the building type,
B) Install 25% less parking than the building type’s average listed in the Institute of Transportation Engineers’ Parking Generation study, 3rd Edition.

TECHNICAL ADVICE:
Please provide a narrative with calculations for minimum parking requirements based on the above referenced standards, demonstrating that the project provides the minimum number of parking spaces indicated (and no more than the minimum). If necessary, revise the number of preferred parking spaces for car/vanpool vehicles accordingly to demonstrate that at least 5% of the total provided parking is reserved for car/vanpools.

**Design Application**

The clarification narrative has been provided to address the issues outlined in the Preliminary Review comments and indicates that the Institute of Transportation Engineers Parking Generation study, Third Edition does not specify minimum parking requirements for data centers and therefore the project team has used the zoning requirements for the Town of Braintree, MA (1 stall per 1,000 square feet) to determine the minimum required quantity of parking spaces (46). The narrative states that the provided number of parking spaces does not exceed 75% of the requirement. The template indicates that of the 15 parking spaces on site, one preferred parking space has been provided, representing 6.7% of the total on-site parking. A site plan has been provided highlighting the location of the preferred parking spaces. The documentation demonstrates credit compliance.
Site Development: Protect or Restore Habitat

Construction Application

The LEED Submittal Template has been provided stating that the site has been previously developed and that 69.6% of the site area that does not fall within the building footprint has been restored with native planting and/or protected in a natural state. Calculations have been provided stating that 94,022 square feet of the site area has been planted with native or adaptive species. The required site drawings have been provided showing this restored area. A narrative describing the project’s approach to this credit has also been provided.

Site Development: Maximize Open Space

Design Application

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 94,022 square feet of dedicated open space, compared to 45,324 square feet of the building footprint, has been provided adjacent to the building. Site drawings have been provided in support of this credit.

For future submittals, please note that it is not necessary to exclude sodded areas from the calculations as shown in the project area summary. Including the sodded area, the project has provided 102,301 square feet of dedicated open space.

Stormwater Management: Quantity Control

Design Application

The LEED Submittal Template has been provided stating that the project has implemented a stormwater management plan that results in no net increase (in rate and quantity) in runoff from calculated pre-project conditions, for the 1- and 2-year, 24-hour storm events. Calculation results have been provided to demonstrate compliance with the requirements of this credit. A narrative describing the project site conditions, measures taken, and controls implemented to prevent excessive stream velocities and associated erosion has been provided. The project team has provided stormwater calculations, a narrative, an infiltration master report, an infiltration worksheet, and a table with the pre- and post-development rate and quantity values.

Stormwater Management: Quality Control

Design Application

The LEED Submittal Template has been provided stating that the project has implemented a stormwater management plan that reduces impervious cover, promotes infiltration, and captures and treats the stormwater runoff from 100% of the average annual rainfall using acceptable Best Management Practices (BMPs). A landscaping plan, a narrative regarding pre- and post-development stormwater quantity and runoff rate, a grading plan, landscape details, and a table of the pre- and post-development stormwater runoff values have been provided. However, neither the Template nor the supporting documentation confirms that the project’s BMPs are capable of removing at least 80% of the total suspended solids (TSS) from the average annual post-development runoff.

TECHNICAL ADVICE:
Please provide revised Submittal Template which includes the TSS removal rate and source of the removal rate within the “description” field. At least 80% of the TSS must be removed, and the TSS removal rate must come from an approved source, including state or local sources, national sources, in-field performance testing, or manufacturer’s specifications.

**Design Application**
1/20/2011
The clarification narrative has been revised to address the issues outlined in the Preliminary Review comments and indicates that the TSS removal rate sited in the template is from an approved state source. A revised LEED Submittal Template has been provided. The documentation demonstrates credit compliance.

**Heat Island Effect: Non-Roof**

**Construction Application**
3/15/2012
The LEED Submittal Template has been provided stating that 78.24% of the site hardscape have been paved with highly reflective materials. The calculations provided in the template indicate that of the 32,867 square feet of total site hardscape, 32,867 square feet (78.24%) have been paved with non-colored concrete. A site plan showing the paved areas has been provided.

**Heat Island Effect: Roof**

**Design Application**
10/27/2010
The LEED Submittal Template has been provided stating that the 100% of the roofing materials used on the project meet the SRI requirements of the credit. A roof plan and specifications have been provided.

**Light Pollution Reduction**

**Design Application**
10/27/2010
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 Submittal Template narrative indicates that the non-emergency interior lighting fixtures have been automatically controlled to turn off during non-business hours. Manual override capability has been provided for after hours use. Interior lighting plans have been provided.

- 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.

- Site Lumens: the Template indicates that the project is located in LZ-3. Based on requirements for LZ-3, the Site Lumen calculation in the Template indicates that the project complies with this portion of the credit requirement.

- Light Trespass: a narrative explaining the light trespass analysis undertaken for the project has been provided demonstrating that the light trespass requirements have been met for LZ-3. A photometric site plan has been provided.
However, five issues must be addressed for the Final Review:

1. Exterior lighting plans have not been provided as required by the Template. Please note that exterior lighting plans are required to verify the contents of the tables in the Submittal Template and the light trespass analysis.

2. A perimeter 15 feet beyond the site boundary has not been indicated on the photometric plan, and the light trespass analysis does not reach the west site boundary of the project grounds. Therefore, compliance with the illuminance requirements for LZ-3 cannot be confirmed.

3. The light trespass analysis for the north site boundary and the east section of the boundary exceed the allowable footcandles for LZ-3. The requirements of LZ-3 indicate that the light trespass should not exceed 0.20 fc at the boundary and 0.01 fc 15 feet past the boundary.

4. The lighting and power density table for exterior site areas indicates W/sf as the unit for Walkways<10', which is inconsistent with the specification of W/lf on Table 9.4.5 of ASHRAE 90.1-2004 and in the LEED-NC v2.2 Reference Guide, 2008.

5. The light trespass analysis units have not been provided to the degree of accuracy required, which is to the hundredths place.

**TECHNICAL ADVICE:**

Please provide the following.

1. Exterior lighting plans consistent with the Lighting Power Density Tabulation Exterior Site Areas, the Lighting Power Density Tabulation Building Fa?ade/Landscape Lighting, and the Site Lumen calculation in the Template. Revise the Template as necessary.

2. A revised photometric site plan indicating a perimeter 15 feet beyond the LEED boundary in order to confirm compliance with the illuminance requirements of LZ-3. Note that in order to demonstrate compliance, the light trespass at the project boundary must not exceed 0.20 fc or 0.01 fc 15 feet past the boundary.

3. A revised photometric site plan verifying that the requirements of LZ-3 have not been exceeded. If the light trespass exceeds the allowable footcandle thresholds, SSc8 cannot be earned.

4. Revised calculations indicating W/lf as the units for walkway exterior lighting calculations.

5. A revised light trespass analysis with measurements to the hundredths place.

**Design Application** 1/20/2011

This credit has been withdrawn.

**Construction Application** 3/15/2012

**Construction Application** 5/30/2012
Water Efficiency Possible Points 5

Water Efficient Landscaping

Credit 1.1-1.2-Version 2.2

Design Application

The LEED Submittal Template has been provided stating that no permanent irrigation system has been installed, and a narrative has been provided describing the landscaping design strategies. A landscaping plan has been provided. However, clarification is needed regarding the length of time that plantings will be watered.

TECHNICAL ADVICE:
Please provide a narrative explaining the length of time that plantings will be watered.

Design Application

The LEED Submittal Template has been revised to address the issues outlined in the Preliminary Review comments and indicates that the plants will be regularly watered only during the initial plant establishment period (6-8 weeks) and will be monitored and only watered as needed following this period. The documentation demonstrates credit compliance.

Innovative Wastewater Technologies

Credit 2-Version 2.2

Water Use Reduction

Credit 3.1-3.2-Version 2.2

Design Application

The LEED Submittal Template has been provided stating that the project has reduced potable water use by 48.8% from a calculated baseline design through the installation of dual-flush water closets, ultra-low-flow urinals, and low-flow lavatories and showers. Manufacturer documentation, an occupancy calculation, and a plumbing schedule have been provided. However, two issues must be addressed for the Final Review:

1. The flow rate listed for the shower on the Template (1.5 gpm) appears to be inconsistent with the product data provided (1.8 gpm).

2. Page 1 of the Template indicates that 100% of male restrooms contain urinals. Based on the floor plans provided in the Documents section of LEED Online, there appears to be 1 unisex restroom on the first floor, which accounts for 50% of the restrooms that males will use, that does not contain urinals (Toilet 125B).

TECHNICAL ADVICE:
Please provide the following.

1. Revised Template calculations including a value for the shower flow rate consistent with the documentation provided.

2. Revised Template calculations that include a revised percentage of male restrooms with urinals. Ensure that same-sex restrooms usage is included in the calculation, as required. Note that all restrooms to which male
occupants have access must be included in the calculation for the percentage of male restrooms with urinals on page 1 of the Template.

**Design Application**
1/20/2011

A clarification narrative has been provided stating that the showers in the project have a flow rate of 1.5 GPM and that due to the security at the project building, the restroom containing no urinals is accessible to visitors only. A supplemental calculation spreadsheet has been provided to appropriately account for the atypical usage patterns in the project. A revised template has been provided. The supplemental calculations sheet indicates that the project has reduced potable water usage by 41.2% from a calculated baseline design. The documentation demonstrates credit compliance.

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### Earned  Denied

<table>
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<tr>
<th>Energy and Atmosphere</th>
<th>Possible Points</th>
<th>17</th>
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<tbody>
<tr>
<td><strong>Fundamental Commissioning of the Building</strong></td>
<td>Prerequisite 1-Version 2.2</td>
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</tbody>
</table>

### Construction Application
3/15/2012

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

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

**Design Application**
10/27/2010

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, and has used a computer simulation model to document improved building energy performance under EAc1 Optimize Energy Performance.

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

**Design Application**
10/27/2010

The LEED Submittal Template has been provided stating that base building HVAC systems use no CFC-based refrigerants. Mechanical drawings, specifications, and schedules have been provided.

### Optimize Energy Performance
**Credit 1-Version 2.2**

**Design Application**
10/27/2010

The LEED Submittal Template and supporting documentation have been provided stating that the project has achieved an energy cost savings of 71.4% using the ASHRAE 90.1-2004 Appendix G methodology. Energy
efficiency measures incorporated into the building design include improved thermal envelope, reduced lighting power density, reduced power consumption for efficient servers, and CHP with district energy. The total predicted annual energy consumption for the project is 7,073,345 kWh/year of electricity and 20 therms/year of natural gas.

**On-Site Renewable Energy**

Credit 2-Version 2.2

**Enhanced Commissioning**

Credit 3-Version 2.2

**Construction Application**

3/15/2012

The LEED Submittal Template has been provided stating that the enhanced commissioning requirements have been completed. In addition, a narrative describing the enhanced commissioning processes that were employed on the project has been provided. A copy of the project’s systems manual has been provided.

However, it is unclear if the training of operating personnel and building occupants is conducted by independent, third-parties. indicated on the template is appropriate. The template indicates that the equipment representatives and installing contractors are to offer training. These parties do not appear to be independent, third-parties.

**TECHNICAL ADVICE:**
Please revise the template or documentation, as applicable, to confirm that the training of operating personnel and building occupants is to be completed by an appropriate independent third-party.

**Construction Application**

5/30/2012

The LEED Submittal Template has been revised to address the issues outlined in the Preliminary Review comments and confirms that training is performed by independent, third parties. An operations manual has been provided. The documentation demonstrates credit compliance.

**Enhanced Refrigerant Management**

Credit 4-Version 2.2

**Design Application**

10/27/2010

The LEED Submittal Template has been provided stating that the project selected refrigerants and HVAC equipment that minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming. The completed Refrigerant Impact Calculation indicates that the project’s total refrigerant impact is 75.6 per ton, which is less than the maximum allowable value of 100. Manufacturer documentation has been provided for each chiller. However, the expected chiller life must be listed as 15 years unless manufacturer documentation is provided, in accordance with page 222 of the LEED-NC v2.2 Reference Guide, Third Edition.

**TECHNICAL ADVICE:**
Please provide a revised Template indicating 15 years as the expected chiller life, or provide manufacturer documentation verifying a different value. Refer to the LEED-NC v2.2 Reference Guide, Third Edition, page 222 for complete requirements regarding alternate equipment life values.
A clarification narrative has been provided stating that the showers in the project have a flow rate of 1.5 GPM and that due to the security at the project building, the restroom containing no urinals is accessible to visitors only. A supplemental calculation spreadsheet has been provided to appropriately account for the atypical usage patterns in the project. A revised template has been provided. The supplemental calculations sheet indicates that the project has reduced potable water usage by 41.2% from a calculated baseline design. The documentation demonstrates credit compliance.

<table>
<thead>
<tr>
<th>Measurement and Verification</th>
<th>Credit 5-Version 2.2</th>
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<tbody>
<tr>
<td>Green Power</td>
<td>Credit 6-Version 2.2</td>
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<th>Materials and Resources</th>
<th>Possible Points 13</th>
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</thead>
<tbody>
<tr>
<td>Storage and Collection of Recyclables</td>
<td>Prerequisite 1-Version 2.2</td>
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</tbody>
</table>

**Construction Application**

3/15/2012

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.

**Building Reuse**

Credit 1.1-1.2-Version 2.2

**Building Reuse, Non-Structural**

Credit 1.3-Version 2.2

**Construction Waste Management**

Credit 2-Version 2.2

**Construction Application**

3/15/2012

The LEED Submittal Template has been provided stating that the project has diverted 341.35 tons (86.03%) of on-site generated construction waste from landfill. Calculations have been provided to document the waste types and receiving agencies for recycled materials. A copy of the project’s Construction Waste Management Plan has been provided along with tipping sheets.

**Resource Reuse**

Credit 3-Version 2.2
Recycled Content

Construction Application 3/15/2012

The LEED Submittal Template has been provided stating that 31.76% of the total building materials content, by value, have been manufactured using recycled materials.

Regional Materials

Construction Application 3/15/2012

The LEED Submittal Template has been provided stating that 45.58% of the total building materials value includes building materials and/or products that have been extracted, harvested or recovered, as well as manufactured within 500 miles of the project site.

Certified Wood

Construction Application 3/15/2012

The LEED Submittal Template has been provided stating that 54.619% of the total wood-based building materials are harvested from FSC certified forests. A minimum of 50% is required. Vendor invoices have been provided for 100% of all new wood products.

Minimum IAQ Performance

Design Application 10/27/2010

The LEED Submittal Template has been provided stating that the project complies with the minimum requirements of ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality, using the Ventilation Rate Procedure. Mechanical floor plans, ventilation rate calculations, and a supplemental narrative have been provided to describe the project’s ventilation design. The narrative includes specific information regarding design outside air intake volumes.

For future submittals, please note that the conference rooms are considered regularly occupied spaces. Since sufficient outside air has been provided, the credit may be awarded.

Environmental Tobacco Smoke (ETS) Control

Prerequisite 2-Version 2.2
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 at least 25 feet away from building entries, windows, and air intakes. The Template narrative includes the University Operations Manual language regarding smoking.

Outdoor Air Delivery Monitoring

Design Application 10/27/2010
The LEED Submittal Template has been provided stating that carbon dioxide concentrations are monitored within all densely occupied spaces and that direct airflow measurement devices have been provided for each mechanical ventilation system serving non-densely occupied spaces. A narrative describing the project’s ventilation design and CO2 monitoring system has been included, as required. Mechanical drawings have been provided documenting the location and type of installed sensors. A furniture plan has been provided. However, two issues must be addressed for the Final Review:
1. It is unclear whether the CO2 sensors are located within the breathing zone (3 to 6 feet above the floor).
2. The CO2 setpoint is not specified, and it is unclear if monitoring equipment has been configured to generate an alarm when conditions vary by 10% or more from the setpoint.

TECHNICAL ADVICE:
Please provide the following.
1. A narrative confirming that the CO2 sensors in densely occupied spaces are located within the breathing zone (3 to 6 feet above the floor). Please note that while ASHRAE allows return air duct sensors, for the purposes of this credit, sensors must be placed within the breathing zone.
2. A narrative verifying the CO2 setpoint and that an alarm will be generated for variations of 10% or more from the setpoint for the sensors.

Design Application 1/20/2011
The clarification narrative has been provided to address the issues outlined in the Preliminary Review comments and indicates that the CO2 sensors have been located in the breathing zone, and that sensor setpoints have been established that generate an alarm for variations of 10% or more. The documentation demonstrates credit compliance.

Increased Ventilation

Design Application 10/27/2010
The LEED Submittal Template has been provided stating that the project has increased breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE Standards 62.1-2004 as determined by EEqp1. A detailed narrative has been provided describing the project’s ventilation system design. Specific information regarding the design outside air intake volumes for each occupied zone has been provided. The project team has provided mechanical plans and a copy of the Submittal Template.
Construction IAQ Management Plan: During Construction

Construction Application

The LEED Submittal Template has been provided stating that the project developed and implemented a construction IAQ Management Plan that followed the referenced SMACNA Guidelines, that all air handlers operating during construction had filtration with a rating of at least MERV-8 present while operational and that the filtration media was replaced prior to occupancy. A copy of the project’s IAQ Management Plan including photographs highlighting the implemented IAQ measures has been provided.

Construction IAQ Management Plan: Before Occupancy

Construction Application

The LEED Submittal Template has been provided stating that, prior to initial occupancy, baseline IAQ testing was conducted. A copy of the project’s IAQ testing report has been provided to confirm that all sampling points were tested confirming that the allowable concentration limits have not been exceeded.

Low-Emitting Materials: Adhesives and Sealants

Construction Application

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.

Low-Emitting Materials: Paints and Coatings

Construction Application

The LEED Submittal Template has been provided stating that all indoor paint and coating products comply with the VOC limits of the referenced Green Seal and SCAQMD standards. The template includes a list of the required product details.

Low-Emitting Materials: Carpet Systems

Construction Application

The LEED Submittal Template has been provided stating that the installed carpet complies with the testing and product requirements of the CRI Green Label Plus Program, there are no installed carpet cushions, and all carpet adhesives comply with the requirements of EQc4.1 Low-Emitting Materials-Adhesives and Sealants. The template includes a list of the required product details.

Low-Emitting Materials: Composite Wood and Agrifiber

Construction Application

The LEED Submittal Template has been provided stating that all indoor composite wood and agrifiber materials used on the project contain no added urea-formaldehyde. The template includes a list of the required product details.
Indoor Chemical and Pollutant Source Control

Design Application 10/27/2010

The LEED Submittal Template has been provided stating that the project has installed the required indoor chemical and pollutant source control measures required by this credit. A listing of each entryway product installed for the building has been provided. Copies of the project's architectural and mechanical drawings have been provided to show the installed entryway systems, room separations, and required ventilation systems. The Template confirms that MERV 13 filtration media have been installed in all HVAC systems prior to occupancy. However, three issues must be addressed for the Final Review:

1. It is unclear whether the chemical use areas have self-closing doors.
2. While the Template states that negative pressurization has been provided for the chemical use areas, the negative pressurization values have not been included.
3. There appear to be several building entries that do not have entryway systems, and it is unclear whether these are emergency exits.

TECHNICAL ADVICE:
Please provide the following.
1. A narrative confirming that the chemical use areas have self-closing doors.
2. A revised Submittal Template providing the specific negative pressurization for each area. Note that according to the Requirements section of the LEED-NC v2.2 Reference Guide, Third Edition, page 359, the negative pressure differential with the surrounding spaces shall be at least 5 Pa (0.02 inches of water gauge) on average and 1 Pa (0.004 inches of water) at a minimum when the doors to the rooms are closed.
3. A revised plan highlighting all building entryway systems and indicating any emergency exits that would be exempt from the requirements of this credit.

Design Application 1/20/2011

The LEED Submittal Template has been revised to address the issues outlined in the Preliminary Review comments, indicates that the chemical-use areas have self-closing doors, and provides specific negative pressurization for each area. Specifications have been provided to verify the self-closing doors. A floor plan has been provided to identify the emergency exits and main entryways. The documentation demonstrates credit compliance.

Controllability of Systems: Lighting

Design Application 10/27/2010

The LEED Submittal Template has been provided stating that a sufficient quantity of lighting controls are provided for individual workstations, and that appropriate lighting controls are available for shared multi-occupant spaces. A narrative has been provided describing the project's lighting control strategy with a description of the type and location of the lighting controls. The project team has provided a floor plan highlighting the individual workstation lighting fixtures and a furniture and equipment plan that highlights the total number of individual workstations.
Controllability of Systems: Thermal Comfort

Design Application
The LEED Submittal Template has been provided stating that a sufficient quantity of thermal controls are provided for individual workstations, and that appropriate thermal controls are available for all shared multi-occupant spaces. A narrative has been provided describing the project’s thermal control strategy with a description of the type and location of the thermal controls. The project team has provided a floor plan highlighting the individual workstation thermostats and a furniture and equipment plan highlighting the total number of individual workstations.

Thermal Comfort: Design

Design Application
The LEED Submittal Template has been provided stating that the HVAC systems and building envelope have been designed to meet the requirements of ASHRAE Standard 55-2004. The project team has provided a narrative describing the method used to establish thermal comfort criteria for the project. Data have been provided regarding the specific seasonal temperature and humidity design criteria. However, the narrative does not address specific information regarding compliance with the referenced standard.

TECHNICAL ADVICE:
Please describe in the narrative specific information regarding compliance with ASHRAE Standard 55-2004, including metabolic rate, clothing insulation, radiant temperature asymmetry, and air speed.

Design Application
1/20/2011
The clarification narrative has been provided to address compliance with ASHRAE Standard 55-2004 regarding metabolic rate, clothing insulation, radiant temperature, and air speed. The documentation demonstrates credit compliance.

Thermal Comfort: Verification

Design Application
The LEED Submittal Template has been provided explaining that a thermal comfort survey that 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 20% of the building occupants are dissatisfied with thermal comfort based on the environmental variables outlined in ASHRAE 55-2004. A copy of the survey has been provided. However, achievement of EQc7.2 cannot be awarded without demonstrated achievement of EQc7.1.

TECHNICAL ADVICE:
Please see the comments in EQc7.1.

Design Application
1/20/2011
The EQc7.1 Thermal Comfort: Design documentation has been provided to address the issues outlined in the Preliminary Review comments. The documentation demonstrates credit compliance.
**Daylighting and Views: Daylight 75% of Spaces**

**Construction Application**

This credit was submitted for initial review during the Final Review. The LEED Submittal Template has been provided stating that the project has achieved a minimum 2% glazing factor in 100% of all regularly occupied spaces. Calculations have also been provided. A detailed narrative describing any excluded areas has been provided. Floor plans have been provided.

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

**Construction Application**

The LEED Submittal Template has been provided stating that the project has provided direct line of sight views for 98.68% of all regularly occupied areas. A narrative has been provided describing special occupancy areas that have been excluded from compliance. The narrative confirms that these spaces have been appropriately excluded. Floor plans highlighting the areas with views have been provided.

However, three issues are pending:
1. It appears that several spaces that are considered regularly occupied have been noted on the floor plans as spaces with functions that would be inhibited by the presence of daylight. It is unclear if the following spaces has been appropriately excluded from credit requirements: ITS Office 111, ITS Office 150, ITS OC 113, ITS War Room Conference Room 115B, HCIS War Room Conference Room 115A, HCIS OC 117, HCIS Office 119, and ITS Office 118.

2. It appears that several non-regularly occupied spaces have been included in the calculations, including Vestibule X100, Lobby X105, and Work Room/Break Room 116. According to page 394 of the LEED-NC v2.2 Reference Guide, Third Edition, regularly occupied spaces are areas where workers are seated or standing as they work inside a building. Non-regularly occupied spaces (that are not eligible for inclusion in this credit) include corridors, hallways, lobbies, break rooms, copy rooms, storage rooms, kitchens, restrooms, stairwells, etc.

3. Copies of applicable project drawings highlighting the direct line of sight through exterior windows have not been provided.

**TECHNICAL ADVICE:**
1. Please revise the calculations to include all regularly occupied spaces in the project building. Alternatively, provide a clarification narrative to describe why the activities in the following rooms would be hindered by daylight: ITS Office 111, ITS Office 150, ITS OC 113, ITS War Room Conference Room 115B, HCIS War Room Conference Room 115A, HCIS OC 117, HCIS Office 119, and ITS Office 118.

2. Revise the calculations to exclude all non-regularly occupied spaces. Alternatively, provide a clarification narrative describing the activities that take place in Vestibule X100, Lobby X105, and Work Room/Break Room 116. Ensure that the narrative explains how the activities differ from those that take place in typical lobbies and why these spaces should be considered regularly occupied for this project.

3. Provide project drawings (both plan and sectional views) indicating the line of sight from interior spaces through exterior windows.

**Construction Application**

The LEED Submittal Template has been revised to address the issues outlined in the Preliminary Review.
comments and confirms that areas have been appropriately excluded from this credit. Project drawings have been provided highlighting the views. The documentation indicates that the project has provided direct line of sight views for 100% of all regularly occupied areas. The documentation demonstrates credit compliance.

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**Innovation in Design**

**Construction Application**
3/15/2012

The LEED Submittal Template has been provided stating that the project team has developed and implemented a green housekeeping program. Green cleaning is detailed in LEED-NC v2.1 IDc1.1 CIR ruling dated 4/8/2004 (LEED Interpretation 766). To receive an innovation point, the project team must demonstrate that a comprehensive green cleaning / housekeeping program is in place with clear performance goals including: a statement of purpose; custodial training; the contractual or procedural requirements for operations staff; a clear set of acceptable performance standards by which to measure products, progress, and achievement of goals; and documentation of the program's housekeeping and environmental cleaning solution specifications. The green cleaning program complies with the LEED Interpretation requirements.

**Innovation in Design**

**Design Application**
10/27/2010

The LEED Submittal Template has been provided stating that the project team has developed and implemented an ID credit proposal for Reduced Mercury in Light Bulbs. This path appears to follow the compliance path of LEED-EBOM, 2008 version, MRC4 Sustainable Purchasing: Reduced Mercury Content in Lamps which requires...
that a lamp purchasing plan be implemented with a maximum mercury performance level of 90 picograms/lumen-hour. A narrative with the statement of intent, a lighting schedule, manufacturer documentation, and specifications regarding the toxicity characteristics have been provided. However, the documentation does not indicate that the project average mercury content in picograms per lumen hour is less than 90, as required.

Additionally, please note that mercury values generated by TCLP (Toxicity Characteristic Leaching Procedure) tests are measured in milligrams per liter of test solution, and do not reflect total mercury content or mercury concentration in the bulb. These values therefore are not appropriate for use in the LEED-EBOM calculations. These values cannot be converted to total mercury content through calculations.

TECHNICAL ADVICE:
Please provide revised documentation to verify that the average mercury content is less than 90 picograms per lumen-hour. Refer to the requirements of MRc4 in the LEED-EBOM Rating System for additional details.

Design Application 1/20/2011
The low-mercury lamps data summary sheet has been provided to address the issues outlined in the Preliminary Review comments and indicates that 94% of all purchased bulbs have an average mercury content less than 90 picograms per lumen-hour. Manufacturer documentation and a revised LEED Submittal Template have been provided. The documentation demonstrates credit compliance.

Innovation in Design 10/27/2010
Credit 1.4-Version 2.2
The LEED Submittal Template has been provided stating that the project achieves exemplary performance for SSc5.2 Site Development: Maximize Open Space as specified in the LEED-NC v2.2 Reference Guide, Third Edition. The guideline for exemplary performance in SSc5.2 is to protect or maintain open space representing at least two times to building footprint. A landscape plan has been provided. The project team has provided documentation demonstrating 103,301 square feet of open space has been provided, which is over two times the building footprint and meets the exemplary performance requirement.

LEED Accredited Professional 3/15/2012
Credit 2-Version 2.2
Construction Application
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 Ron Paskach has been included.