BASIS OF DESIGN

GENERAL INFORMATION

1.1 During the Schematic Design phase, the Consultant shall develop a Basis of Design (BOD) Document. This document shall provide a comprehensive description of the project’s design intent.

1.2 Provide a detailed description of the concepts, assumptions, calculations, product selections and operating conditions that will meet CUF Design Requirements and satisfy all codes and industry best practices.

1.3 Consultant shall update the BOD at each phase of the project.

DESIGN REQUIREMENTS

2.1 Background – provide a narrative that demonstrates an understanding of the project goals and CUF requirements.

2.2 Project program and major relationships.

2.3 Proposed deviations from CUF Design Requirements and justification.

2.4 Regulatory, site, schedule and budget impacts effecting the design.

2.5 List of required permits and applications.

2.6 Noise and visual considerations.

2.7 Code analysis describing methods proposed to comply with governing codes and regulations, including zoning, occupancy, fire life safety, fire protection, ventilation and structural.

2.8 Climate, site and utilities information including drainage, site context (surrounding buildings and conditions), circulation, etc.

2.9 Sustainability / LEED narrative of approach, checklist, lifecycle analysis.

2.10 ADA narrative outlining approach and identification of non-compliant conditions in the path of travel as well as within the project limit lines.

2.11 Area and volume calculations, net and gross, for impacted floors and rooms.

2.12 Architectural, mechanical, electrical and structural systems descriptions
a. Partition systems, UL ratings  
b. Interior finishes  
c. Casework / Millwork  
d. FFE  
e. Windows, building envelope, provision for cleaning, thermal characteristics  
f. Vertical transportation  

2.13 Mechanical – description of systems considers and rationale for system selection, life cycle analysis, interface with building automation systems.  
   a. Comfort cooling and heating including design loads  
   b. Ventilation including design loads  
   c. HVAC equipment and building automation  

2.14 Electrical – describe special power and reliability requirements, anticipated participation in rebate programs.  
   a. Electrical system loads and distribution methods  
   b. Lighting – proposed fixtures and energy calculations  
   c. Backup power  
   d. Emergency power  
   e. UPS systems  
   f. Sub-metering  

2.15 Fire Life Safety  
   a. Fire alarm – impact to existing system, connection points.  
   b. Fire protection – sprinkler layout, sizes of risers, runs, and connection points.  
   c. Fire separations  

2.16 Plumbing  
   a. Plumbing fixture count verification  
   b. Lab services  
   c. Pantries  
   d. Location of water, gas, sanitary, lab waste, storm and sprinkler standpipe, compressed air, etc.  

2.17 Structural  

2.18 Utilities - Impact to campus and other utilities  

2.19 Audio Visual  

2.20 Telecommunications - description of systems, capabilities and service line locations, layout of devices, connection points, pathways and wireless locations.  

2.21 Security and access control
2.22 Schedule.

2.23 Trade cost estimate.

2.24 Design assumptions (occupancy schedules, temperature, humidity, air change rates, room pressurization, sound level limits, light levels, glare limits, vibration criteria, heat loads, water, gases, power, data, grounding, hazardous materials).

2.25 Facility Condition Assessment Requirement List marked to indicate tasks included in the project.

2.26 Pollution Control means and methods.

2.27 Appendices
   a. LEED checklist
   b. Soils and utility service reports
   c. Systems and equipment sizing calculations
   d. Light levels and watts / square foot calculations
   e. Effluent, dispersion, noise, vibration and other studies
   f. Outline of Commissioning scope of work
## Approval:

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe Mannino</td>
<td></td>
</tr>
<tr>
<td>Frank Martino</td>
<td></td>
</tr>
</tbody>
</table>
Sample BOD Worksheet

These requirements are intended to be targets. CUF is willing to entertain design/performance improvements on these targets and expects the Consultant to propose any project related ideas to improve CU’s energy performance. Any conflicts between this document and applicable code should be brought to the attention of the Project Manager. This Worksheet does not relieve the Consultant of any obligation to perform the required code reviews.

<table>
<thead>
<tr>
<th>Outdoor design Criteria</th>
<th>Diversity Factor:________________</th>
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<tbody>
<tr>
<td>Summer outdoor temperature: .4% dry bulb, 92.1F DB</td>
<td></td>
</tr>
<tr>
<td>Summer outdoor temperature: .4% mean coincident wet bulb, 74.4F WB</td>
<td></td>
</tr>
<tr>
<td>Winter outdoor temperature, 99.6% dry bulb: 12.8F DB</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Summer Temp</th>
<th>Summer RH</th>
<th>Winter Temp</th>
<th>Winter RH</th>
<th>Min. Ventilation Rate</th>
<th>Min. ACH</th>
<th>Pressurization</th>
<th>Equipment Load (W/SF)</th>
<th>Lighting Load (W/SF)</th>
<th>Air filtration (dust-spot efficiency)</th>
<th>Noise Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratories, Lab Support</td>
<td>72F</td>
<td>40-60%</td>
<td>66-70F</td>
<td>35% min.</td>
<td>17 cfm/occ</td>
<td>6</td>
<td>Negative</td>
<td>Actual</td>
<td>1.4</td>
<td>90-95%</td>
<td>45</td>
</tr>
<tr>
<td>Faculty Offices</td>
<td>75F</td>
<td>35-60%</td>
<td>65-71F</td>
<td>30% min.</td>
<td>17 cfm/occ</td>
<td>----</td>
<td>Neutral</td>
<td>2</td>
<td>1</td>
<td>80-85%</td>
<td>35</td>
</tr>
<tr>
<td>Conference Rooms</td>
<td>75F</td>
<td>35-60%</td>
<td>65-71F</td>
<td>30% min.</td>
<td>17 cfm/occ</td>
<td>----</td>
<td>Neutral</td>
<td>2</td>
<td>1</td>
<td>80-85%</td>
<td>35</td>
</tr>
<tr>
<td>Lecture Halls</td>
<td>75F</td>
<td>60% max.</td>
<td>65-71F</td>
<td>Uncontrolled</td>
<td>8 cfm/occ</td>
<td>----</td>
<td>Neutral</td>
<td>.9 - 1.4</td>
<td>1</td>
<td>60-65%</td>
<td>25</td>
</tr>
<tr>
<td>Libraries</td>
<td>72F</td>
<td>60% max.</td>
<td>66-70F</td>
<td>Uncontrolled</td>
<td>17 cfm/occ</td>
<td>----</td>
<td>Neutral</td>
<td>1.8 - 5.6</td>
<td>0.8</td>
<td>60-65%</td>
<td>35</td>
</tr>
<tr>
<td>Entrance Lobbies</td>
<td>62-82F</td>
<td>70% max.</td>
<td>58-78F</td>
<td>Uncontrolled</td>
<td>11 cfm/occ</td>
<td>----</td>
<td>Positive</td>
<td>0.5</td>
<td>.9 - 1.8</td>
<td>60-65%</td>
<td>45</td>
</tr>
<tr>
<td>Dining Areas</td>
<td>75F</td>
<td>60% max.</td>
<td>65-71F</td>
<td>Uncontrolled</td>
<td>9 cfm/occ</td>
<td>----</td>
<td>Negative</td>
<td>1.5</td>
<td>0.3</td>
<td>60-65%</td>
<td>40</td>
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<tr>
<td>Corridors</td>
<td>68-76F</td>
<td>60% max.</td>
<td>64-72F</td>
<td>Uncontrolled</td>
<td>.1 cfm / SF</td>
<td>----</td>
<td>Neutral</td>
<td>0.5</td>
<td>.6 - 1.8</td>
<td>60-65%</td>
<td>40</td>
</tr>
<tr>
<td>Restrooms, custodial</td>
<td>68-76F</td>
<td>60% max.</td>
<td>64-72F</td>
<td>Uncontrolled</td>
<td>75 cfm / fixture</td>
<td>----</td>
<td>Negative</td>
<td>0.5</td>
<td>0.9</td>
<td>60-65%</td>
<td>40</td>
</tr>
</tbody>
</table>
### SECTION 00 00 14
### DESIGN REQUIREMENTS

<table>
<thead>
<tr>
<th>Exit Stairwells</th>
<th>Uncontrolled</th>
<th>Uncontrolled</th>
<th>65F min.</th>
<th>Uncontrolled</th>
<th>.06 cfm / SF</th>
<th>Neutral or per code</th>
<th>0.5</th>
<th>.4 - .6</th>
<th>----</th>
<th>----</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Rooms</td>
<td>85-95F</td>
<td>60% max.</td>
<td>65-95F</td>
<td>Uncontrolled</td>
<td>.05 cfm / SF</td>
<td>Neutral</td>
<td>2-8.3</td>
<td>.5 - 1.5</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Electric Closets</td>
<td>67-77F</td>
<td>60% max.</td>
<td>63-73F</td>
<td>Uncontrolled</td>
<td>.05 cfm / SF</td>
<td>Negative</td>
<td>24</td>
<td>1.1</td>
<td>----</td>
<td>----</td>
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<tr>
<td>Tech Rooms</td>
<td>70-74F</td>
<td>60% max.</td>
<td>70-74F</td>
<td>Uncontrolled</td>
<td>.05 cfm / SF</td>
<td>Negative</td>
<td>39-174</td>
<td>.2 - 1.5</td>
<td>----</td>
<td>----</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Points of connection to Site/Building Utilities</th>
</tr>
</thead>
</table>

- **Chilled Water:**
- **Medium Pressure Steam (40psig):**
- **Perimeter Heating Hot Water:**
- **Domestic Water:**
- **Electrical:**
- **Emergency Power:**
- **Sprinkler:**
- **Air Handler:**
- **Fresh air intake:**
- **General Exhaust:**
- **Laboratory Exhaust:**
- **Lab Services (process chilled water, compressed air, vacuum, back-up power):**
SECTION 00 00 14
DESIGN REQUIREMENTS