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.

1.4 Certain work types that do not impact infrastructure or compliance issues are excluded from this requirement:
   - Residential living spaces (not including building common areas)
   - Façade work
   - One for one infrastructure, finish and equipment replacements
   - One for one sidewalk replacements
   - In-kind replacement of windows
   - Data, security and telecommunications work that does not require penetrating a corridor wall or change in cooling requirement
   - Emergency repairs
   - Asbestos and other environmental abatement
   - Retail / commercial work for non-Columbia occupants

For individual projects from the above list that impact infrastructure or compliance, the requirement for BOD submission may be customized or required by a CUF Vice President.

DESIGN REQUIREMENTS

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

2.1 Project program and major relationships.

2.2 Proposed deviations from CUF Design Requirements and justification.

2.3 Schedule and budget.

2.4 List of required permits and applications.
2.5 Code summary describing methods proposed to comply with governing codes and regulations, including zoning, area and volume calculations, occupancy, fire life safety, fire protection, ventilation, structural, ADA (narrative outlining approach and identification of non-compliant conditions in the path of travel as well as within the project limit lines), etc.

2.6 Mechanical / Electrical / Plumbing and Utilities information
   a. Mechanical – description of systems considered and rationale for system selection, life cycle analysis, interface with building automation systems.
      - Comfort cooling and heating including design loads
      - Ventilation including design loads
      - HVAC equipment and building automation
      - Connection / impacts to existing mechanical system
   
   b. Electrical – describe special power and reliability requirements, anticipated participation in rebate programs.
      - Electrical system loads and distribution methods
      - Lighting – proposed fixtures and energy calculations
      - Standby power
      - Emergency power
      - UPS systems
      - Sub-metering
      - Connection / impacts to existing electrical system
   
   c. Plumbing
      - Lab services
      - Pantries
      - Location of water, gas, sanitary, lab waste, storm and sprinkler standpipe, compressed air, etc.
      - Connection / impacts to existing plumbing system

2.7 Sustainability / LEED narrative of approach, checklist, lifecycle analysis, including the current ASHRAE guidelines for BOD.

2.8 Architectural 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

2.9 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

2.10 Audio Visual

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

2.12 Security and access control

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

2.14 Outline of Commissioning scope of work

2.15 Appendices

a. Indoor Environment Design Criteria
b. Forms
c. LEED checklist
d. Sample documents

END OF SECTION
Indoor Environment Criteria 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.

### Indoor Environment Design Criteria

#### Outdoor Design Criteria

- Summer outdoor temperature: .4% dry bulb, 92.1°F DB
- Diversity Factor: ___________
- Summer outdoor temperature: .4% mean coincident wet bulb, 74.4°F WB
- Winter outdoor temperature: 0°F

<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. Vent. Rate</th>
<th>Min. ACH</th>
<th>Pressurization</th>
<th>Equip Load (W/SF)</th>
<th>Lig Load (W/SF)</th>
<th>Air filtration</th>
<th>Noise Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratories, Lab Support</td>
<td>75°F/+/-2°F</td>
<td>50%</td>
<td>68°F/+/-2°F</td>
<td>35% min.</td>
<td>20 cfm/occ</td>
<td>6-8</td>
<td>Neutral</td>
<td>Actual</td>
<td>1.5</td>
<td>HEPA</td>
<td>45</td>
</tr>
<tr>
<td>Conference Rooms</td>
<td>75°F/+/-2°F</td>
<td>50%</td>
<td>68°F/+/-2°F</td>
<td>Uncontrolled</td>
<td>Uncontrolled</td>
<td>---</td>
<td>Neutral</td>
<td>2</td>
<td>1.5</td>
<td>MERV-13</td>
<td>35</td>
</tr>
<tr>
<td>Lecture Halls</td>
<td>75°F/+/-2°F</td>
<td>50%</td>
<td>68°F/+/-2°F</td>
<td>Uncontrolled</td>
<td>Uncontrolled</td>
<td>---</td>
<td>Neutral</td>
<td>2</td>
<td>1.5</td>
<td>MERV-13</td>
<td>35</td>
</tr>
<tr>
<td>Libraries</td>
<td>75°F/+/-2°F</td>
<td>50%</td>
<td>68°F/+/-2°F</td>
<td>Uncontrolled</td>
<td>Uncontrolled</td>
<td>---</td>
<td>Neutral</td>
<td>2</td>
<td>1.5</td>
<td>MERV-13</td>
<td>35</td>
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<td>68°F/+/-2°F</td>
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<td>1.5</td>
<td>MERV-13</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Lobbies</td>
<td>Dining Areas</td>
<td>Corridors</td>
<td>Restrooms, custodial</td>
<td>Exit Stairwells</td>
<td>Mech. Rooms</td>
<td>Elec. Closets</td>
<td>Tech. Rooms</td>
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<tr>
<td><strong>Location</strong></td>
<td>75F</td>
<td>76F</td>
<td>76F</td>
<td>76F</td>
<td>10F Above</td>
<td>78F</td>
<td>80F</td>
<td>78F</td>
<td></td>
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<tr>
<td><strong>Temperature</strong></td>
<td>75F max.</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>70%</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td>+/- 2F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Airflow</strong></td>
<td>15 cfm/occ</td>
<td>15 cfm/occ</td>
<td>15 cfm/occ</td>
<td>15 cfm/occ</td>
<td>15 cfm/occ</td>
<td>15 cfm/occ</td>
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<tr>
<td><strong>MERV</strong></td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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<tr>
<td><strong>Notes</strong></td>
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<td>Uncontrolled</td>
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<td>N/A</td>
<td>N/A</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Notes:**
- **Positive:** 0.5
- **Negative:** 1.0
- **Neutral or per code:** 0.5
- **Actual:** 1.0
- **Uncontrolled:** 0.0