1 University – Designer Information-Interaction:

1.1 Through the PM you should contact the Energy and Utilities (E&U) department at Purdue University during the schematic design phase to discuss general HVAC control systems. Early coordination of the mechanical design with the E&U department is essential.

1.2 The Designer is responsible for the operational sequences of the mechanical systems, but Purdue’s E&U department must approve before being issued. The Designer shall provide the E&U department with an electronic copy of the sequences of operation for our LAN-based mechanical controls library.

1.3 A pre-submittal meeting to review the BAS controls and architecture is to be scheduled. At a minimum the Mechanical Designer, Temperature Controls Vendor and a Representative of the Purdue E&U Department shall attend. Others may attend as necessary. This meeting is to be scheduled by the Mechanical Designer.

1.4 A responsibility matrix delineating responsibility for both parts and installation will be utilized on each project to facilitate installation of the BAS.

2 Systems Design Expectations

2.1 Emphasis should be placed on the latest indoor air quality and energy conservation principles during the design and sequence development process (i.e. LEED, ASHRAE 62.1 and 90.1 (as required by the state of Indiana)).

2.2 Individual room temperature control is expected on all projects.

2.3 Thermostats consisting of a digital temperature display, set point adjustment and an occupant override button should be in all spaces. Set point adjustment and occupant override will be disabled in public spaces.

2.4 All systems shall have schematic drawings depicting all necessary components (sensors, valves, dampers, etc.) and their respective location in the system.

2.5 Notice the examples of the equipment numbering conventions (Section 0553 Equipment Identification). These are to be utilized to identify all equipment in project documentation.

2.6 All integrations between the BAS system and any third-party equipment shall have prior approval from E&U and be done utilizing BACnet over MSTP protocol. Be prepared to justify the need for the integration.

2.7 Skid packages that are utilized on a project will have the BAS controls of the building used on all auxiliary equipment.

3 Electrical Interaction

3.1 Coordinate all VFD, raceway, motor, and other electrical equipment specifications with the appropriate electrical sections of the Consultants Handbook.

3.2 The Mechanical Designer is responsible for coordinating with the University (E&U) the location of all necessary Purdue Information Connection (PIC) Access data Ports. Mechanical Designer will then work with the Electrical/Telecommunications Designer to include the pic locations on the appropriate drawings with any construction notes and references added to ensure the correct data pics are installed. A duplex set (2 ea. Individual of data pics) shall be installed where ever necessary. These PIC’s will be dedicated to the BAS system in the building for maintenance purposes. There is no permanent equipment that hooks up to these PIC’s.

3.3 Pics shall be located in all mechanical rooms that have HVAC air handling or pumping systems. The data pics shall either be installed in the BAS control cabinet if there is available space or in a Hoffman Nema 1 hinged door 6”x6”x4” with a Siemens lock installed in place of the thumb screw. Siemens lock part number is: 567-225, description CP567 LOCK & KEY ASSY-ALL CABINETS. All key from locks to be turned over to E&U department. If no lock exists on the BAS control cabinet that a data pic is installed then one is to be added.

3.4 The Electrical contractor shall furnish and install all Purdue Information Connection (PIC) for the BAS system where indicated on construction documentation.

3.5 All modules, sensors, actuators, meters, and relays, transmitters, switches, wiring, tubing, conduit, and control components installed by the Electrical Contractor or the Temperature Control Contractor shall be compatible with the Purdue E&U DDC systems. No terminal strips shall be used. No equipment to be mounted on panel doors. No controllers to be stack on top of another.

3.6 All wiring to be labelled on both ends with the University approved point name and full point address. At the control panel, if labelling is cut off during termination point name and address to be re-applied.

4 Mechanical Equipment Nomenclature

Purdue mechanical systems have two owner names, the common name, scheduled on the construction documents, and the software DDC name, found on control drawings and in control system programming.
The assigned number for each scheduled mechanical unit is the same number as in the DDC software, but the assigned names are different. See E&U system and point nomenclature for a description of DDC names. Purdue’s standard naming for scheduled mechanical equipment follows.

1. Air handling systems: A C P- # (# = 1, 2, 3…):
   - First two letters indicate whether it has cooling (AC), return or relief air (RA), heating/ventilation only (HV), 100% dedicated OA (SA), or other descriptor.
   - Third letter indicates location: B = basement, 1 = first floor, 2 = 2nd floor, A = attic, P = penthouse, R = roof
   - Number air handling systems sequentially, such that each AHU system has a unique number. A supply and return/relief fan on the same system share the same number. For new buildings start number equipment from the basement up through the building.

2. Computer Room A/C Units: CRAC - #:
   - CRAC units are numbered sequentially with AHUs. See #1 above.

3. Exhaust fans: T E R- # (# = 1, 2, 3…):
   - First two (or three) letters indicate whether it is toilet exhaust (TE), general exhaust (GE), kitchen exhaust (KE), hood exhaust (HE), manifold hood exhaust (MHE), or other descriptor.
   - The next letter indicates location: B = basement, 1 = first floor, 2 = 2nd floor, A = attic, P = penthouse, R = roof
   - Number all exhaust fans, regardless of type, sequentially, such that each fan has a unique number. (I.e. GEB-1, TE1-2, GER-3…etc.)
   - Number hood exhaust fans according to room number as in: HE1-101-1, HE1-101-2, HE1-101-3, serving room 101 and numbered sequentially.

4. Pumping systems: H Y P B-# (# = 1, 2, 3…):
   - First two letters indicate whether it is chilled water (CW), Hydronic heating water (HY), or other descriptor.
   - The third letter is always "P" indicating that it is a pumping system.
   - The fourth letter indicates location: B = basement, 1 = first floor, 2 = 2nd floor, A = attic, P = penthouse, R = roof
   - Number pumping systems sequentially, such that each pumping system has a unique number. If the pumping system has more than one pump, then use a number plus a letter, such as CWPB-1A and CWPB-1B, for a chilled water pumping system with two pumps, located in the basement.

5. Fan Coil Units: FCU - (room#)
   - First few letters indicate type of equipment, followed by the room number that is served by the unit. Example: FCU-123

6. Misc. mechanical equipment:
   - Sump pumps: SP-1, 2, 3…
   - Sewage ejector pumps: SEP-1, 2, 3…
   - Condensate vacuum pumps: CVP-1, 2, 3…
   - Unit Heaters, Cabinet heaters: UH-1, 2, 3…; CUH-1, 2, 3…

5 E&U System DDC Nomenclature

5.1 B B S S P P = Six-letter Point Name

<table>
<thead>
<tr>
<th>BB</th>
<th>SS</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two-letter acronym for the Building (Example: SW = Stewart Center)</td>
<td>Two-letter acronym for System (see below)</td>
<td>Two-letter acronym for DDC Point, Location / Function (Example: ST = space temp.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SW</th>
<th>06</th>
<th>FO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple pieces of same equipment will utilize letters to designate the individual equipment. I.e.- SW06FOA SW06FOB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.2 S S System Description

<table>
<thead>
<tr>
<th>SYSTEM DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td># # Air Handling Unit (01, 02, 03…)</td>
</tr>
<tr>
<td>P # Pumping System (P1, P2…)</td>
</tr>
<tr>
<td>B # Boiler (B1, B2…)</td>
</tr>
<tr>
<td>C # Water Chiller Refrigeration (C1, C2…)</td>
</tr>
<tr>
<td>D # Direct Expansion Refrigeration (D1, D2…)</td>
</tr>
<tr>
<td>E F Electrical Feeder</td>
</tr>
<tr>
<td>C N Condensate System</td>
</tr>
</tbody>
</table>
6 Additional Information

6.1 At closeout of the project the Temperature Controls Vendor will submit a digital copy of the project to the E&U department. The copy should contain but is not limited to the following:
1. All systems control drawings (In University provided .dwg format)
2. All control component (panels, modules, etc.) drawings (In University provided .dwg format)
3. All control code for the project
4. Systems graphics
5. Project bible-plans
6. Network layout
7. Floor level device network

6.2 Temperature control standard details to be included in the bid documents will be provided by E&U department. These drawings identify standard installation details required by the E&U department.

6.3 The E&U department will provide the next sequential number for the following:
1. Static IP addresses
2. Langate numbers
3. Panel numbers
4. Module numbers
5. System numbers.

6.4 Notify the Purdue E&U console (494-6285) prior to any work being done on live or existing units, panels or modules. Purdue reserves the right of first refusal on any salvaged materials.

6.5 Please contact the E&U department before proceeding if any directions in this guideline are unclear as well as with any questions not addressed in this guideline.