

## 307.5 Outline Specification Example – Integrated Automation

Division 250000

### 1.1 CODES AND STANDARDS

#### A. Codes

1. The Kentucky Building Code (KBC)
2. Applicable Local Codes and Ordinances
3. National Electrical Code (NEC)
4. Occupational Safety and Health Administration (OSHA)

#### B. Standards

1. Air Conditioning and Refrigeration Institute (ARI)
2. Air Diffusion Council (ADC)
3. Air Movement and Control Association, Inc. (AMCA)
4. American National Standards Institute (ANSI) Laboratory Ventilation
5. American Society of Heating, Refrigeration and Air Conditioning Engineers (Handbooks, 62-73 Standard, 52-76 Standard and 90-80 Standard (ASHRAE)
6. American Society of Mechanical Engineers (ASME)
7. American Society for Testing and Materials (ASTM)
8. American Water Works Association (AWWA)  
Institute of Boiler and Radiator Manufacturers (IBR)
9. National Electrical Manufacturers Association (NEMA)
10. National Fire Protection Association (NFPA)
11. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)
12. Underwriters' Laboratories (UL)

### 1.2 BUILDING CONTROL SYSTEMS:

- A. System shall be open protocol, Native BACnet, and be web-based.
- B. System Description: Sensors, indicators, actuators, final control elements, interface equipment, other apparatus, accessories, and software connected to distributed controllers operating in multiuser, multitasking environment on token-passing network and programmed to control mechanical systems.
- C. The temperature control system shall interface and communicate with the existing Owner CEMCS head-in system in Frankfort, Kentucky for seamless system integration transparent to the user. System shall comply with the Owner's CEMCS system control requirements.
- D. The system will consist of a totally native BACnet system based on a distributed control system. Building controllers, application controllers, and input/output devices shall communicate using the protocols and network standards as defined by ANSI/ASHRAE Standard 135-2004, BACnet.
- E. The Building Control System shall be a Direct Digital Control System with electronic actuation, which will be tied into the Campus systems to perform all the control routines required. All system components shall be industrial or commercial grade

as specified. Instrument characteristics such as hysteresis, relaxation time, span, minimum and maximum limits shall be coordinated so that the control system will operate smoothly and accurately throughout the design range. The system local control panel shall be a "stand-alone" unit at each mechanical system area.

- F. All temperature control and equipment interlock wiring, including conduits, shall be provided as required.
- G. Provide new head end computer and associated peripheral devices for monitoring, in the new facility. Locate where directed by the Owner.
- H. Controls shall be connected to emergency power.
- I. Valve and damper motors will be electric. Control system will be all electric.
- J. Individual room temperature control will be provided.
- K. In addition to the above, the following equipment will be provided as part of this section:
  - 1. Air terminal units (overhead variable volume units).
  - 2. Air terminal units (underfloor units)
  - 3. Demand control ventilation systems
  - 4. Variable frequency drives.
  - 5. Refrigerant detection and alarm system.
- L. The central control panel will provide start-stop-run indication for all major items of building equipment with run-time and critical alarms. Smoke detection alarms and other related and fire command system requirements will be provided under the Electrical Section.
- M. Critical alarms will include, but not necessarily be limited to, the following:
  - 1. Pump failures.
  - 2. Fire alarm control panel alarm condition. (Upon receiving alarm signal from Fire Alarm Control Panel (FACP), building HVAC equipment fire and life safety mode of operation will be activated as required.)
  - 3. Freeze indication at coils.
  - 4. Exhaust fan failures.
  - 5. Return fan failures.
  - 6. Supply fan failures.
- N. Each fan system, water system, etc., will be provided with main control panels and sub-panels to mount all required thermostats, thermometers, gauges, relays, switches, timers, regulators, receivers/controllers, and sub-master controls, with proper identification of the control devices.
- O. Chilled water coil control will be with two-way modulating type control valves with pump for minimum flow conditions.
- P. Freezestat with manual reset will close outside air dampers, stop fans and activate alarm.

- Q. All wall mounted room thermostat covers will be tamper-proof. Thermostats can be locally adjusted or no adjustment at Agency direction.
- R. Provide and be responsible for the laboratory control systems and their control. Controls for these systems shall be DDC/pneumatic.
- S. Typical zone variable volume air terminal unit will be controlled by wall mounted DDC room thermostat to modulate terminal unit and reheat control valve in VAV reheat systems, and a dual duct mixing box for VAV Dual Duct Systems.
- T. Air handling system. shall be controlled from supply duct air flow measuring stations as well as system static pressure sensors to modulate the supply and return fans through its variable frequency drive.

END

EXAMPLE