

) ' .

1.1 SUMMARY

- A. The Direct-Digital Control (DDC) System specified herein shall include materials, operator training, installation, start-up, testing, documentation and training for a complete operation of the system as required for this project.
- B. Controls engineering shall provide the local controls manufacturer representative.
- C. Contractor specified under this section shall perform work under the direct supervision of the local controls manufacturer representative or by a contractor that is certified by the controls manufacturer to perform all work within Section 12.01. Installation and Control for 12AC and those sections of 12.01 that have been specified herein.
- D. Alternate techniques, modifications or changes to any aspect of these specifications may be submitted as a voluntary alternate no later than (13) days prior to the date an efficient information for a complete evaluation. This information shall include project data sheets, a U43.5A Standard for Industrial Control 6a

,., SYST*M 40ST08 : C7M640A8C*

A.

(C7.2) inter-al start time" and stop time for each system data object shall be able to retrieve data for use in spreadsheets and standard data base programs

4. Reports and logs. Operator shall be able to select "to modify" to create" and to print reports and logs. 4.1 Finish the following standard system reports.

1. Alarm Reports
2. Schedule Reports
3. Security Reports
4. Commissioning Reports
5. Equipment Reports

4.2 Energy Conservation

1. 7.1.1 The Air Conditioning Heating or cooling modes shall be on configuration limits.

2. Demand Limiting

- a. System shall monitor building power consumption from building power meter plus generator signals or from building feeder line transformer or current transformer.

b. The system shall include all required hardware and software necessary to receive an Automatic Demand Response (ADR) signal from the utilities Demand Response Automation Server (DRAS).

- c. When power consumption exceeds a ("stable levels" or the system receives an ADR signal from the "utility" the system shall automatically adjust set points" and take other programmatic actions to reduce demand.

3. Optimal Start. The system shall bring the conditioned space to within occupied set points prior to the occupied time period to ensure occupant comfort.

4. Demand Controlled Ventilation (DCV). Each controlled space shall have a Carbon Dioxide (CO₂) sensor and shall maintain a ventilation setpoint through a DCV algorithm to fulfill the requirements of ASHRAE 62.1-2009 5.5.2.3(1) - 5.5.2.3(2) [TJT263.712]

1. Capacity control shall use the RTC internal time clock and setpoints (cooling and heating) compatible with a communicating room sensor. The controls shall provide separate occupancy and non-occupancy cooling and heating setpoints.
- 1.1. RTC shall utilize input, speed of fan control" input - stages of cooling" and input to = stages of heating.
- 1.2. RTC shall provide economizer control that has been certified for AHU Leakage Detection and Diagnostics (ALDD) by California Energy Commission (CEC). The ALDD system shall detect the following faults:
 - a. Air temperature sensor failure
 - b. Economizing when it should not
 - c. Economizing when it should not
 - d. Damper not modulating
 - e. Excess outdoor air
2. Fume Controller (FC). Define as Application Specific Controllers (ASC) shall be capable of independent zone control or function as part of the zoning system.
 1. FC shall have an integrated pressure sensor and shall perform pressure independent zone control by measuring and controlling CO2 being delivered to the zone.
 - 1.1. The FC shall utilize the Differential Maximum Control Setpoints 2A2 logic as defined by Title 24.
3. Bypass Controller (BC). Define as Application Specific Controllers (ASC) shall be capable of receiving supply static pressure and controlling the bypass damper (or a 2-position speed control output) to maintain the supply static set point in the supply duct. This operation shall be provided when operating within a zoning system application" or in a stand-alone mode.
 1. BC shall have an integrated pressure sensor and on-board pressure sensor to measure and control duct static pressure.
4. General Purpose Controller. Define as Advanced Application Controller (AAC) shall be a solid state micro-controller with pre-tested and factory configured software designed for room tie-in

iii. Range: -1 Qgßm-

iv. Response Time: R1.s

v. Temp an 6ress!re Compensation: Yes

@. TotalSense Series - 7 !t oor *n&ironmental an Air A!ality Sensor

1. The sensor shall %e an 7 !t oor air ' !ality sensor that has the option to sense all the follo#ing9 C7 , " 1 !mi ity" Temperat!re" 6artic!late Matter" T2 7Cs" an)arometric 6ress!re.
2. The sensor shall meet C* an Ro1S re' !irements.
3. The sensor shall %e a%le to comm!nicate %oth igitally #ith Mo %!s an)ACnet an #ith analog o!tp!ts.
4. The e&ice shall comm!nicate !sing)ACnet MSBT6 or Mo.0037(S)3.067ic

- v. Temperature Compensation? Yes
- vi. Weight, . . . Qgm- (default) programable up to 1 Qgm-
- d. Mass
 - i. Type? Optical

