

PART II - PRIMARY SYSTEMS INFORMATION

2. DIRECT DIGITAL CONTROL SYSTEM

1. Description

- a. A Direct Digital Control (DDC) System is provided for operation of the facility HVAC systems as follows:

- (1) An Alerton DDC control system handles the operation of all HVAC systems within this facility.

HVAC System:

The HVAC controls consist of a Direct Digital Control (DDC) System with Electric operators. Electric operators are used to actuate valves and dampers. The DDC Workstation Computer is located in Rm.1E28. The Workstation Computer is capable of sending and receiving information to and from the global controller with a built in modem and to the DDC Systems Digital Points Units (DPU) through communication cable. The communication cable extends from these panels to individual sensors and controllers, which communicate back to the DDC System as to operating parameters and set points. The Work Station Computer, Global Controller and DDC Panels contain all software, logic, sequences, alarms, etc. The Global Controller and each DDC Panel are capable of operating in a stand-a-lone mode of operation without direct contact with the Workstation Computer or with each other. Each unit panel has a keypad data entry system with a visual readout, to indicate the system operating set points and operating parameters required for that particular function. These set points and parameters may be accessed for modification with an approved password (if password use is set by the user) by the operating personnel. A notebook computer is furnished that can be directly connected into each of the above indicated local Unit panels. The notebook computer contains all system control software, memory, etc., that is required to run a systems display and data entry modification. The following DDC panels are located as indicated and control the indicated equipment systems:

| <u>Room</u> | <u>DDC Panel</u> | <u>Equipment</u> | <u>Electric Panel, in Rm. No.</u> |
|-------------|--|---|---------------------------------------|
| 1E-15 | DDC | Chiller CWP-1 Two (2) DDC Panels Located on 1 st floor Serving 80 VAV Terminals | 1MEC in RM 1E-15 |
| 2D-05 | DDC DDC DDC DDC DDC DDC | AHU-1 AHU-1 AHU-2 AHU-2 Boiler & HWP 1 & 2 Two (2) DDC panels Located on 2 nd floor Serving 59 VAV Terminals | N22C2 in RM 2C18 |

The DDC system is composed of a system of electronic sensors/controllers that is wired into and communicate directly with each local DDC Panel. Each Panel contains specific computer based software programs suited to control the equipment that it serves. Primary electrical power to operate the DDC system is provided with 120 volts supplied from emergency power circuits to each DDC Panel. Transformers in each DDC Panel reduce the 120 volt power supply to 24 volts D.C. Battery back up in each DDC Panel will allow 60 days of memory protection if primary electrical power is lost.

See Sequence of Operation and Control Diagrams under "Diagrammatic Plans", Page 2-2-1f2 through Page 2-2-1f4, for additional information.