WORK ORDER NO. 1333825

HVAC and DDC Facility Optimization

At

NAVSTA Norfolk, Norfolk, VA

SUBMITTED BY:

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Volume 2 of 4

APPROVED BY:

For Commander, NAVFAC MIDLANT
Date: June 2, 2016
100 Percent RFP Submittal

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SPECIFICATION MODIFICATIONS

Additions/Modifications to Specifications and RFP

1.08.2016

SECTION 23 09 23.13 20
BACnet DIRECT DIGITAL CONTROL SYSTEMS FOR HVAC

Instructions: These sections directly replace spec language in some cases only a lettered item is added to a spec section i.e. 2.1.2.1 item c. is added to 2.1.2.1 a and b. In most cases the entire paragraph has been edited for replacement. Any questions please call David Reyna 341-0733 or email david.reyna@navy.mil

1.2.10 BAS Owner

Contact Information for Building Automation Systems (BAS) owner NAVFAC MIDLANT Utilities & Energy DDC Group. Guidance shall be requested from BAS owner for BACnet device addressing schemes, BACnet communications media, DDC training coordination, along with assistance for technical support during commissioning or performance verification testing, workstation location, and local DDC site conditions. The BAS Owner and point of contact for Norfolk Naval Station (NSN)/Naval Support ActivityHR (NSAHR)/Yorktown (YNWS)/Cheatham (CAX) are David Reyna (david.reyna@navy.mil) or Alan Wright (alan.wright1@navy.mil), Building A-81 Rm. 110 DDC Office.

1.2.49 Stand-Alone Control

Refers to devices performing equipment-specific and small system control without communication to other devices or computers for physical I/O, excluding outside air and other common shared conditions. Devices are located near controlled equipment, with physical input and output points limited to 64 or less per device, except for complex individual equipment or systems. Failure of any single device or communications will not cause other network devices to fail. Internal time clocks and onboard scheduling are required to allow for stand-alone control. BACnet "Smart" actuators (B-SA profile) and sensors (B-SS profile) communicating on a network with a parent device are exempt from stand-alone requirements. Provide stand-alone control routines to provide for energy saving sequences such as free cooling. Provide stand-alone control routines that operate without connection to the BACnet/IP and MSTP networks during a loss of communication.

1.2.50 EMCS Server

A server is a system (software and suitable computer hardware) that responds to requests across a computer network to provide, or help to provide, a network service. Servers operate within client-server architecture. Servers have computer programs running to serve the requests of other programs, the clients. Thus, the server performs some tasks on behalf of clients. The clients typically connect to the server through the network with a web browser interface. All servers shall operate in a virtual environment. The EMCS Server for NSN/YNWS is a Johnson Controls server platform at Bldg. A-81. The EMCS Server for NSAHR/CAX is an Automated Logic Controls server platform at Bldg. A-81. Other vendors virtual servers are also housed at Bldg A-81 and report to the EMCS server as required by contract.

Additions/Modifications to Specifications and RFP

1.08.2016

1.4.1.9 Integration EMCS Server

Item A is for Naval Station Norfolk (NSN), Yorktown Naval Weapons Station (YNWS), Camp Allen and Lafayette River Annex. Item B is for Naval Support Activity Hampton Roads (NSAHR) and Cheatham Annex (CAX)

A. Provide integration of the new DDC system to the existing NSN EMCS BACnet front-end Server located at NSN A-81 using Johnson Controls Metasys and existing application software displaying all graphic floor plans, equipment graphics, DDC ladder diagrams, complete sequence of operations graphic pages, providing all functional points, alarming, trend services, schedules and other BACnet services and configurations as described in the UFGS 23 09 23.13 20.

B. Provide integration of the new DDC system to the existing NSAHR EMCS BACnet front-end Server located at NSN A-81using Automated Logic Controls and existing application software displaying all graphic floor plans, equipment graphics, DDC ladder diagrams, complete sequence of operations graphic pages, providing all functional points, alarming, trend services, schedules and other BACnet services and configurations as described in the UFGS 23 09 23.13 20.

All operator workstation functions requiring BACnet services, i.e., navigating through the graphic displays, trending, alarming and monitoring of the new BACnet controls system must be demonstrated from the existing EMCS BACnet front-end server using only the existing application software and without the need to launch other applications or logon to other vendor applications. Integrate all new BACnet points found in the points list tables or sequences by creating new graphics, alarms, trends, schedules, and system reports modeled after existing facilities with similar systems and zone types so that there is a seamless logical flow from the existing facilities to the new facility.

Access and technical support for the existing EMCS BACnet server and software is available via the BAS owner. Provide the BACnet Building Controllers (B-BC) in the correct quantities plus BACnet/MSTP routers, media converters as required at the building site for BACnet/IP and MSTP communications. Communication between the media converter and the existing server will be the responsibility of the BAS owner. Any Notebook or workstation shall be provided with all the features and graphic requirements configured as a full front-end workstation in accordance with the UFGS 23 09 23.13 20, BACnet Direct Digital Control Systems for HVAC. Provide a BACnet protocol analyzer.

2.1.1.3 Stand-Alone Controllers

Provide stand-alone Direct Digital Controllers with internal time clocks. Each piece of equipment shall be controlled by a single controller to provide stand-alone control in the event of any building communication failure. All I/O points specified for a piece of equipment shall be integral to its controller and serial connected expansion modules. Provide stable and reliable stand-alone control using default values or other method for values normally read over the network.

Additions/Modifications to Specifications and RFP

1.08.2016

2.1.1.4 Internal Clock

Provide internal clocks and scheduling for all Direct Digital Controllers. Provide controllers with BTL listed profiles BACnet Building Controller (B-BC) and BACnet Advanced Application Controllers (B-AAC) using BACnet time synchronization services this includes but not limited to VAV Controllers, Fan Coil controllers, Heat Pump controllers and any terminal controllers. BACnet Application specific controllers (B-ASC) will only be accepted for dedicated small exhaust system control such as restroom and mechanical room exhaust fans. Automatically synchronize system clocks daily from an operator-designated controller. The system shall automatically adjust for daylight saving time.

2.1.2.1 Programming

c. Line by line text based programming will not be accepted. Only graphical block programming will be accepted.

2.1.4 Notebook Computer

Provide a notebook computer for Naval Station Norfolk's DDC Group, complete with the project's installed DDC software, applications database, and graphics to fully troubleshoot and program the project's devices. Notebook computers for web-based systems do not require this installed software if they have the ability to connect locally in real time, view all graphics, and fully troubleshoot, modify, and program all project devices. Provide the notebook computer with ballistic nylon carrying case with shoulder strap with all necessary cables and interface hardware needed for setup and communication with the controllers and control system components.

At a minimum the notebook computer shall include: Windows 7 Professional 64-bit operating system, minimum 2.7 GHz processor with 3 MB Cache, discrete switchable graphics card with minimum 1 GB dedicated memory, 1 Terabyte hard drive, 6 GB DDR3 RAM, 2 USB 2.0 ports, 10/100/1000 network interface card, internal V.92 modem, 802.11 b/g/n WLAN, 17-inch display, keyboard with numeric keypad, 6-hour battery with charger, 8X internal DVD+/-R/RW drive with double layer support with DVD creator software, and Microsoft Office Home and Business 2013 bundled software. Provide all original licenses, installation media, documentation, and recovery CDs capable of restoring the original configuration. Provide the manufacturer's 3-year accidental damage protection with 3-day on site response for 2 year warranty with the Government listed as the warranty owner.

2.1.4.1 Graphics Software

Provide web-based system graphics viewable on browsers compatible with MS Internet Explorer 6.X or greater using an industry-standard file format such as HTML, BMP, JPEG, or GIF.

Graphic displays shall have full-screen resolution when viewed on the workstation and notebook computers. Dynamic data on graphics pages shall refresh within 10 seconds using an Internet connection, or 30 seconds using a dial-up modem connection. Graphics viewing shall not require additional "plug-in" software like Java, Shockwave and Flash applications unless the software is readily available for free over the Internet.

Additions/Modifications to Specifications and RFP

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The graphics shall show the present value and object name for each of the project's I/O points on at least one graphic page. Arrange point values and names on the graphic displays in their appropriate physical locations with respect to the floor plan or equipment graphic displayed. Graphics shall allow the operator to monitor current status, view zone and equipment summaries, use point-and-click navigation between graphic pages, and edit set points and parameters directly from the screens. Items in alarm shall be displayed using a different color or other obvious visual indicator.
Provide graphics with the following:

a. Graphic Types: Provide at least one graphic display for each piece of HVAC equipment, building floor, and controlled zone. Indicate dynamic point values, operating statuses, alarm conditions, and control setpoints on each display. Provide summary pages where appropriate.

(1) Building Elevation: For buildings more than one story, provide an elevation view of the building with links to each of the building's floor plans. Simulate the building's architecture and include the building number and floor numbers. If possible, use an actual photograph of the building.

(2) Building Floor Plans: Provide a thermal floor plan graphic for each of the building's floors with dynamic display of space temperature and other important data. If used, indicate and provide links to sub-plan areas. If possible, use the project's electronic drawing files for the graphic backgrounds. Provide clear names for important areas, such as "Main Conference Room." Include room names and numbers where applicable. Include features such as stairwells, elevators, and main entrances. Where applicable, include the mechanical room, HVAC equipment, and control component locations, with corresponding links to the equipment graphics.

(3) Sub-plan Areas: Where a building's floor plan is too large to adequately display on the screen, sub-divide the plan into distinct areas, and provide a separate graphic display for each area. Provide same level of detail requested in building floor plan section above.

(4) HVAC Equipment: Provide a graphic display for each piece of HVAC equipment, such as a fan coil unit, VAV terminal, or air handling unit. Equipment shall be represented by a two or three-dimensional drawing. Where multiple pieces of equipment combine to form a system, such as a central chiller plant or central heating plant, provide one graphic to depict the entire plant. Indicate the equipment, piping, ductwork, dampers, and control valves in the installed location. Include labels for equipment, piping, ductwork, dampers, and control valves. Show the direction of air and water flow. Include dynamic display of applicable object data with clear names in appropriate locations.

(5) Sequence of Operation: Provide a graphic screen displaying the written out full sequence of operation for each piece of HVAC equipment. Provide a link to the sequence of operation displays on their respective equipment graphics. Include dynamic real-time data within the text for setpoints and variables.

(6) Provide a graphic screen displaying the controller wiring for all controllers used in this project and provide a link from each room or equipment graphic to the appropriate controller wiring graphic.

(7) Provide a graphic screen displaying the part list with part numbers and quantity of the following; controller, sensor, actuators, thermostat, and other components for each piece of equipment requiring a graphic and provide a link from each room or equipment graphic to the appropriate part list. Part lists shall be editable at the server level to update components replaced. Like systems shall have only one part list, updated lists shall be capable of being stored as a new item specific to that piece of equipment.

b. Graphic Title: Provide a prominent, descriptive title on each graphic page.

c. Dynamic Update: When the workstation is on-line, all graphic I/O object values shall update with change-of-value services, or by operator selected discrete intervals.

d. Graphic Linking: Provide forward and backward linking between floor plans, sub-plans, and equipment.

e. Graphic Editing: Provide installed software to create, modify, and delete the DDC graphics. Include the ability to store graphic symbols in a symbol directory and import these symbols into the graphics.

f. Dynamic Point Editing: Provide full editing capability for deleting, adding, and modifying dynamic points on the graphics.

2.4.2.1 Power Line Surge Protection

Provide surge suppressors on the incoming power at each Direct Digital Controller or grouped terminal controllers and shall be installed externally to the device or devices being protected. Surge suppressors shall be rated in accordance with IEEE Standard C62.11 and have a fault indicating light and system status light such as system on light.

2.2.9 Energy Metering

Provide meters, monitored by DDC, on all of the building's incoming utilities affected by this project, electric meters shall communicate with BACnet (steam, gas and water may be pulse or BACnet as required). Set up trend reports to record data daily, weekly, monthly and yearly and store values in A-81 EMCS server.

3.3 CONTROLS SYSTEM OPERATORS MANUALS

k. A written statement entitled "Technical Support" stating the control system manufacturer or authorized representative will provide corporate toll-free telephone technical support at no additional cost to the Government for a minimum of two years from project acceptance, will be furnished by experienced service technicians, and will be available during normal weekday working hours. Include the toll-free technical support telephone number. This information shall be included with OM Manual

l. A written statement entitled "Software Upgrades" stating software and firmware patches and updates will be provided upon request at no additional cost to the Government for a minimum of two years from

contract acceptance. Include a table of all DDC system software and firmware provided under this contract, listing the original release dates, version numbers, part numbers, and serial numbers for all software provided or updated in this contract.

>Mechanical specification note

Packaged HVAC units > 5 tons capacity shall supply Manufacturer controls with BACnet MSTP interface for EMCS connection.

Boiler controls shall supply Manufacturer controls with BACnet MSTP interface for EMCS connection.

ATTACHMENT 2
PAP

Performance Assessment Plan
MONTHLY EVALUATION

MONTH: _____YEAR:_____

Evaluation Factor	Yes	No	N/A	Comments
Experience of Personnel 1. Did the team identified in the proposal actively participate in the project? 2. If personnel substitutions were needed, was the degree of technical competence maintained?				
Working Relationships 1. Did the Construction team participate in the design process (i.e. attend meetings, provide insight, etc.)? Were the coordination meetings between Construction and Design team personnel documented? 2. Did the Design team participate in the construction process (i.e. attend CQC meetings, perform field oversight, etc.)? Were coordination meetings between Construction and Design team personnel documented? 3. Did the collaboration between the Construction and Design Team deliver a high value innovative facility? - Were Total Operating Cost minimized - What LEED points can be obtained - Was energy efficiency optimized, and the energy goals exceeded. 4. Was the budget management process clear; was an estimate submitted on time with each design submittal. Was the estimate updated to reflect the changes in the design submittal? 5. Did the Contractor's team effectively manage the project budget and the User's requirements to meet the customer's needs? Was project budget and emphasis in cost control exhibited in the estimate? (Contractor to document in comments block materials/systems innovations and provision of higher quality than required in the RFP Part 4)				

Additional factors to be developed during Partnering.				
Quality Control 1. Were re-submittals of design deliverables or construction rework required this month? 2. Were as built redlines updated this month? *Additional factors to be developed during Partnering.*				
Timely Performance 1. Is the Contractor on schedule? 2. Is the Contractor maintaining the schedule? (Can the Government confirm the project is on schedule?) 3. Is the Contractor following his schedule? *Additional factors to be developed during Partnering.*				
Effectiveness of Management 1. Did the Government need to intercede in resolving a subcontractor issue? *Additional factors to be developed during Partnering.*				
Compliance with Labor Standards 1. Did payrolls have to be resubmitted this month due to inaccuracies or errors? *Additional factors to be developed during Partnering.*				
Compliance with Safety Standards 1. Were there any lost time accidents this month? *Additional factors to be developed during Partnering.*				

GENERAL PERFORMANCE COMMENTS THIS MONTH:

Concurrence:

CM/ROICC Representative _____Date_____.

Project Manager _____Date_____.

Contractor Representative _____Date_____.

ATTACHMENT 3
DDC POINT LISTS

DDC System Points List**

System Point Description Building A-48	Number Required*	Analog																		Binary										System Features														Notes
		Input												Output						Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC (4-20mA, 0-10v)	Number of Stages	Setpoint Adj.				Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																														x	
Space Sensor	.	x														x														x	x					x	x					x	x			x	x	
Box Discharge Air	.	x																																													x	
HTG. Valve	.													x																																	x	
Box Damper Position	.								x					x																																	x	
Box Inlet Air Flow Sensor	.		x				x																																								x	
Box Fan	.																				x					x						x															x	
Electric Reheat	.														x						x																										x	
Occupied Override Switch	.																							x																							x	
Fan Coil Terminals (111)	1																																														x	Provide FCU graphic
Space Sensor	E	x														x														x	x					x	x					x				x	x	
Discharge Air Temperature	111	x																																													x	
HTG. Valve	E													x																																	x	
Cooling Valve	E													x																																	x	
Fan Command	E																									x																					x	
Occupied Override Switch	E																							x																							x	
Hot Water (HW) Heating System (1 Pumps, Steam HX,)	1																																														x	Provide graphic
Heating Primary Pump Status	E																				x																				x						x	
Heating Primary Pump Start/Stop	E																									x																					x	
Primary Pump DP	1		x																													x															x	
Heating Secondary Pump Status	.																				x																				x						x	
Heating Secondary Pump Start/Stop	.																									x																					x	
Secondary Pump DP	.		x																													x															x	
HW Supply Temperature	.	x														x																							x								x	
HW Return Temperature	.	x																																													x	
HW Flow Rate	.					x																																									x	
HW Mixing Valve Position	.													x																																	x	
Boiler Enable	.																									x																					x	
Boiler Status/Alarm	.									x											x											x		x							x						x	
Heat Exchanger Inlet Temp.	E	x																																													x	
Heat Exchanger Outlet Temp.	E	x														x																							x								x	
Pump VFD's	.								x	x				x																																	x	
Condensate Return Pump Status	1																				x																				x						x	

DDC System Points List**

System Point Description Building A-48	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC (4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (1 Pumps, 1 AC Chiller)	1																																													x	Provide graphic
Chiller Enable/Disable	E																								x										x								x			x	
Chiller Status	E																			x																				x						x	
Chiller Failure Alarms	1									x										x													x													x	
Chiller EWT	E	x																																												x	
Chiller LWT	E	x														x																						x								x	
Chiller Primary Flow	.					x																									x	x														x	
Secondary Flow	.					x																																								x	
Secondary CWS Temperature	.	x																																												x	
Secondary CWR Temperature	.	x																																												x	
Decoupler Temperature	.	x																																												x	
CW System DP(Primary)	.		x																																											x	
CW System DP(Secondary)	.		x													x																						x								x	
Primary Pump Start/Stop	E																							x																						x	
Primary Pump Status	E																			x											x									x						x	
Secondary Pump Start/Stop	.																							x																						x	
Secondary Pump Status	.																			x											x									x						x	
Pump VFD's	.								x	x				x																																x	
Cooling Tower Fan Status	.																			x											x									x						x	
Cooling Tower Fans VFD's	.								x	x				x																																x	
Condenser Supply Temp.	.	x																																												x	
Condenser Return Temp.	.	x																																												x	
Tower Bypass Valve Position	.								x					x																																x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Air Distribution System (3 AHU)	E																																													x	Update graphic with added points
Supply Air Temperature	E	x														x																				x										x	
Supply Air Static Pressure	.		x													x																														x	
Supply Airflow	.						x																																							x	
Outside Air Temperature	E	x																																												x	
Outside Air Relative Humidity	E	x																																												x	
Return Air Temperature	.	x																																												x	
Mixed Air Temperature	.	x																																												x	
Cooling Coil Discharge Temp.	E	x														x																														x	

DDC System Points List**

System Point Description Building A-48	Number Required*	Analog																	Binary									System Features																	Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC (4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Heating Coil Discharge Temp.	E	x														x																														x	
Preheat Coil Discharge Temp.	E	x																																												x	
Filter Status	E																				x																							x		x	
Supply Damper Position	.								x					x																																x	
Return Damper Position	.								x					x																																x	
Exhaust Damper Position	.								x					x																																x	
OA Damper Position	E								x					x																																x	
Cooling Coil Valve Position	E								x					x																																x	
Heating Coil Valve Position	E								x					x																																x	
Preheat Coil Valve Position	E								x					x																																x	
Electric Heater Status	.														x								x																							x	
Freezestat	1																						x																							x	
Smoke Detector	1																						x																							x	
Supply Fan Start/Stop	E																								x																					x	
Supply Fan VFD	.								x	x				x																																x	
Supply Fan Run Status	E																			x																				x						x	
Supply Fan Fault Status	1																			x																										x	
Return Fan Start/Stop	.																								x																					x	
Return Fan VFD	.								x	x				x																																x	
Return Fan Run Status	.																			x																				x						x	
Return Fan Fault Status	.																			x																										x	
Exhaust Fan Run Status	.																			x																				x						x	
Outside Air Fan Run Status	.																			x																				x						x	
Heat Recovery Wheel Rotation	.																			x																				x						x	
Heat Recovery Wheel Discharge Air	.	x																																												x	
Fire Damper Status	1																			x																										x	
Smoke Damper Status	.																			x																										x	
AHU Circulating Pump	E																			x					x														x						x	
General Building Systems	1																																														Provide graphic
Building Electric Meter	.				x						x																																	x		x	
Building Water Meter	.											x	x																															x		x	
Building Gas Meter	.											x	x																															x		x	
Building Steam Meter	.											x	x																															x		x	
HVAC Shutdown Switch Status	1																						x																							x	

DDC System Points List**

System Point Description Building A-48	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs										
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC (4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (0) (7.5 tons to 3 tons)	.																																											x	
Space Temp.	.	x														x													x	x					x	x					x	x			x	x	
Space RH	.			X																																									x	
Unoccupied Override Switch	.																			x																										x	
DX Coil Discharge Temp.	.	x																																											x	
Heating Coil Discharge Temp.	.	x																																											x	
Filter Status	.																				x																						x		x	
OA Damper Command	.													x																					x										x	x	
Electric Heater Status	.																			x																										x	
Mini-Split DX (0) (Under 3 tons)	.																																												x	
Space Temp.	.	x														x													x	x					x	x					x	x			x	x	
																				x											x										x					x	
Domestic Hot Water System	1																																												x	Provide graphic
DHW Storage / Supply Temperature	E	x																																											x	
DHW Return Temperature	E	x																																											x	
Return Pump	1																			x					x															x					x	
Additional Points																																															
DDC Front End/Communication	E																																														Johnson Controls
Floor Plan Graphics	E																																														Only 35 of 111 rooms are displayed, update both floor graphics

Total Points	**125**

*E = Existing Point

DDC System Points List**

System Point Description Building A-48	Number Required*	Analog																Binary										System Features																Notes
		Input											Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC (4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	

*# = A number indicates the number of Points required based on the number of this type equipment within the facility.

*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building A-54	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																												x	
Space Sensor	.	x														x													x	x					x	x					x	x			x	x	
Box Discharge Air	.	x																																											x	
HTG. Valve	.													x																															x	
Box Damper Position	.								x					x																															x	
Box Inlet Air Flow Sensor	.		x				x																																						x	
Box Fan	.																			x					x						x														x	
Electric Reheat	.														x					x																									x	
Occupied Override Switch	.																						x																						x	
Fan Coil Terminals (38)	1																																												x	Provide graphic
Space Sensor	E	x														x													x	x					x	x					x				x	
Discharge Air Temperature	38	x														x													x	x											x				x	
HTG. Valve	E													x																															x	
Cooling Valve	E													x																															x	
Fan Status	E																								x																					x	
Occupied Override Switch	E																						x																							x	
Hot Water (HW) Heating System (Steam HX, 1 Pump)	1																																												x	Provide graphic
Heating Primary Pump Status	E																			x																				x					x	
Heating Primary Pump Start/Stop	E																								x																				x	
Primary Pump DP	.		x																												x														x	
Heating Secondary Pump Status	.																			x																				x					x	
Heating Secondary Pump Start/Stop	.																								x																				x	
Secondary Pump DP	.		x																												x														x	
HW Supply Temperature	E	x														x																					x								x	
HW Return Temperature	E	x																																											x	
HW Flow Rate	.					x																																							x	
HW Mixing Valve Position	.													x																															x	
Boiler Enable	.																								x																				x	
Boiler Status/Alarm	.									x										x											x		x							x					x	
Heat Exchanger Inlet Temp.	E	x																																											x	
Heat Exchanger Outlet Temp.	E	x														x																					x								x	
Pump VFD's	.								x	x				x																															x	
Condensate Return Pump Status	.																			x																				x					x	

DDC System Points List**

System Point Description Building A-54	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (AC Chiller, 1 Pump)	1																																												x	Provide graphic
Chiller Enable/Disable	E																								x										x								x			x	
Chiller Status	E																			x																				x						x	
Chiller Failure Alarms	1									x										x													x													x	
Chiller EWT	E	x																																											x	
Chiller LWT	E	x														x																						x							x	
Chiller Primary Flow	.					x																									x	x													x	
Secondary Flow	.					x																																							x	
Secondary CWS Temperature	.	x																																											x	
Secondary CWR Temperature	.	x																																											x	
Decoupler Temperature	.	x																																											x	
CW System DP(Primary)	.		x																																										x	
CW System DP(Secondary)	.		x													x																						x							x	
Primary Pump Start/Stop	E																							x																					x	
Primary Pump Status	E																			x											x									x						x	
Secondary Pump Start/Stop	.																							x																					x	
Secondary Pump Status	.																			x											x									x						x	
Pump VFD's	.								x	x				x																															x	
Cooling Tower Fan Status	.																			x											x									x						x	
Cooling Tower Fans VFD's	.								x	x				x																															x	
Condenser Supply Temp.	.	x																																											x	
Condenser Return Temp.	.	x																																											x	
Tower Bypass Valve Position	.								x					x																															x	
Heat Exchanger Inlet Temp.	.	x																																											x	
Heat Exchanger Outlet Temp.	.	x														x																						x							x	
Air Distribution System (0)	.																																												x	
Supply Air Temperature	.	x														x																				x									x	
Supply Air Static Pressure	.		x													x																													x	
Supply Airflow	.						x																																						x	
Outside Air Temperature	.	x																																											x	
Outside Air Relative Humidity	.	x																																											x	
Return Air Temperature	.	x																																											x	
Mixed Air Temperature	.	x																																											x	
Cooling Coil Discharge Temp.	.	x														x																													x	
Heating Coil Discharge Temp.	.	x														x																													x	
Preheat Coil Discharge Temp.	.	x																																											x	

DDC System Points List**

System Point Description Building A-54	Number Required*	Analog																	Binary										System Features																	Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Filter Status	.																				x																								x		x	
Supply Damper Position	.								x					x																																x	
Return Damper Position	.								x					x																																x	
Exhaust Damper Position	.								x					x																																x	
OA Damper Position	.								x					x																																x	
Cooling Coil Valve Position	.								x					x																																x	
Heating Coil Valve Position	.								x					x																																x	
Preheat Coil Valve Position	.								x					x																																x	
Electric Heater Status	.														x								x																							x	
Freezestat	.																						x																							x	
Smoke Detector	.																						x																							x	
Supply Fan Start/Stop	.																								x																					x	
Supply Fan VFD	.								x	x				x																																x	
Supply Fan Run Status	.																			x																				x						x	
Supply Fan Fault Status	.																			x																										x	
Return Fan Start/Stop	.																								x																					x	
Return Fan VFD	.								x	x				x																																x	
Return Fan Run Status	.																			x																				x						x	
Return Fan Fault Status	.																			x																										x	
Exhaust Fan Run Status	.																			x																				x						x	
Outside Air Fan Run Status	.																			x																				x						x	
Heat Recovery Wheel Rotation	.																			x																				x						x	
Heat Recovery Wheel Discharge Air	.	x																																												x	
Fire Damper Status	.																			x																										x	
Smoke Damper Status	.																			x																										x	
General Building Systems	1																																													x	Provide graphic
Building Electric Meter	.				x						x																																	x		x	
Building Water Meter	.											x																																x		x	
Building Gas Meter	.											x																																x		x	
Building Steam Meter	.											x																																x		x	
HVAC Shutdown Switch Status	1																						x																							x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (0) (7.5 tons to 3 tons)	.																																													x	
Space Temp.	.	x														x													x	x					x	x					x	x			x	x	

DDC System Points List**

System Point Description Building A-54	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Space RH	.			X																																									x	
Unoccupied Override Switch	.																			x																									x	
DX Coil Discharge Temp.	.	x																																											x	
Heating Coil Discharge Temp.	.	x																																											x	
Filter Status	.																				x																						x		x	
OA Damper Command	.													x																					x										x	x	
Electric Heater Status	.																			x																										x	
Supply Fan Run Status	.																			x											x									x						x	
Mini-Split DX (0) (Under 3 tons)	.																																												x	
Space Temp.	.	x														x													x	x					x	x					x	x			x	x	
Domestic Hot Water System	1																																												x	Provide graphic
DHW Storage / Supply Temperature	1	x																																											x	
DHW Return Temperature	1	x																																											x	
Return Pump	1																			x					x																					x	
Additional Points																																															
DDC Front End/Communication	.																																												x	Johnson Controls
Floor Plan Graphics	2																																												x	Provide graphic each floor

Total Points	**50**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.
** x = indicated system features required

DDC System Points List**

System Point Description Building C-9	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	.	x																																												x	
HTG. Valve	.													x																																x	
Box Damper Position	.								x					x																																x	
Box Inlet Air Flow Sensor	.		x				x																																							x	
Box Fan	.																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	.																						x																							x	
Fan Coil Terminals/ Small AHU (29)	1																																													x	Provide 8 AHU graphics. 21 are currently visible.
Space Sensor	14	x														x													x	x					x	x						x					x	
Discharge Air Temperature	14	x																																												x	
HTG. Valve	14													x																																x	
Cooling Valve	14													x																																x	
Fan Status	14																								x																					x	
Occupied Override Switch	14																						x																							x	
Outside Air Damper Position	14																																														
Hot Water (HW) Heating System (1 HW Pump, Steam HX)	E																																													x	Update graphic with added points
Heating Primary Pump Status	1																			x																					x					x	
Heating Primary Pump Start/Stop	1																								x																					x	
Primary Pump DP	.		x																												x															x	
Heating Secondary Pump Status	.																			x																					x					x	
Heating Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature	E	x														x																						x								x	
HW Return Temperature	E	x																																												x	
HW Flow Rate	.					x																																								x	
HW Mixing Valve Position	.													x																																x	
Boiler Enable	.																								x																					x	
Boiler Status/Alarm	.									x										x											x		x								x					x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	1																			x																					x					x	

DDC System Points List**

System Point Description Building C-9	Number Required*	Analog																	Binary										System Features																	Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (2 Air cooled Chillers, 4 CW Pumps)	E																																													x	Update graphic with added points
Chiller Enable/Disable	E																							x										x									x			x	
Chiller Status	E																			x																				x						x	
Chiller Failure Alarms	E									x										x												x														x	
Chiller EWT	E	x																																												x	
Chiller LWT	E	x														x																						x								x	
Chiller Primary Flow	1					x																									x	x														x	
Secondary Flow	1					x																																								x	
Secondary CWS Temperature	E	x																																												x	
Secondary CWR Temperature	E	x																																												x	
Decoupler Temperature	E	x																																												x	
CW System DP(Primary)	1		x																																											x	
CW System DP(Secondary)	1		x													x																						x								x	
Primary Pump Start/Stop	2																						x																							x	
Primary Pump Status	2																			x											x									x						x	
Secondary Pump Start/Stop	2																						x																							x	
Secondary Pump Status	2																			x											x									x						x	
Pump VFD's	2							x	x				x																																	x	
Cooling Tower Fan Status	.																			x											x									x						x	
Cooling Tower Fans VFD's	.							x	x				x																																	x	
Condenser Supply Temp.	.	x																																												x	
Condenser Return Temp.	.	x																																												x	
Tower Bypass Valve Position	.							x					x																																	x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Air Distribution System (2 MAU)	E																																													x	Update graphic with added points
Supply Air Temperature	E	x														x																			x											x	
Supply Air Static Pressure	.		x													x																														x	
Supply Airflow	.						x																																							x	
Outside Air Temperature	1	x																																												x	
Outside Air Relative Humidity	1	x																																												x	
Return Air Temperature	.	x																																												x	
Mixed Air Temperature	.	x																																												x	
Cooling Coil Discharge Temp.	E	x														x																														x	
Heating Coil Discharge Temp.	2	x														x																														x	
Preheat Coil Discharge Temp.	.	x																																												x	
Filter Status	2																				x																								x		x	

DDC System Points List**

System Point Description Building C-9	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Supply Damper Position	.								x					x																																	x	
Return Damper Position	.								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	E								x					x																																	x	
Cooling Coil Valve Position	E								x					x																																	x	
Heating Coil Valve Position	E								x					x																																	x	
Preheat Coil Valve Position	.								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	2																						x																								x	
Smoke Detector	2																						x																								x	
Supply Fan Start/Stop	E																								x																						x	
Supply Fan VFD	E								x	x				x																																	x	
Supply Fan Run Status	E																			x																					x						x	
Supply Fan Fault Status	.																			x											x																x	
Return Fan Start/Stop	.																								x																						x	
Return Fan VFD	.								x	x				x																																	x	
Return Fan Run Status	.																			x																					x						x	
Return Fan Fault Status	.																			x											x																x	
Exhaust Fan Run Status	.																			x																					x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																	x		x	
Building Water Meter	.											x																																x		x	
Building Gas Meter	.											x																																x		x	
Building Steam Meter	.											x																																x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (0) (7.5 tons to 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	
Unoccupied Override Switch	.																			x																											x	
DX Coil Discharge Temp.	.	x																																													x	
Heating Coil Discharge Temp.	.	x																																													x	

DDC System Points List**

System Point Description Building C-9	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Filter Status	.																				x																								x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																											x	
Supply Fan Run Status	.																			x											x										x						x	
Mini-Split DX (x) (Under 3 tons)	1																																														x	Provide graphic
Space Temp.	1	x														x												x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																														x	Provide graphic
DHW Storage / Supply Temperature	1	x																																													x	
DHW Return Temperature	1	x																																													x	
Return Pump	1																			x					x																							x	
Additional Points																																																
DDC Front End/Communication	E																																														x	Johnson
Floor Plan Graphics	E																																														x	Update graphics with added equipment

Total Points	**134**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.
** x = indicated system features required

DDC System Points List**

System Point Description Building CEP-198	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Zone Coils (8)	1																																													x	Provide zone coil graphic
Space Sensor	8	x														x													x	x					x	x						x	x			x	x	
Coil Discharge Air	8	x																																												x	
HTG. Valve	8													x																																x	
Zone Damper Position	.								x					x																																x	
Zone Inlet Air Flow Sensor	.		x				x																																							x	
Zone Fan	.																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	8																						x																							x	
Fan Coil Terminals (0)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x				x	
Discharge Air Temperature	.	x																																												x	
HTG. Valve	.													x																																x	
Cooling Valve	.													x																																x	
Fan Status	.																								x																					x	
Occupied Override Switch	.																						x																							x	
Hot Water (HW) Heating System (1 HX, 2 HW pumps)	1																																													x	Provide graphic
Heating Primary Pump Status	2																			x																					x					x	
Heating Primary Pump Start/Stop	2																								x																					x	
Primary Pump DP	.		x																												x															x	
Heating Secondary Pump Status	.																			x																					x					x	
Heating Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature	1	x														x																						x								x	
HW Return Temperature	1	x																																												x	
HW Flow Rate	.					x																																								x	
Steam Valve Position	1													x																																x	
Boiler Enable	.																								x																					x	
Boiler Status/Alarm	.									x										x											x		x								x					x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	1																			x																					x					x	
Steam Pressure	3		x																												x															x	

DDC System Points List**

System Point Description Building CEP-198	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (1 Air cooled Chiller, 2 CW pumps)	1																																													x	Provide graphic
Chiller Enable/Disable	1																								x										x									x			x	
Chiller Status	1																			x																					x						x	
Chiller Failure Alarms	1									x										x													x														x	
Chiller EWT	1	x																																												x	
Chiller LWT	1	x														x																						x								x	
Chiller Primary Flow	1					x																									x	x														x	
Secondary Flow	.					x																																								x	
Secondary CWS Temperature	.	x																																												x	
Secondary CWR Temperature	.	x																																												x	
Decoupler Temperature	.	x																																												x	
CW System DP(Primary)	.		x																																											x	
CW System DP(Secondary)	.		x													x																						x								x	
Primary Pump Start/Stop	2																								x																					x	
Primary Pump Status	2																			x											x										x						x	
Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump Status	.																			x											x										x						x	
Pump VFD's	.								x	x				x																																x	
Cooling Tower Fan Status	.																			x											x										x						x	
Cooling Tower Fans VFD's	.								x	x				x																																x	
Condenser Supply Temp.	.	x																																												x	
Condenser Return Temp.	.	x																																												x	
Tower Bypass Valve Position	.								x					x																																x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
	.																																														
Air Distribution System (2 CV AHU)	1																																													x	Provide graphic for each configuration
Supply Air Temperature	2	x														x																				x										x	
Supply Air Static Pressure	.		x													x																														x	
Supply Airflow	2						x																																							x	
Outside Air Temperature	1	x																																												x	
Outside Air Relative Humidity	1	x																																												x	
Outside Airflow	2						x																																							x	
Return Air Temperature	2	x																																												x	
Mixed Air Temperature	2	x																																												x	
Cooling Coil Discharge Temp.	2	x														x																														x	
Heating Coil Discharge Temp.	.	x														x																														x	
Preheat Coil Discharge Temp.	1	x																																												x	
Filter Status	2																				x																							x		x	

DDC System Points List**

System Point Description Building CEP-198	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Supply Damper Position	.								x					x																																	x	
Return Damper Position	2								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	2								x					x																																	x	
Cooling Coil Valve Position	2								x					x																																	x	
Heating Coil Valve Position	.								x					x																																	x	
Preheat Coil Valve Position	1								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	2																						x																								x	
Smoke Detector	2																						x																								x	
Supply Fan Start/Stop	2																								x																						x	
Supply Fan VFD	.								x	x				x																																	x	
Supply Fan Run Status	2																			x																					x						x	
Supply Fan Fault Status	2																			x											x																x	
Outside Air Fan Start/Stop	2																								x																						x	
Outside Airflow	2						x																																								x	
Outside Air Fan Run Status	2																			x																					x						x	
Outside Air Fan Fault Status	2																			x											x																x	
Exhaust Fan Start/Stop	6																								x																						x	
Exhaust Fan Run Status	6																			x																					x						x	
Exhaust Fan Fault Status	6																			x											x																x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																		x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, Small Packaged Equipment (0) (7.5 tons to 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	
Unoccupied Override Switch	.																			x																											x	
DX Coil Discharge Temp.	.	x																																													x	

DDC System Points List**

System Point Description Building CEP-198	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Heating Coil Discharge Temp.	.	x																																												x	
Filter Status	.																				x																								x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																										x	
Supply Fan Run Status	.																			x											x										x					x	
Mini-Split DX (0) (Under 3 tons)	.																																													x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																													x	Provide graphic
DHW Storage / Supply Temperature	1	x																																												x	
DHW Return Temperature	1	x																																												x	
Return Pump	1																			x					x																						x	
Split DX, Terminal Heat Pumps, Small Packaged	.																																													x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																										x	
Unoccupied Override Switch	.																			x																										x	
DX Coil Discharge Temp.	.	x																																												x	
Heating Coil Discharge Temp.	.	x																																												x	
Filter Status	.																				x																								x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																										x	
Supply Fan Run Status	.																			x											x										x					x	
Controlled Storage Points	3																																													x	Provide 3 graphics this area
Space Temp.	10	x														x																														x	
Pressure/Dif Pres.	6		x																																											x	
Analog Out	5													x																																x	
Digital Status	13																				x																									x	
Damper Command Open	2																									x																				x	
Start/Stop	7																								x																						
Additional Points																																															
DDC Front End/Communication	1																																													x	Inet Controls

DDC System Points List**

System Point Description Building CEP-198	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Floor Plan Graphics	**2**																																													**x**	Provide graphic for each administrative floor

Total Points	**172**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building CEP-209	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (41)	1																																													x	Provide VAV graphic
Space Sensor	41	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	41	x																																												x	
HTG. Valve	41													x																																x	
Box Damper Position	41								x					x																																x	
Box Inlet Air Flow Sensor	41		x				x																																							x	
Box Fan	41																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	41																						x																							x	
Fan Coil Terminals (0)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x				x	
Discharge Air Temperature	.	x																																												x	
HTG. Valve	.													x																																x	
Cooling Valve	.													x																																x	
Fan Status	.																								x																					x	
Occupied Override Switch	.																						x																							x	
Hot Water (HW) Heating System (Steam HX 2 HW pumps)	1																																													x	Provide graphic
Heating Primary Pump Status	2																			x																					x					x	
Heating Primary Pump Start/Stop	2																								x																					x	
Primary Pump DP	1		x																												x															x	
Heating Secondary Pump Status	.																			x																					x					x	
Heating Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature	1	x														x																						x								x	
HW Return Temperature	1	x																																												x	
HW Flow Rate	.					x																																								x	
HW Mixing Valve Position	1													x																																x	
Boiler Enable	.																								x																					x	
Boiler Status/Alarm	.									x										x											x		x								x					x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	1																			x																					x					x	
Outside Temperature	1	x														x																						x								x	
Steam Pressure	3		x																										x	x																x	

DDC System Points List**

System Point Description Building CEP-209	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (2 Air cooled Chillers, 2 CW pumps)	1																																												x	Provide graphic
Chiller Enable/Disable	2																							x										x									x			x	
Chiller Status	2																			x																				x							x	
Chiller Failure Alarms	2									x										x													x														x	
Chiller EWT	2	x																																												x	
Chiller LWT	2	x														x																						x								x	
Chiller Primary Flow	2					x																									x	x														x	
Secondary Flow	.					x																																								x	
Secondary CWS Temperature	.	x																																												x	
Secondary CWR Temperature	.	x																																												x	
Decoupler Temperature	.	x																																												x	
CW System DP(Primary)	.		x																																											x	
CW System DP(Secondary)	.		x													x																					x									x	
Primary Pump Start/Stop	2																							x																						x	
Primary Pump Status	2																			x											x										x					x	
Secondary Pump Start/Stop	1																							x																						x	
Secondary Pump Status	1																			x											x										x					x	
Pump VFD's	.								x	x				x																																x	
Cooling Tower Fan Status	.																			x											x										x					x	
Cooling Tower Fans VFD's	.								x	x				x																																x	
Condenser Supply Temp.	.	x																																												x	
Condenser Return Temp.	.	x																																												x	
Tower Bypass Valve Position	.								x					x																																x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																					x									x	
Chiller Isolation Valve Open/Close	2																								x																					x	
Air Distribution System (2 VAV AHU)	1																																													x	Provide graphic
Supply Air Temperature	2	x														x																			x											x	
Supply Air Static Pressure	2		x													x																															x	
Supply Airflow	2						x																																								x	
Outside Air Temperature	1	x																																												x	
Outside Air Relative Humidity	1	x																																												x	
Return Air Temperature	2	x																																												x	
Mixed Air Temperature	2	x																																												x	
Cooling Coil Discharge Temp.	2	x														x																														x	
Heating Coil Discharge Temp.	.	x														x																														x	
Preheat Coil Discharge Temp.	2	x																																												x	
Filter Status	2																				x																							x		x	
Supply Damper Position	.								x					x																																x	

DDC System Points List**

System Point Description Building CEP-209	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Relief Damper Position	2								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	2								x					x																																	x	
Outside Airflow	2						x																																								x	
Cooling Coil Valve Position	2								x					x																																	x	
Heating Coil Valve Position	.								x					x																																	x	
Preheat Coil Valve Position	2								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	2																						x																								x	
Smoke Detector	2																						x																								x	
Supply Fan Start/Stop	2																								x																						x	
Supply Fan VFD	2								x	x				x																																	x	
Supply Fan Run Status	2																			x																					x						x	
Supply Fan Fault Status	2																			x											x																x	
Return Fan Start/Stop	.																								x																						x	
Return Fan VFD	.								x	x				x																																	x	
Return Fan Run Status	.																			x																					x						x	
Return Fan Fault Status	.																			x											x																x	
Exhaust Fan Run Status	1																			x																					x						x	
Outside Fan Start/Stop	2																								x																						x	
Outside Air Fan Status	2																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
Air Distribution System (5 HV Units)	1																																														x	Provide graphic for each configuration
Room Air Temperature	5	x														x																				x											x	
Room Air Static Pressure	1		x													x																															x	
Supply Airflow							x																																								x	
Outside Air Temperature		x																																													x	
Outside Air Relative Humidity		x																																													x	
Return Air Temperature		x																																													x	
Mixed Air Temperature		x																																													x	
Cooling Coil Discharge Temp.		x														x																															x	
Heating Coil Discharge Temp.		x														x																															x	
Preheat Coil Discharge Temp.		x																																													x	
Filter Status	5																				x																								x		x	
Supply Damper Position									x					x																																	x	
Return Damper Modulate	1								x					x																																	x	
Return Damper Open/Close	1																									x																					x	
Exhaust Damper Position									x					x																																	x	

DDC System Points List**

System Point Description Building CEP-209	Number Required*	Analog																	Binary										System Features																	Notes
		Input												Output					Input						Output				Alarms						Programs													
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
OA Damper Modulate	2								x					x																																	x	
OA Damper Open/Close	3																									x																					x	
Cooling Coil Valve Position									x					x																																	x	
Heating Coil Valve Position	5								x					x																																	x	
Preheat Coil Valve Position									x					x																																	x	
Electric Heater Status															x								x																								x	
Freezestat																							x																								x	
Smoke Detector																							x																								x	
Supply Fan Start/Stop	5																								x																						x	
Supply Fan VFD	1								x	x				x																																	x	
Supply Fan Run Status	5																			x																					x						x	
Supply Fan Fault Status	1																			x											x																x	
Return Fan Start/Stop																									x																						x	
Return Fan VFD									x	x				x																																	x	
Return Fan Run Status																				x																					x						x	
Return Fan Fault Status																				x											x																x	
Exhaust Fan Run Status	9																			x																					x						x	
Outside Fan Start/Stop																									x																						x	
Outside Air Fan Status																				x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
VAV Box Interlock	1																										x																				x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																		x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (7.5 tons to 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	
Unoccupied Override Switch	.																			x																											x	
DX Coil Discharge Temp.	.	x																																													x	
Heating Coil Discharge Temp.	.	x																																													x	
Filter Status	.																				x																								x		x	

DDC System Points List**

System Point Description Building CEP-209	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																											x	
Supply Fan Run Status	.																			x											x										x						x	
Mini-Split DX (0) (Under 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																														x	Provide graphic
DHW Storage / Supply Temperature	1	x																																													x	
DHW Return Temperature	1	x																																													x	
Return Pump	1																			x					x																							x	
Additional Points																																																
DDC Front End/Communication	1																																														x	DMS Controls (Outdated)
Floor Plan Graphics	2																																														x	Provide graphic for each floor

Total Points	**424**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building J-50	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	.	x																																												x	
HTG. Valve	.													x																																x	
Box Damper Position	.								x					x																																x	
Box Inlet Air Flow Sensor	.		x				x																																							x	
Box Fan	.																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	.																						x																							x	
Fan Coil Terminals (~36 2-pipe FCU, 6 ventilation units)	1																																													x	Provide graphic
Space Sensor	42	x														x													x	x					x	x						x				x	
Discharge Air Temperature	42	x																																												x	
HTG. Valve	42													x																																x	
Cooling Valve	.													x																																x	
Fan Status	42																								x																					x	
Occupied Override Switch	42																						x																							x	
Hot Water (HW) Heating System (0)	.																																													x	
Heating Primary Pump Status	.																			x																					x					x	
Heating Primary Pump Start/Stop	.																								x																					x	
Primary Pump DP	.		x																												x															x	
Heating Secondary Pump Status	.																			x																					x					x	
Heating Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature	.	x														x																						x								x	
HW Return Temperature	.	x																																												x	
HW Flow Rate	.					x																																								x	
HW Mixing Valve Position	.													x																																x	
Boiler Enable	.																								x																					x	
Boiler Status/Alarm	.									x										x											x		x									x					x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	.																			x																					x					x	

DDC System Points List**

System Point Description Building J-50	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (0)	.																																													x	
Chiller Enable/Disable	.																							x									x									x			x	
Chiller Status	.																			x																				x						x	
Chiller Failure Alarms	.									x										x												x														x	
Chiller EWT	.	x																																												x	
Chiller LWT	.	x														x																						x								x	
Chiller Primary Flow	.					x																									x	x														x	
Secondary Flow	.					x																																								x	
Secondary CWS Temperature	.	x																																												x	
Secondary CWR Temperature	.	x																																												x	
Decoupler Temperature	.	x																																												x	
CW System DP(Primary)	.		x																																											x	
CW System DP(Secondary)	.		x													x																						x								x	
Primary Pump Start/Stop	.																						x																							x	
Primary Pump Status	.																			x											x										x						x	
Secondary Pump Start/Stop	.																						x																								x	
Secondary Pump Status	.																			x											x										x						x	
Pump VFD's	.								x	x				x																																x	
Cooling Tower Fan Status	.																			x											x										x						x	
Cooling Tower Fans VFD's	.								x	x				x																																x	
Condenser Supply Temp.	.	x																																												x	
Condenser Return Temp.	.	x																																												x	
Tower Bypass Valve Position	.								x					x																																x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Air Distribution System (0) (AHU, DOAS, ERU, Pkg. over 7.5 tons)	.																																													x	
Supply Air Temperature	.	x														x																			x											x	
Supply Air Static Pressure	.		x													x																														x	
Supply Airflow	.						x																																							x	
Outside Air Temperature	.	x																																												x	
Outside Air Relative Humidity	.	x																																												x	
Return Air Temperature	.	x																																												x	
Mixed Air Temperature	.	x																																												x	
Cooling Coil Discharge Temp.	.	x														x																														x	
Heating Coil Discharge Temp.	.	x														x																														x	
Preheat Coil Discharge Temp.	.	x																																												x	
Filter Status	.																				x																							x		x	
Supply Damper Position	.								x					x																																x	

DDC System Points List**

System Point Description Building J-50	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Return Damper Position	.								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	.								x					x																																	x	
Cooling Coil Valve Position	.								x					x																																	x	
Heating Coil Valve Position	.								x					x																																	x	
Preheat Coil Valve Position	.								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	.																						x																								x	
Smoke Detector	.																						x																								x	
Supply Fan Start/Stop	.																								x																						x	
Supply Fan VFD	.								x	x				x																																	x	
Supply Fan Run Status	.																			x																					x						x	
Supply Fan Fault Status	.																			x											x																x	
Return Fan Start/Stop	.																								x																						x	
Return Fan VFD	.								x	x				x																																	x	
Return Fan Run Status	.																			x																					x						x	
Return Fan Fault Status	.																			x											x																x	
Exhaust Fan Run Status	.																			x																					x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
General Building Systems	.																																														x	
Building Electric Meter	.				x						x																																	x		x	
Building Water Meter	.											x																																x		x	
Building Gas Meter	.											x																																x		x	
Building Steam Meter	.											x																																x		x	
HVAC Shutdown Switch Status	.																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (x) (7.5 tons to 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	
Unoccupied Override Switch	.																			x																					x						x	
DX Coil Discharge Temp.	.	x																																													x	
Heating Coil Discharge Temp.	.	x																																													x	
Filter Status	.																				x																								x		x	

DDC System Points List**

System Point Description Building J-50	Number Required*	Analog																	Binary												System Features													Notes
		Input												Output					Input						Output					Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																											x	
Supply Fan Run Status	.																			x											x										x						x	
Mini-Split DX (x) (Under 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	.																																														x	
DHW Storage / Supply Temperature	.	x																																													x	
DHW Return Temperature	.	x																																													x	
Return Pump	.																			x					x																							x	
Additional Points																																																
DDC Front End/Communication	E																																														x	Automated Logic Corporation
Floor Plan Graphics	E																																														x	Update existing graphics

Total Points	**211**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.
** x = indicated system features required

DDC System Points List**

System Point Description Building LF-59	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																														x	
Space Sensor	.	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	.	x																																													x	
HTG. Valve	.													x																																	x	
Box Damper Position	.								x					x																																	x	
Box Inlet Air Flow Sensor	.		x				x																																								x	
Box Fan	.																			x					x						x																x	
Electric Reheat	.														x					x																											x	
Occupied Override Switch	.																						x																								x	
Fan Coil Terminals (0)	.																																														x	
Space Sensor	.	x														x													x	x					x	x						x					x	
Discharge Air Temperature	.	x																																													x	
HTG. Valve	.													x																																	x	
Cooling Valve	.													x																																	x	
Fan Status	.																								x																						x	
Occupied Override Switch	.																						x																								x	
Hot Water (HW) Heating System (Gas boiler)	E																																														x	Update graphic with new points
Heating Primary Pump Status	E																			x																					x					x	
Heating Primary Pump Start/Stop	E																								x																						x	
Primary Pump DP	.		x																												x																x	
Heating Secondary Pump Status	.																			x																					x					x	
Heating Secondary Pump Start/Stop	.																								x																						x	
Secondary Pump DP	.		x																												x																x	
HW Supply Temperature	E	x														x																						x									x	
HW Return Temperature	E	x																																													x	
HW Flow Rate	.					x																																									x	
HW Mixing Valve Position	.													x																																	x	
Boiler Enable	E																								x																						x	
Boiler Status/Alarm	E									x										x											x		x								x						x	
Heat Exchanger Inlet Temp.	.	x																																													x	
Heat Exchanger Outlet Temp.	.	x														x																						x									x	
Pump VFD's	.								x	x				x																																	x	
Condensate Return Pump Status	.																			x																					x					x	

DDC System Points List**

System Point Description Building LF-59	Number Required*	Analog																	Binary										System Features																		Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (1 Fluid Cooler, 2 Pumps)	E																																													x	Update graphic with new points
Chiller Enable/Disable	.																							x										x									x			x	
Chiller Status	.																			x																				x							x	
Chiller Failure Alarms	.									x										x													x														x	
Chiller EWT	.	x																																												x	
Chiller LWT	.	x														x																						x								x	
Chiller Primary Flow	.					x																									x	x														x	
Secondary Flow	.					x																																								x	
Secondary CWS Temperature	.	x																																												x	
Secondary CWR Temperature	.	x																																												x	
Decoupler Temperature	.	x																																												x	
CW System DP(Primary)	.		x																																											x	
CW System DP(Secondary)	.		x													x																					x									x	
Primary Pump Start/Stop	.																							x																						x	
Primary Pump Status	.																			x										x										x						x	
Secondary Pump Start/Stop	.																							x																						x	
Secondary Pump Status	.																			x										x										x						x	
Pump VFD's	.								x	x				x																																x	
Cooler Spray Pump Start/Stop	1																							x																						x	
Cooler Spray Pump Status	1																			x										x										x						x	
Cooler Fan Start/Stop	1																							x																						x	
Cooler Fan Status	1																			x										x										x						x	
Cooler Damper Open/Close	1																								x																					x	
Cooler Tank Temp.	1	x																																												x	
Cooler Fan Low Speed	1																							x																						x	
Cooler Fan High Speed	1																							x																						x	
Condenser Supply Temp.	1	x																																												x	
Condenser Return Temp.	1	x																																												x	
Tower Bypass Valve Position	.								x					x																																x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																					x									x	
Air Distribution System (2 DOAS w/ Heat Recovery)	E																																													x	Update graphic with new points
Supply Air Temperature	E	x														x																			x										x	
Supply Air Static Pressure	.		x													x																														x	
Supply Airflow	.						x																																							x	
Outside Air Temperature	E	x																																												x	
Outside Air Relative Humidity	E	x																																												x	
Return Air Temperature	.	x																																												x	

DDC System Points List**

System Point Description Building LF-59	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Mixed Air Temperature	.	x																																												x	
Cooling Coil Discharge Temp.	E	x														x																														x	
Heating Coil Discharge Temp.	.	x														x																														x	
Preheat Coil Discharge Temp.	.	x																																												x	
Filter Status	2																				x																								x	x	
Supply Damper Position	.								x					x																																x	
Return Damper Position	.								x					x																																x	
Exhaust Damper Position	.								x					x																																x	
OA Damper Position	E								x					x																																x	
Cooling Coil Valve Position	.								x					x																																x	
Heating Coil Valve Position	.								x					x																																x	
Preheat Coil Valve Position	.								x					x																																x	
Electric Heater Status	E														x								x																							x	
Freezestat	2																						x																							x	
Smoke Detector	2																						x																							x	
Supply Fan Start/Stop	E																								x																					x	
Supply Fan VFD	.								x	x				x																																x	
Supply Fan Run Status	E																			x																					x					x	
Supply Fan Fault Status	.																			x											x															x	
Return Fan Start/Stop	.																								x																					x	
Return Fan VFD	.								x	x				x																																x	
Return Fan Run Status	.																			x																					x					x	
Return Fan Fault Status	.																			x											x															x	
Exhaust Fan Run Status	.																			x																					x					x	
Outside Air Fan Run Status	.																			x																					x					x	
Heat Recovery Wheel Rotation	E																			x																					x					x	
Heat Recovery Wheel Discharge Air	2	x																																												x	
Fire Damper Status	.																			x											x															x	
Smoke Damper Status	.																			x																										x	
General Building Systems	E																																													x	Update graphic with new points
Building Electric Meter	E				x						x																																	x		x	
Building Water Meter	E											x																																x		x	
Building Gas Meter	.											x																																x		x	
Building Steam Meter	.											x																																x		x	
HVAC Shutdown Switch Status	1																						x																							x	

DDC System Points List**

System Point Description Building LF-59	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (48 Water Source Heat Pumps)	E																																											x	Update graphic with new points
Space Temp.	E	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																										x	
Unoccupied Override Switch	3																			x																										x	
DX Coil Discharge Temp.	E	x																																												x	
Heating Coil Discharge Temp.	.	x																																												x	
Filter Status	3																				x																							x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																										x	
Supply Fan Run Status	E																			x											x										x					x	
Mini-Split DX (0) (Under 3 tons)	.																																													x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																													x	Provide graphic
DHW Storage / Supply Temperature	1	x																																												x	
DHW Return Temperature	1	x																																												x	
Return Pump	1																			x					x																					x	
Additional Points																																															
DDC Front End/Communication	E																																													x	Automated Logic Corporation
Floor Plan Graphics	E																																													x	

Total Points	**29**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building LP-21	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Current	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	.	x																																												x	
HTG. Valve	.													x																																x	
Box Damper Position	.								x					x																																x	
Box Inlet Air Flow Sensor	.		x				x																																							x	
Box Fan	.																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	.																						x																							x	
Fan Coil Terminals (30)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x					x	
Discharge Air Temperature	.	x																																												x	
HTG. Valve	.													x																																x	
Cooling Valve	.													x																																x	
Fan Status	.																								x																					x	
Occupied Override Switch	.																						x																							x	
Condenser Water Heating System (2 boilers, 3 HW pumps)	1																																													x	Provide graphic
Heating Primary Pump Status	3																			x																				x						x	
Heating Primary Pump Start/Stop	3																								x																					x	
Primary Pump DP	.		x																												x															x	
Heating Secondary Pump Status	.																			x																				x						x	
Heating Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature Setpoint	1															x																						x								x	
HW Supply Temperature	1	x																																												x	
HW Flow Rate	.					x																																								x	
HW Mixing Valve Position	1													x																																x	
Boiler Enable	2																								x																					x	
Boiler Status/Alarm	2									x										x											x		x							x						x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	.																			x																				x						x	

DDC System Points List**

System Point Description Building LP-21	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Current	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Condenser Water Cooling System (1 Fluid Cooler, 2 Condenser Loop pumps)	**1**																																													**x**	Provide graphic
Chiller Enable/Disable	.																							**x**										**x**									**x**			**x**	
Chiller Status	.																			**x**																				**x**						**x**	
Chiller Failure Alarms	.									**x**										**x**												**x**														**x**	
Chiller EWT	.	**x**																																												**x**	
Chiller LWT	.	**x**														**x**																						**x**								**x**	
Chiller Primary Flow	.					**x**																								**x**	**x**															**x**	
Secondary Flow	.					**x**																																								**x**	
Secondary CWS Temperature	.	**x**																																												**x**	
Secondary CWR Temperature	.	**x**																																												**x**	
Decoupler Temperature	.	**x**																																												**x**	
CW System DP(Primary)	.		**x**																																											**x**	
CW System DP(Secondary)	.		**x**													**x**																					**x**									**x**	
Primary Pump Start/Stop	**2**																							**x**																						**x**	
Primary Pump Status	**2**																			**x**										**x**										**x**						**x**	
Cooler Spray Pump Start/Stop	**1**																							**x**																						**x**	
Cooler Spray Pump Status	**1**																			**x**										**x**										**x**						**x**	
Cooler Fan Start/Stop	**1**																							**x**																						**x**	
Cooler Fan Status	**1**																			**x**										**x**										**x**						**x**	
Cooler Damper Open/Close	**1**																								**x**																					**x**	
Cooler Tank Temp.	**1**	**x**																																												**x**	
Condenser Return Temp.	**1**	**x**																																												**x**	
Cooler Fan Low Speed	**1**																							**x**																						**x**	
Cooler Fan High Speed	**1**																							**x**																						**x**	
Heat Exchanger Outlet Temp.	.	**x**														**x**																					**x**									**x**	
Air Distribution System	.																																													**x**	
Supply Air Temperature	.	**x**														**x**																			**x**										**x**	
Supply Air Static Pressure	.		**x**													**x**																														**x**	
Supply Airflow	.						**x**																																							**x**	
Outside Air Temperature	.	**x**																																												**x**	
Outside Air Relative Humidity	.	**x**																																												**x**	
Return Air Temperature	.	**x**																																												**x**	
Mixed Air Temperature	.	**x**																																												**x**	
Cooling Coil Discharge Temp.	.	**x**														**x**																														**x**	
Heating Coil Discharge Temp.	.	**x**														**x**																														**x**	
Preheat Coil Discharge Temp.	.	**x**																																												**x**	
Filter Status	.																				**x**																							**x**	**x**	
Supply Damper Position	.								**x**					**x**																																**x**	

DDC System Points List**

System Point Description Building LP-21	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Current	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Return Damper Position	.								x					x																																x	
Exhaust Damper Position	.								x					x																																x	
OA Damper Position	.								x					x																																x	
Cooling Coil Valve Position	.								x					x																																x	
Heating Coil Valve Position	.								x					x																																x	
Preheat Coil Valve Position	.								x					x																																x	
Electric Heater Status	.														x								x																							x	
Freezestat	.																						x																							x	
Smoke Detector	.																						x																							x	
Supply Fan Start/Stop	.																								x																					x	
Supply Fan VFD	.								x	x				x																																x	
Supply Fan Run Status	.																			x																				x						x	
Supply Fan Fault Status	.																			x											x															x	
Return Fan Start/Stop	.																								x																					x	
Return Fan VFD	.								x	x				x																																x	
Return Fan Run Status	.																			x																				x						x	
Return Fan Fault Status	.																			x											x															x	
Exhaust Fan Run Status	.																			x																				x						x	
Outside Air Fan Run Status	.																			x																				x						x	
Heat Recovery Wheel Rotation	.																			x																				x						x	
Heat Recovery Wheel Discharge Air	.	x																																												x	
Fire Damper Status	.																			x											x															x	
Smoke Damper Status	.																			x																										x	
General Building Systems	1																																													x	Provide graphic
Building Electric Meter	.				x						x																																	x		x	
Building Water Meter	.											x																																x		x	
Building Gas Meter	.											x																																x		x	
Building Steam Meter	.											x																																x		x	
HVAC Shutdown Switch Status	1																						x																							x	
Phase Reversal Switch	1																						x																							x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (42 Water Source Heat Pumps) (7.5 tons to 3 tons)	1																																													x	Provide graphic for each configuration
Space Temp.	40	x														x													x	x					x	x						x	x			x	x	
Smoke Detector	2																						x																							x	
Outdoor Air Temp	2	x																																												x	
Supply Air Temp.	42	x																																												x	
Return Air Temp.	40	x																																												x	
Filter Status	2		x																										x																	x	

DDC System Points List**

System Point Description Building LP-21	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Current	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																											x	
Supply Fan Run Status	42												x																		x										x						x	
Supply Fan Start/Stop	42																								x																						x	
Reversing Valve Status	.																			x																											x	
Drain Pan Status	40																			x									x																		x	
Hot gas bypass status	2																			x											x																x	
Outdoor Air Humidity	2	x																																													x	
Supply Air Humidity	2	x																																													x	
General Building Systems	.																																														x	Proivde graphic
Space CO2	3							x								x													x																		x	
Interlocked Exhaust Fan Status	2																			x											x										x						x	
Interlocked Exhaust Fan Start/Stop	2																								x																						x	
General Exhaust Fan Status	7																			x											x										x						x	
General Exhaust Fan Start/Stop	7																								x																						x	
General Space Temp.	7	x														x													x																		x	
Hangar Temp.	5	x														x													x																		x	
Domestic Hot Water System	1																																														x	Provide graphic
DHW Storage / Supply Temperature	1	x																																													x	
DHW Return Temperature	1	x																																													x	
Return Pump	1																			x					x																						x	
Additional Points																																																
DDC Front End/Communication	1																																														x	Siemens Apogee or Inet
Floor Plan Graphics	2																																														x	Provide graphic each floor

Total Points	**330**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building LP-27	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Current	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	.	x																																												x	
HTG. Valve	.													x																																x	
Box Damper Position	.								x					x																																x	
Box Inlet Air Flow Sensor	.		x				x																																							x	
Box Fan	.																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	.																						x																							x	
Fan Coil Terminals (8)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x				x	
Discharge Air Temperature	.	x																																												x	
HTG. Valve	.													x																																x	
Cooling Valve	.													x																																x	
Fan Status	.																								x																					x	
Occupied Override Switch	.																						x																							x	
Hot Water (HW) Heating System (2 boilers, 2 HW pumps)	1																																													x	Provide graphic
Heating Primary Pump Status	2																			x																					x					x	
Heating Primary Pump Start/Stop	2																								x																					x	
Primary Pump DP	.		x																												x															x	
Heating Secondary Pump Status	.																			x																					x					x	
Heating Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature	E	x														x																						x									x	
HW Return Temperature	E	x																																												x	
HW Flow Rate	.					x																																								x	
HW Mixing Valve Position	.													x																																x	
Boiler Enable	E																								x																					x	
Boiler Status/Alarm	E									x										x											x		x								x					x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	.																			x																					x					x	

DDC System Points List**

System Point Description Building LP-27	Number Required*	Analog																	Binary										System Features																		Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Current	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Condenser Water System (1 Fluid Cooler, 2 CW pumps)	1																																													x	Provide graphic
Cooler Enable/Disable	.																							x										x									x			x	
Cooler Flow Switch Status (available)	.									x																				x																x	
Cooler Failure Alarms	.									x										x												x														x	
Cooler EWT	E	x																																												x	
Cooler LWT	E	x														x																						x								x	
Chiller Primary Flow	.					x																								x	x															x	
Secondary Flow	.					x																																								x	
Secondary CWS Temperature	.	x																																												x	
Secondary CWR Temperature	.	x																																												x	
Decoupler Temperature	.	x																																												x	
CW System DP(Primary)	.		x																																											x	
CW System DP(Secondary)	.		x													x																						x								x	
Primary Pump Start/Stop	E																							x																						x	
Primary Pump Status	E																			x										x										x						x	
Secondary Pump Start/Stop	.																							x																						x	
Secondary Pump Status	.																			x										x										x						x	
Cooler Fan Start/Stop	.																							x																						x	
Cooler Fan Status	1								x	x			x															x		x										x						x	
Cooler Tank Temp (available)	.	x																																												x	
Condenser Supply Temp.	.	x																																												x	
Condenser Return Temp.	.	x																																												x	
Spray Pump Start/Stop	1																							x																						x	
Spray Pump Status	1																			x																										x	
Cooler Damper Open/Close	1																							x																						x	
Cooler Fan Low Speed	1																							x																						x	
Cooler Fan High Speed	1																							x																						x	
Air Distribution System	.																																													x	
Supply Air Temperature	.	x														x																			x											x	
Supply Air Static Pressure	.		x													x																														x	
Supply Airflow	.						x																																							x	
Outside Air Temperature	.	x																																												x	
Outside Air Relative Humidity	.	x																																												x	
Return Air Temperature	.	x																																												x	
Mixed Air Temperature	.	x																																												x	
Cooling Coil Discharge Temp.	.	x														x																														x	
Heating Coil Discharge Temp.	.	x														x																														x	
Preheat Coil Discharge Temp.	.	x																																												x	

DDC System Points List**

System Point Description Building LP-27	Number Required*	Analog																	Binary										System Features																		Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Current	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Filter Status	.																				x																									x		x	
Supply Damper Position	.								x					x																																	x	
Return Damper Position	.								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	.								x					x																																	x	
Cooling Coil Valve Position	.								x					x																																	x	
Heating Coil Valve Position	.								x					x																																	x	
Preheat Coil Valve Position	.								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	.																						x																								x	
Smoke Detector	.																						x																								x	
Supply Fan Start/Stop	.																								x																						x	
Supply Fan VFD	.								x	x				x																																	x	
Supply Fan Run Status	.																			x																					x						x	
Supply Fan Fault Status	.																			x											x																x	
Return Fan Start/Stop	.																								x																						x	
Return Fan VFD	.								x	x				x																																	x	
Return Fan Run Status	.																			x																					x						x	
Return Fan Fault Status	.																			x											x																x	
Exhaust Fan Run Status	.																			x																					x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																		x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (57 WSHP) (7.5 tons to 3 tons)	1																																														x	Provide graphic
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	
Unoccupied Override Switch	.																			x																											x	
DX Coil Discharge Temp.	57	x																																													x	

DDC System Points List**

System Point Description Building LP-27	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Current	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Heating Coil Discharge Temp.	.	x																																											x	
Filter Status	.																				x																							x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																										x	
Supply Fan Run Status	.																			x											x										x					x	
Mini-Split DX (1) (Under 3 tons)	.																																												x	
Space Temp.	.	x														x													x	x					x	x					x	x			x	x	
Domestic Hot Water System	1																																												x	Provide graphic
DHW Storage / Supply Temperature	1	x																																											x	
DHW Return Temperature	1	x																																											x	
Return Pump	1																			x					x																					x	
Additional Points																																															
DDC Front End/Communication	E																																												x	Johnson Controls
Floor Plan Graphics	E																																												x	

Total Points	**76**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.
** x = indicated system features required

DDC System Points List**

System Point Description Building O-26	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (84)	1																																													x	Provide graphic for each configuration
Space Sensor	84	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	84	x																																												x	
HTG. Valve	84													x																																x	
Box Damper Position	84								x					x																																x	
Box Inlet Air Flow Sensor	84		x				x																																							x	
Box Fan	84																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	84																						x																							x	
Space Humidity	29			x																									x	x																x	
Fan Coil Terminals (3)	1																																													x	Provide graphic
Space Sensor	3	x														x													x	x					x	x						x				x	
Discharge Air Temperature	3	x																																												x	
HTG. Valve	3													x																																x	
Cooling Valve	3													x																																x	
Fan Status	3																								x																					x	
Occupied Override Switch	3																						x																							x	
Hot Water (HW) Heating System (2 HX, 2 HW	1																																													x	Provide graphic each mech room.
Heating Primary Pump Status	2																			x																					x					x	
Heating Primary Pump Start/Stop	2																								x																					x	
Primary Pump DP	.		x																												x															x	
Heating Secondary Pump Status	.																			x																					x					x	
Heating Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature	2	x														x																						x								x	
HW Return Temperature	2	x																																												x	
HW Flow Rate	.					x																																								x	
HW Mixing Valve Position	1													x																																x	
Boiler Enable	.																								x																					x	
Boiler Status/Alarm	.									x										x											x		x								x					x	
Heat Exchanger Inlet Temp.	2	x																																												x	
Heat Exchanger Outlet Temp.	2	x														x																						x								x	
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	2																			x																					x					x	
HW Radiation Valve New Tower	3																									x																				x	

DDC System Points List**

System Point Description Building O-26	Number Required*	Analog																		Binary										System Features															Notes
		Input												Output						Input						Output				Alarms						Programs											
	Number Required*	Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (2 Chillers, 3 CHW pumps)	1																																												x	Provide graphic each mech room.
Chiller Enable/Disable	2																								x										x									x			x	
Chiller Status	2																			x																						x						x	
Chiller Failure Alarms	2									x										x													x															x	
Chiller EWT	2	x																																													x	
Chiller LWT	2	x														x																						x									x	
Chiller Primary Flow	2					x																									x	x															x	
Secondary Flow	1					x																																									x	
Secondary CWS Temperature	1	x																																													x	
Secondary CWR Temperature	1	x																																													x	
Decoupler Temperature	.	x																																													x	
CW System DP(Primary)	.		x																																												x	
CW System DP(Secondary)	.		x													x																						x									x	
Primary Pump Start/Stop	2																								x																						x	
Primary Pump Status	2																			x											x										x						x	
Secondary Pump Start/Stop	1																								x																						x	
Secondary Pump Status	1																			x											x										x						x	
Secondary Pump VFD's	1								x	x				x																																	x	
Secondary Bypass Valve Position	1								x					x																																	x	
Cooling Tower Fan Status	.																			x											x										x						x	
Cooling Tower Fans VFD's	.								x	x				x																																	x	
Condenser Supply Temp.	.	x																																													x	
Condenser Return Temp.	.	x																																													x	
Tower Bypass Valve Position	.								x					x																																	x	
Heat Exchanger Inlet Temp.	.	x																																													x	
Heat Exchanger Outlet Temp.	.	x														x																						x									x	
Process Cooling Water System (2 Fluid Coolers, 2 condenser pumps)	1																																													x	Provide graphic
Process Cooling Start/Stop Station	3																			x																											x	
Process Cooling Pump Start/Stop	2																								x																						x	
Process Cooling Pump Status	2																			x											x										x						x	
Process Cooling Pump Flow Switch	2																			x																											x	
Process Cooler Spray Pump Start/Stop	2																								x																x						x	
Process Cooler Fan Low Speed	2																								x																x						x	
Process Cooler Fan High Speed	2																								x																x						x	
Process Cooling Return Temp	1	x																																													x	
Process Cooling Supply Temp	1	x														x																						x									x	
Process Cooler Pump Status	2																			x											x										x						x	
Process Cooler Fan Status	4																			x											x										x						x	

DDC System Points List**

System Point Description Building O-26	Number Required*	Analog																	Binary									System Features																	Notes
		Input												Output					Input						Output									Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Original Air Distribution System (4 VAV AHU, 4 Relief AHU)	1																																												x	Provide graphic
Supply Air Temperature	4	x														x																				x										x	
Supply Air Static Pressure	4		x													x																														x	
Supply Airflow	.						x																																							x	
Outside Air Temperature	1	x																																												x	
Outside Air Relative Humidity	1	x																																												x	
Return Air Temperature	.	x																																												x	
Mixed Air Temperature	.	x																																												x	
Cooling Coil Discharge Temp.	4	x														x																														x	
Heating Coil Discharge Temp.	.	x														x																														x	
Preheat Coil Discharge Temp.	.	x																																												x	
Filter Status	4																				x																							x		x	
Supply Damper Position	.								x					x																																x	
Return Damper Position	4								x					x																																x	
Relief Damper Open/Close	4																					x																								x	
OA Damper Position	8								x					x																																x	Min/Max damper for each AHU
Cooling Coil Valve Position	4								x					x																																x	
Heating Coil Valve Position	.								x					x																																x	
Preheat Coil Valve Position	.								x					x																																x	
Electric Heater Status	.														x								x																							x	
Freezestat	4																						x																							x	
Smoke Detector	8																						x																							x	
Supply Fan Start/Stop	4																								x																					x	
Supply Fan VFD	4								x	x				x																																x	Provide VFD to replace inlet vanes
Supply Fan Run Status	4																			x																				x						x	
Supply Fan Fault Status	.																			x										x																x	
Relief Fan Start/Stop	4																								x																					x	
Relief Fan VFD	4								x	x				x																																x	Provide VFD to replace inlet vanes
Relief Fan Run Status	4																			x																				x						x	
Relief Fan Fault Status	.																			x										x																x	
Exhaust Fan Start/Stop	7																								x																					x	
Exhaust Fan Run Status	7																			x																				x						x	
Exhaust Damper Open/Close	7																									x																				x	
Outside Air Fan Run Status	.																			x																				x						x	
Heat Recovery Wheel Rotation	.																			x																				x						x	
Heat Recovery Wheel Discharge Air	.	x																																												x	
Fire Damper Status	.																			x										x																x	
Smoke Damper Status	.																			x																										x	

DDC System Points List**

System Point Description Building O-26	Number Required*	Analog																	Binary									System Features																	Notes
		Input												Output					Input						Output									Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Addition Air Distribution System (2 VAV AHU, 2 CV AHU)	**1**																																												x	Provide graphic
Supply Air Temperature	**4**	x														x																				x										x	
Supply Air Static Pressure	**2**		x													x																														x	
Supply Air High Static	**2**																			x																										x	
Supply Airflow	**.**						x																																							x	
Outside Air Temperature	**.**	x																																												x	
Outside Air Relative Humidity	**.**	x																																												x	
Return Air Temperature	**4**	x																																												x	
Mixed Air Temperature	**4**	x																																												x	
Cooling Coil Discharge Temp.	**4**	x														x																														x	
Heating Coil Discharge Temp.	**2**	x														x																														x	
Preheat Coil Discharge Temp.	**4**	x																																												x	
Filter Status	**4**																				x																							x		x	
Face/Bypass Damper Position	**4**								x					x																																x	
Return Damper Position	**4**								x					x																																x	
Relief Damper Position	**.**								x					x																																x	
OA Damper Position	**4**								x					x																																x	
Cooling Coil Valve Position	**4**																									x																				x	
Heating Coil Valve Position	**2**								x					x																																x	
Preheat Coil Valve Position	**4**																									x																				x	
Electric Heater Status	**.**														x								x																							x	
Freezestat	**4**																						x																							x	
Smoke Detector	**4**																						x																							x	
Supply Fan Start/Stop	**4**																								x																					x	
Supply Fan VFD	**2**								x	x				x																																x	
Supply Fan Run Status	**4**																			x																				x						x	
Supply Fan Fault Status	**.**																			x										x																x	
Outdoor Air Fan Start/Stop	**2**																								x																					x	
Outdoor Air Flow	**4**									x		x																																		x	
Outside Air Fan Run Status	**.**																			x																				x						x	
Heat Recovery Wheel Rotation	**.**																			x																				x						x	
Heat Recovery Wheel Discharge Air	**.**	x																																												x	
Fire Damper Status	**.**																			x										x																x	
Smoke Damper Status	**.**																			x																										x	
Override Switch	**4**																			x																										x	
Space Temperature	**2**	x														x																				x										x	
Space Humidity	**2**			x												x																				x										x	
Exhaust Fan Start/Stop	**13**																								x																					x	
Exhaust Fan Status	**13**																						x																	x						x	

DDC System Points List**

System Point Description Building O-26	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
General Building Systems	1																																												x	Provide graphic
Building Electric Meter	.				x						x																																	x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Refrigerant Leak Detection	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (7.5 tons to 3 tons)	.																																													x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	
Unoccupied Override Switch	.																			x																											x	
DX Coil Discharge Temp.	.	x																																													x	
Heating Coil Discharge Temp.	.	x																																													x	
Filter Status	.																				x																								x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																											x	
Supply Fan Run Status	.																			x											x									x							x	
Mini-Split DX (10) (Under 3 tons)	.																																													x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																													x	Provide graphic
DHW Storage / Supply Temperature	1	x																																												x	
DHW Return Temperature	1	x																																												x	
Return Pump	1																			x					x																					x	
Additional Points																																															
DDC Front End/Communication	1																																													x	Inet Controls. Outdated
Floor Plan Graphics	4																																													x	Provide graphic each floor

DDC System Points List**

System Point Description Building O-26	Number Required*	Analog																	Binary										System Features														Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	

Total Points	**923**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building SP-12	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																														x	
Space Sensor	.	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	.	x																																													x	
HTG. Valve	.													x																																	x	
Box Damper Position	.								x					x																																	x	
Box Inlet Air Flow Sensor	.		x				x																																								x	
Box Fan	.																			x					x						x																x	
Electric Reheat	.														x					x																											x	
Occupied Override Switch	.																						x																								x	
Fan Coil Terminals (3)	E																																														x	Update graphic with added points
Space Sensor	3	x														x													x	x					x	x						x					x	
Discharge Air Temperature	E	x																																													x	
HTG. Valve	E													x																																	x	
Cooling Valve	E													x																																	x	
Fan Status	E																								x																						x	
Occupied Override Switch	3																						x																								x	
Hot Water (HW) Heating System (1 Steam Boiler)	E																																														x	Update graphic with added points
Heating Primary Pump Status	1																			x																					x					x	
Heating Primary Pump Start/Stop	1																								x																						x	
Primary Pump DP	.		x																												x																x	
Heating Secondary Pump Status	.																			x																					x					x	
Heating Secondary Pump Start/Stop	.																								x																						x	
Secondary Pump DP	.		x																												x																x	
HW Supply Temperature	.	x														x																						x									x	
HW Return Temperature	.	x																																													x	
HW Flow Rate	.					x																																									x	
HW Mixing Valve Position	.													x																																	x	
Boiler Enable	E																								x																						x	
Boiler Status/Alarm	E									x										x											x		x								x						x	
Heat Exchanger Inlet Temp.	.	x																																													x	
Heat Exchanger Outlet Temp.	.	x														x																						x									x	
Pump VFD's	.								x	x				x																																	x	
Condensate Return Pump Status	1																			x																					x					x	

DDC System Points List**

System Point Description Building SP-12	Number Required*	Analog																	Binary									System Features																Notes
		Input												Output					Input						Output			Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (1 Air cooled Chiller, 1 CW pump)	E																																													x	
Chiller Enable/Disable	E																								x									x									x			x	
Chiller Status	E																			x																				x						x	
Chiller Failure Alarms	1									x										x													x													x	
Chiller EWT	E	x																																												x	
Chiller LWT	E	x														x																						x								x	
Chiller Primary Flow	.					x																								x	x															x	
Secondary Flow	.					x																																								x	
Secondary CWS Temperature	.	x																																												x	
Secondary CWR Temperature	.	x																																												x	
Decoupler Temperature	.	x																																												x	
CW System DP(Primary)	.		x																																											x	
CW System DP(Secondary)	.		x													x																					x									x	
Primary Pump Start/Stop	E																								x																					x	
Primary Pump Status	E																			x										x										x						x	
Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump Status	.																			x										x										x						x	
Pump VFD's	.								x	x				x																																x	
Cooling Tower Fan Status	.																			x										x										x						x	
Cooling Tower Fans VFD's	.								x	x				x																																x	
Condenser Supply Temp.	.	x																																												x	
Condenser Return Temp.	.	x																																												x	
Tower Bypass Valve Position	.								x					x																																x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																					x									x	
Air Distribution System (6 Zone MultiZone AHU with Steam Coil)	E																																													x	Update graphic with added points
Supply Air Temperature	E	x														x																			x											x	
Supply Air Static Pressure	.		x													x																														x	
Supply Airflow	.						x																																							x	
Outside Air Temperature	E	x																																												x	
Outside Air Relative Humidity	E	x																																												x	
Return Air Temperature	6	x																																												x	
Mixed Air Temperature	1	x																																												x	
Cooling Coil Discharge Temp.	E	x														x																														x	
Heating Coil Discharge Temp.	E	x														x																														x	
Preheat Coil Discharge Temp.	.	x																																												x	
Filter Status	1																				x																							x		x	

DDC System Points List**

System Point Description Building SP-12	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Supply Damper Position	E								x					x																																	x	
Return Damper Position	E								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	1								x					x																																	x	
Cooling Coil Valve Position	E								x					x																																	x	
Heating Coil Valve Position	E								x					x																																	x	
Preheat Coil Valve Position	.								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	1																						x																								x	
Smoke Detector	1																						x																								x	
Supply Fan Start/Stop	1																								x																						x	
Supply Fan VFD	.								x	x				x																																	x	
Supply Fan Run Status	1																			x																					x						x	
Supply Fan Fault Status	.																			x											x																x	
Return Fan Start/Stop	.																								x																						x	
Return Fan VFD	.								x	x				x																																	x	
Return Fan Run Status	.																			x																					x						x	
Return Fan Fault Status	.																			x											x																x	
Exhaust Fan Run Status	.																			x																					x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																	x		x	
Building Water Meter	.											x																																x		x	
Building Gas Meter	.											x																																x		x	
Building Steam Meter	.											x																																x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (0) (7.5 tons to 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	
Unoccupied Override Switch	.																			x																											x	
DX Coil Discharge Temp.	.	x																																													x	
Heating Coil Discharge Temp.	.	x																																													x	

DDC System Points List**

System Point Description Building SP-12	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Filter Status	.																				x																									x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																											x	
Supply Fan Run Status	.																			x											x										x						x	
Mini-Split DX (0) (Under 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																														x	Provide graphic
DHW Storage / Supply Temperature	1	x																																													x	
DHW Return Temperature	1	x																																													x	
Return Pump	1																			x					x																							x	
Additional Points																																																
DDC Front End/Communication	E																																														x	Automated Logic corporation
Floor Plan Graphics	E																																														x	

Total Points	**29**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building SP-108	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	.	x																																												x	
HTG. Valve	.													x																																x	
Box Damper Position	.								x					x																																x	
Box Inlet Air Flow Sensor	.		x				x																																							x	
Box Fan	.																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	.																						x																							x	
Fan Coil Terminals (0)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x					x	
Discharge Air Temperature	.	x																																												x	
HTG. Valve	.													x																																x	
Cooling Valve	.													x																																x	
Fan Status	.																								x																					x	
Occupied Override Switch	.																						x																							x	
Hot Water (HW) Heating System (0)	.																																													x	
Heating Primary Pump Status	.																			x																				x						x	
Heating Primary Pump Start/Stop	.																								x																					x	
Primary Pump DP	.		x																												x															x	
Heating Secondary Pump Status	.																			x																				x						x	
Heating Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature	.	x														x																						x								x	
HW Return Temperature	.	x																																												x	
HW Flow Rate	.					x																																								x	
HW Mixing Valve Position	.													x																																x	
Boiler Enable	.																								x																					x	
Boiler Status/Alarm	.									x										x											x		x							x						x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	.																			x																				x						x	

DDC System Points List**

System Point Description Building SP-108	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (0)	.																																													x	
Chiller Enable/Disable	.																								x										x									x			x	
Chiller Status	.																			x																					x						x	
Chiller Failure Alarms	.									x										x													x														x	
Chiller EWT	.	x																																												x	
Chiller LWT	.	x														x																						x								x	
Chiller Primary Flow	.					x																									x	x														x	
Secondary Flow	.					x																																								x	
Secondary CWS Temperature	.	x																																												x	
Secondary CWR Temperature	.	x																																												x	
Decoupler Temperature	.	x																																												x	
CW System DP(Primary)	.		x																																											x	
CW System DP(Secondary)	.		x													x																						x								x	
Primary Pump Start/Stop	.																								x																					x	
Primary Pump Status	.																			x											x										x						x	
Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump Status	.																			x											x										x						x	
Pump VFD's	.								x	x				x																																x	
Cooling Tower Fan Status	.																			x											x										x						x	
Cooling Tower Fans VFD's	.								x	x				x																																x	
Condenser Supply Temp.	.	x																																												x	
Condenser Return Temp.	.	x																																												x	
Tower Bypass Valve Position	.								x					x																																x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Air Distribution System (1 Split AHU with gas heat)	1																																													x	Provide graphic
Supply Air Temperature	1	x														x																				x										x	
Supply Air Static Pressure	.		x													x																														x	
Supply Airflow	.						x																																							x	
Outside Air Temperature	1	x																																												x	
Outside Air Relative Humidity	1	x																																												x	
Return Air Temperature	1	x																																												x	
Mixed Air Temperature	1	x																																												x	
Cooling Coil Discharge Temp.	1	x														x																														x	
Heating Coil Discharge Temp.	1	x														x																														x	
Preheat Coil Discharge Temp.	.	x																																												x	
Filter Status	1																				x																							x		x	
Supply Damper Position	.								x					x																																x	

DDC System Points List**

System Point Description Building SP-108	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Return Damper Position	1								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	E								x					x																																	x	
Cooling Coil Valve Position	E								x					x																																	x	
Gas Heat Command	E																								x																						x	
Preheat Coil Valve Position	.								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	1																						x																								x	
Smoke Detector	1																						x																								x	
Supply Fan Start/Stop	E																								x																						x	
Supply Fan VFD	.								x	x				x																																	x	
Supply Fan Run Status	E																			x																					x						x	
Supply Fan Fault Status	.																			x											x																x	
Return Fan Start/Stop	.																								x																						x	
Return Fan VFD	.								x	x				x																																	x	
Return Fan Run Status	.																			x																					x						x	
Return Fan Fault Status	.																			x											x																x	
Exhaust Fan Run Status	.																			x																					x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																		x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (2 with gas heat) (7.5 tons to 3 tons)	1																																														x	Provide graphic
Space Temp.	2	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	
Unoccupied Override Switch	2																			x																											x	
DX Coil Discharge Temp.	2	x																																													x	
Heating Coil Discharge Temp.	2	x																																													x	

DDC System Points List**

System Point Description Building SP-108	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Filter Status	2																				x																								x		x	
OA Damper Command	2													x																					x											x	x	
Gas Heater Command	2																								x																						x	
Supply Fan Run Status	2																			x											x										x						x	
Mini-Split DX (3) (Under 3 tons)	1																																														x	Provide graphic
Space Temp.	3	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																														x	Provide graphic
DHW Storage / Supply Temperature	1	x																																													x	
DHW Return Temperature	1	x																																													x	
Return Pump	1																			x					x																						x	
Additional Points																																																
DDC Front End/Communication	E																																														x	Delta Controls
Floor Plan Graphics	1																																														x	Provide graphic

Total Points	**40**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building SP-256	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (0)	.																																													x	
Space Sensor	.	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	.	x																																												x	
HTG. Valve	.													x																																x	
Box Damper Position	.								x					x																																x	
Box Inlet Air Flow Sensor	.		x				x																																							x	
Box Fan	.																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	.																						x																							x	
Fan Coil Terminals (60)	1																																													x	Provide graphic
Space Sensor	103	x														x													x	x					x	x						x				x	
Discharge Air Temperature	103	x																																												x	
Dual Temp Valve	103													x																																x	
Cooling Valve	.													x																																x	
Fan Status	103																								x																					x	
Occupied Override Switch	103																						x																							x	
Hot Water (HW) Heating System (Gas Boiler, 2 Dual Temp Pumps)	1																																													x	Provide graphic
Heating Primary Pump Status	1																			x																					x				x	
Heating Primary Pump Start/Stop	1																								x																					x	
Primary Pump DP	.		x																												x															x	
Dual Temp Pump Status	2																			x																					x				x	
Dual Temp Pump Start/Stop	2																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature	1	x														x																						x								x	
HW Return Temperature	1	x																																												x	
HW Flow Rate	.					x																																								x	
HW Mixing Valve Position	1													x																																x	
Boiler Enable	E																								x																					x	
Boiler Status/Alarm	E									x										x											x		x								x					x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	.																			x																					x				x	

DDC System Points List**

System Point Description Building SP-256	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (Chiller, Evaporative Cooling Tower, Cond Pump)	**1**																																												**x**	Provide graphic
Chiller Enable/Disable	**1**																							**x**										**x**									**x**			**x**	
Chiller Status	**1**																			**x**																				**x**						**x**	
Chiller Failure Alarms	**1**									**x**										**x**												**x**														**x**	
Chiller EWT	**1**	**x**																																											**x**	
Chiller LWT	**1**	**x**														**x**																						**x**							**x**	
Chiller Primary Flow	**.**					**x**																									**x**	**x**													**x**	
Secondary Flow	**.**					**x**																																							**x**	
Secondary CWS Temperature	**.**	**x**																																											**x**	
Secondary CWR Temperature	**.**	**x**																																											**x**	
Decoupler Temperature	**.**	**x**																																											**x**	
CW System DP(Primary)	**.**		**x**																																										**x**	
CW System DP(Secondary)	**1**		**x**													**x**																						**x**							**x**	
CHW Pump Start/Stop	**1**																						**x**																						**x**	
CHW Pump Status	**1**																			**x**											**x**									**x**						**x**	
Tower Pump Start/Stop	**1**																						**x**																						**x**	
Tower Pump Status	**1**																			**x**											**x**									**x**						**x**	
Pump VFD's	**.**								**x**	**x**				**x**																															**x**	
Cooling Tower Fan Status	**1**																			**x**											**x**									**x**						**x**	
Cooling Tower Fans VFD's/Speed	**1**								**x**	**x**				**x**																															**x**	
Condenser Supply Temp.	**1**	**x**																																											**x**	
Condenser Return Temp.	**1**	**x**																																											**x**	
Tower Bypass Valve Position	**1**								**x**					**x**																															**x**	
Heat Exchanger Inlet Temp.	**1**	**x**																																											**x**	
Heat Exchanger Outlet Temp.	**1**	**x**														**x**																						**x**							**x**	
HX Pump Start/Stop	**1**																						**x**																						**x**	
HX Pump Status	**1**																			**x**											**x**									**x**						**x**	
Air Distribution System (0) (AHU, DOAS, ERU, Pkg. over 7.5 tons)	**.**																																												**x**	
Supply Air Temperature	**.**	**x**														**x**																			**x**										**x**	
Supply Air Static Pressure	**.**		**x**													**x**																													**x**	
Supply Airflow	**.**						**x**																																						**x**	
Outside Air Temperature	**1**	**x**																																											**x**	
Outside Air Relative Humidity	**1**	**x**																																											**x**	
Return Air Temperature	**.**	**x**																																											**x**	
Mixed Air Temperature	**.**	**x**																																											**x**	
Cooling Coil Discharge Temp.	**.**	**x**														**x**																													**x**	
Heating Coil Discharge Temp.	**.**	**x**														**x**																													**x**	
Preheat Coil Discharge Temp.	**.**	**x**																																											**x**	

DDC System Points List**

System Point Description Building SP-256	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Filter Status	.																				x																									x		x	
Supply Damper Position	.								x					x																																	x	
Return Damper Position	.								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	.								x					x																																	x	
Cooling Coil Valve Position	.								x					x																																	x	
Heating Coil Valve Position	.								x					x																																	x	
Preheat Coil Valve Position	.								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	.																						x																								x	
Smoke Detector	.																						x																								x	
Supply Fan Start/Stop	.																								x																						x	
Supply Fan VFD	.								x	x				x																																	x	
Supply Fan Run Status	.																			x																				x						x	
Supply Fan Fault Status	.																			x											x																x	
Return Fan Start/Stop	.																								x																						x	
Return Fan VFD	.								x	x				x																																	x	
Return Fan Run Status	.																			x																				x						x	
Return Fan Fault Status	.																			x											x																x	
Exhaust Fan Run Status	.																			x																				x						x	
Outside Air Fan Run Status	.																			x																				x						x	
Heat Recovery Wheel Rotation	.																			x																				x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																		x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (0) (7.5 tons to 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	
Unoccupied Override Switch	.																			x																											x	

DDC System Points List**

System Point Description Building SP-256	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
DX Coil Discharge Temp.	.	x																																											x	
Heating Coil Discharge Temp.	.	x																																											x	
Filter Status	.																				x																							x		x	
OA Damper Command	.													x																					x										x	x	
Electric Heater Status	.																			x																										x	
Supply Fan Run Status	.																			x											x										x					x	
Mini-Split DX (0) (Under 3 tons)	.																																												x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																													x	Provide graphic
DHW Storage / Supply Temperature	1	x																																											x	
DHW Return Temperature	1	x																																											x	
Return Pump	1																			x					x																					x	
Additional Points																																															
DDC Front End/Communication	E																																												x	Automated Logic
Floor Plan Graphics	2																																												x	Provide graphic each floor

Total Points	**556**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building SP-300	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Level	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status	Humidity	Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (91)	**1**																																													**x**	Provide graphic
Space Sensor	**91**	**x**														**x**													**x**	**x**					**x**	**x**						**x**	**x**			**x**	**x**	
Box Discharge Air	**91**	**x**																																												**x**	
HTG. Valve	**91**													**x**																																**x**	
Box Damper Position	**91**								**x**					**x**																																**x**	
Box Inlet Air Flow Sensor	**91**		**x**				**x**																																							**x**	
Box Fan Start	**91**																								**x**						**x**															**x**	
Box Fan Status	**91**																			**x**											**x**															**x**	
Electric Reheat	**.**														**x**					**x**																										**x**	
Occupied Override Switch	**91**																						**x**																							**x**	
Box Mode	**91**																								**x**						**x**															**x**	
Fan Coil Terminals (7 FCU and AHU-20 operate similarly. Also includes AHU-16-19, 18A, 24 and 25 due to simplicity)	**2**																																													**x**	Provide graphic each configuration
Space Sensor	**8**	**x**														**x**													**x**	**x**					**x**	**x**						**x**					**x**	
Discharge Air Temperature	**7**	**x**																																												**x**	
Space Humidity	**7**		**x**																										**x**	**x**																**x**	
Cooling Valve	**8**													**x**																																**x**	
Fan/AHU Status	**15**																						**x**																							**x**	
Occupied Override Switch	**8**																						**x**																							**x**	
Filter Differential Pressure	**15**		**x**																										**x**																	**x**	
Fan Start/Stop	**1**																								**x**																					**x**	
AHU Enable/Disable	**7**																								**x**																					**x**	
Hot Water (HW) Heating System (3 boilers, 2 HW pumps)	**1**																																													**x**	Provide graphic
Heating Primary Pump Status	**2**																			**x**																					**x**					**x**	
Heating Primary Pump Start/Stop	**2**																								**x**																					**x**	
Primary Pump DP	**1**		**x**																												**x**															**x**	
Heating Secondary Pump Status	**.**																			**x**																					**x**					**x**	
Heating Secondary Pump Start/Stop	**.**																								**x**																					**x**	
Secondary Pump DP	**.**		**x**																												**x**															**x**	
HW Supply Setpoint	**1**															**x**																						**x**									
HW Supply Temperature	**4**	**x**																																												**x**	
HW Return Temperature	**1**	**x**																																												**x**	
HW Flow Rate	**1**					**x**																																								**x**	
HW Mixing Valve Position	**1**													**x**																																**x**	
Boiler Sequencer Enable	**1**																								**x**																					**x**	
Boiler Status	**3**																						**x**								**x**		**x**									**x**					**x**	
Heat Exchanger Inlet Temp.	**.**	**x**																																												**x**	

DDC System Points List**

System Point Description Building SP-300	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Level	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status	Humidity	Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Heat Exchanger Outlet Temp.	.	x														x																						x									x	
Pump VFD's	2								x	x				x																																	x	
Condensate Return Pump Status	.																			x																					x						x	
Chilled Water System (2 Water cooled Chillers, 2 Cooling Towers, 3 CW pumps. 2 SCW pumps, 3 Cond Water Pumps)	1																																													x	Provide graphic
Chiller Enable/Disable	2																								x									x									x			x	
Chiller Status	2																			x																					x						x	
Chiller Failure Alarms	2									x										x													x														x	
Primary Supply Temp	3	x																																													x	
Primary Return Temp	3	x																																													x	
Chiller Setpoint	1															x																						x										
Secondary Supply Temp	1	x																																													x	
Secondary Return Temp	1	x														x																						x									x	
Chiller Primary Flow Switch	4																			x											x	x															x	
Secondary Flow	1					x																																									x	
Decoupler Temperature	1	x																																													x	
CW System DP(Primary)	.		x																																												x	
CW System DP(Secondary)	1		x													x																						x									x	
Primary Pump Start/Stop	3																								x																						x	
Primary Pump Status	3																			x											x										x						x	
Secondary Pump Start/Stop	2																								x																						x	
Secondary Pump Status	2																			x											x										x						x	
Secondary Pump VFD's	2								x	x				x																																	x	
Tower Fan Start/Stop	2																								x																						x	
Cooling Tower Fan Status	2																			x											x										x						x	
Cooling Tower Fans VFD's	2								x	x				x																																	x	
Condenser Supply Temp.	1	x																																													x	
Condenser Return Temp.	1	x																																													x	
Tower Bypass Valve Position	1								x					x																																	x	
Heat Exchanger Inlet Temp.	.	x																																													x	
Heat Exchanger Outlet Temp.	.	x														x																						x									x	
Secondary Bypass Valve	1		x						x					x																																	x	
Refrigerant Alarm	1																						x					x																			x	
EF-2 Refrig Exhaust Start/Stop	1																								x																						x	
EF-2 Refrig Exhaust Status	1																			x											x										x						x	
EF-2 Exhaust Damper Command	1																									x					x																x	
EF-2 Exhaust Damper Open	1																					x							x																		x	
Isolation Valves	6																									x																					x	

DDC System Points List**

System Point Description Building SP-300	Number Required*	Analog																	Binary										System Features																	Notes
		Input												Output					Input						Output				Alarms						Programs													
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Level	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status	Humidity	Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Isolation Valve Status	7																					x									x																	
Tower Sump Level	1												x																x	x																	x	
Tower Sump Temp.	1	x																																													x	
Makeup Valve	1																								x																						x	
Heat Trace Status	2	x																												x																	x	
Blowdown Valve Open	1																								x																						x	
Chem Treatment Status	1																			x																					x						x	
Air Distribution System (11 VAV AHU, 7 CV AHU) <8 AHU included in FCU section above>	6																																														x	Provide graphic each configuration
Supply Air Temperature	18	x														x																				x											x	
Supply Air Static Pressure	11		x													x																															x	
High Limit Duct Static Pressure	11		x													x																															x	
Outside Airflow	11						x																																								x	
Supply Air Humidity	3			x												x																															x	
Return Air Humidity	3			x																																											x	
Return Air Humidity Setpoint	3													x		x																															x	
High Limit Supply Air Humidity	3																							x																							x	
Humidifier Enable/disable	3																										x																				x	
Outside Air Temperature	1	x																																													x	
Outside Air Relative Humidity	1	x																																													x	
Space Temperature	4	x																																													x	
Space Humidity	4			x																																											x	
Mixed Air Temperature	18	x																																													x	
Cooling Coil Discharge Temp.	18	x														x																															x	
Heating Coil Discharge Temp.	7	x														x																															x	
Preheat Coil Discharge Temp.	18	x																																													x	
Filter Status	32		x																									x																			x	
Supply Damper Position	.								x					x																																	x	
Return Damper Open/Close	2																								x																						x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Modulate	11								x					x																																	x	
OA Damper Open/Close	7																								x																						x	
Outside Air Damper Position	23																					x																									x	
Cooling Coil Valve Position	18								x					x																																	x	
Heating Coil Valve Position	7								x					x																																	x	
Preheat Coil Valve Position	18								x					x																																	x	
Preheat Coil Pump Start/Stop	18																								x																						x	
Preheat Coil Pump Status	18																			x																					x						x	
Electric Heater Status	.														x								x																								x	
Freezestat	18																						x																								x	
Smoke Detector	34																						x																								x	

DDC System Points List**

System Point Description Building SP-300	Number Required*	Analog																	Binary										System Features																	Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Level	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status	Humidity	Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Supply Fan Start/Stop	18																								x																						x	
Supply Fan VFD	11								x	x				x																																	x	
Supply Fan Run Status	18																			x																					x						x	
Supply Fan Fault Status	.																			x											x																x	
Relief/Exhaust Fan Start/Stop	10																								x																						x	
Relief/Exhaust Fan Run Status	10																			x																					x						x	
Relief/Exhaust Damper Open/Close	10																								x						x																x	
Relief/Exhaust Damper Position	36																					x																									x	
Exhaust Fan Run Status	.																			x											x										x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
Override Timer	13																			x																											x	
Humidifier Status	1																			x																											x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																		x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
General Building Systems	.																																														x	
Exhaust Fan Start/Stop	5																								x																						x	
Exhaust Fan Status	5																			x											x										x						x	
Exhaust Damper Limit Switch Open	5																						x																								x	
Split DX (SS-1,2,4,5)	1																																														x	Provide graphic
Space Temp.	4	x														x													x	x					x	x						x	x			x	x	
Space RH	4			x																																											x	
Unoccupied Override Switch	.																			x																											x	
DX Coil Discharge Temp.	4	x																																													x	
Heating Coil Discharge Temp.	.	x																																													x	
Pre-Filter Status	2																				x																							x		x	
Pre-Filter Status	4																				x																							x		x	
System Enable	4																										x																			x	
System Status	4																			x																											x	
Supply Fan Run Status	.																			x											x										x						x	

DDC System Points List**

System Point Description Building SP-300	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Level	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status	Humidity	Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Smoke Detector Status	4																																												x	
Split DX (SS-3)	1																																												x	Provide graphic
Space Temp.	1	x														x												x	x					x	x						x	x			x	x	
Space RH	1			x																																									x	
Unoccupied Override Switch	.																			x																									x	
DX Coil Discharge Temp.	1	x																																											x	
Heating Coil Discharge Temp.	.	x																																											x	
Pre-Filter Status	1																				x																							x	x	
Pre-Filter Status	1																				x																							x	x	
System Enable	1																										x																		x	
System Status	1																			x																									x	
Supply Fan Run Status	.																			x										x										x					x	
Smoke Detector Status	2																																												x	
Outside Air Damper Open/Close	1																								x					x															x	
Outside Air Damper Position	1																					x																							x	
Exhaust Damper Open/Close	1																								x					x															x	
Exhaust Damper Position	1																					x																							x	
Exhaust Fan Start/Stop	1																								x																				x	
Exhaust Fan Run Status	1																			x																				x					x	
Gas Furnace Start/Stop	1																								x																				x	
Gas Furnace Run Status	1																			x																				x					x	
Mini-Split DX (0) (Under 3 tons)	.																																												x	
Space Temp.	.	x														x												x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																												x	Provide graphic
DHW Storage / Supply Temperature	1	x																																											x	
DHW Return Temperature	1	x																																											x	
Return Pump	1																			x					x																				x	
Water Heater Enable	1																										x																		x	
Water Heater Status	1																			x										x										x					x	
Space Temperature Setpoint	1	x																										x																	x	
Supply Fan Start/Stop	1																								x																				x	
Supply Fan Status	1																			x										x										x					x	
Damper Limit Switch Open	2																						x																						x	
Filter Status	1																				x																							x	x	
Compressed Air System	1																																												x	Provide graphic

DDC System Points List**

System Point Description Building SP-300	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate	Level	DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status	Humidity	Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Space Temp.	1	x														x													x	x					x	x						x	x			x	x	
Air Pressure	1		x																																											x	
Compressor System Enable	1																									x																				x	
Compressor Status	2																			x																										x	
Outside Air Damper Open/Close	1																								x						x															x	
Outside Air Damper Position	1																					x																								x	
Exhaust Damper Modulate	1													x																																x	
Exhaust Damper Position	1																					x									x															x	
Ref. Dryer Isolation Valve	2																									x																				x	
Ref. Dryer Start/Stop	2																								x																					x	
Ref. Dryer Status	2																			x																					x					x	
Dessicant Dryer Alarm	1																						x																								x	
Additional Points																																															
DDC Front End/Communication	1																																													x	KMC Controls
Floor Plan Graphics	3																																													x	Provide graphic each floor

Total Points	**1563**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building SP-381	Number Required*	Analog																	Binary										System Features														Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (108)	**1**																																														**x**	Provide graphic
Space Sensor	**108**	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	**108**	x																																													x	
HTG. Valve	**108**													x																																	x	
Box Damper Position	**108**								x					x																																	x	
Box Inlet Air Flow Sensor	**108**		x				x																																								x	
Box Fan	**108**																			x					x						x																x	
Electric Reheat	**.**														x					x																											x	
Occupied Override Switch	**108**																						x																								x	
Fan Coil Terminals (1)	**1**																																														x	Provide graphic
Space Sensor	**1**	x														x													x	x					x	x						x					x	
Discharge Air Temperature	**1**	x																																													x	
HTG. Valve	**1**													x																																	x	
Cooling Valve														x																																	x	
Fan Status	**1**																								x																						x	
Occupied Override Switch	**1**																						x																								x	
Hot Water (HW) Heating System (12 gas boilers, 8 HW pumps)	**E**																																														x	Update graphic with added points
Heating Primary Pump Status	**E**																			x																					x					x	
Heating Primary Pump Start/Stop	**E**																								x																						x	
Primary Pump DP	**10**		x																												x																x	
Heating Secondary Pump Status	**5**																			x																					x					x	
Heating Secondary Pump Start/Stop	**5**																								x																						x	
Secondary Pump DP	**5**		x																												x																x	
HW Supply Temperature	**E**	x														x																						x									x	
HW Return Temperature	**E**	x																																													x	
HW Flow Rate	**.**					x																																									x	
HW Mixing Valve Position	**12**													x																																	x	
Boiler Enable	**E**																								x																						x	
Boiler Status/Alarm	**E**									x										x											x		x								x						x	
Heat Exchanger Inlet Temp.	**.**	x																																													x	
Heat Exchanger Outlet Temp.	**.**	x														x																						x									x	
Pump VFD's	**.**								x	x				x																																	x	
Condensate Return Pump Status	**.**																			x																					x					x	

DDC System Points List**

System Point Description Building SP-381	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
	Number Required*	Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Process Chilled Water System (1 air cooled Chillers, 2 CW pumps)	1																																												x	Provide graphic
Chiller Enable/Disable	1																								x										x									x			x	
Chiller Status	1																			x																						x						x	
Chiller Failure Alarms	1									x										x													x															x	
Chiller EWT	1	x																																													x	
Chiller LWT	1	x														x																						x									x	
Chiller Primary Flow	1					x																									x	x															x	
Secondary Flow						x																																									x	
Secondary CWS Temperature		x																																													x	
Secondary CWR Temperature		x																																													x	
Decoupler Temperature		x																																													x	
CW System DP(Primary)	1		x																																												x	
CW System DP(Secondary)			x													x																						x									x	
Primary Pump Start/Stop	2																							x																								x	
Primary Pump Status	2																			x											x											x						x	
Secondary Pump Start/Stop																								x																								x	
Secondary Pump Status																				x											x											x						x	
Pump VFD's									x	x				x																																	x	
Cooling Tower Fan Status	.																			x											x											x						x	
Cooling Tower Fans VFD's	.								x	x				x																																	x	
Condenser Supply Temp.	.	x																																													x	
Condenser Return Temp.	.	x																																													x	
Tower Bypass Valve Position	.								x					x																																	x	
Heat Exchanger Inlet Temp.	.	x																																													x	
Heat Exchanger Outlet Temp.	.	x														x																						x									x	
Process Drycooler System (1 condenser, 2 Glycol pumps)	1																																												x	Provide graphic
Condenser Enable/Disable	1																								x										x									x			x	
Condenser Status	1																			x																						x						x	
Condenser Failure Alarms										x										x													x															x	
Condenser EWT	1	x																																													x	
Condenser LWT	1	x														x																						x									x	
Condenser Primary Flow	1					x																									x	x															x	
Secondary Flow						x																																									x	
Secondary CWS Temperature		x																																													x	
Secondary CWR Temperature		x																																													x	
Decoupler Temperature		x																																													x	
Glycol System DP(Primary)	1		x																																												x	
Glycol System DP(Secondary)			x													x																						x									x	

DDC System Points List**

System Point Description Building SP-381	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Primary Pump Start/Stop	2																							x																								
Primary Pump Status	2																			x											x										x						x	
Secondary Pump Start/Stop																								x																								x	
Secondary Pump Status																				x											x										x						x	
Pump VFD's									x	x				x																																x	
Cooling Tower Fan Status	.																			x											x										x						x	
Cooling Tower Fans VFD's	.								x	x				x																																x	
Condenser Supply Temp.	.	x																																												x	
Condenser Return Temp.	.	x																																												x	
Tower Bypass Valve Position	.								x					x																																x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Air Distribution System (6 DX VAV AHU, 5 Return Fans (details of control assumed))	1																																													x	Provide graphic each configuration
Supply Air Temperature	6	x														x																				x										x	
Supply Air Static Pressure	6		x													x																														x	
Supply Airflow	6						x																																							x	
Outside Air Temperature	1	x																																												x	
Outside Air Relative Humidity	1	x																																												x	
Return Air Temperature	6	x																																												x	
Mixed Air Temperature	6	x																																												x	
Cooling Coil Discharge Temp.	6	x														x																														x	
Heating Coil Discharge Temp.	6	x														x																														x	
Preheat Coil Discharge Temp.	.	x																																												x	
Filter Status	6																				x																								x	x	
Supply Damper Position	.								x					x																																x	
Return Damper Position	6								x					x																																x	
Exhaust Damper Position	6								x					x																																x	
OA Damper Position	6								x					x																																x	
Cooling Coil Stage 1	6																								x																x					x	
Cooling Coil Stage 2	6																								x																x					x	
Heating Coil Valve Position	6								x					x																																x	
Preheat Coil Valve Position	.								x					x																																x	
Electric Heater Status	.														x								x																							x	
Freezestat	6																						x																							x	
Smoke Detector	6																						x																							x	
Supply Fan Start/Stop	6																								x																					x	
Supply Fan VFD	6								x	x				x																																x	
Supply Fan Run Status	6																			x																					x					x	
Supply Fan Fault Status	6																			x										x																x	

DDC System Points List**

System Point Description Building SP-381	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Return Fan Start/Stop	5																								x																						x	
Return Fan VFD	5								x	x				x																																	x	
Return Fan Run Status	5																			x																					x						x	
Return Fan Fault Status	5																			x											x																x	
Exhaust Fan Run Status	.																			x																					x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	6																			x																											x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																		x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (8 split DX units, 8 DX Computer Room units) (7.5 tons to 3 tons)	1																																														x	Provide graphic each configuration
Space Temp.	16	x														x													x	x					x	x						x	x			x	x	
Space RH	8			x																																											x	
Unoccupied Override Switch	8																			x																											x	
DX Coil Discharge Temp.	16	x																																													x	
Heating Coil Discharge Temp.	8	x																																													x	
Filter Status	16																				x																								x		x	
OA Damper Command	8													x																					x											x	x	
Electric Heater Status	.																			x																											x	
Supply Fan Run Status	16																			x											x										x						x	
Mini-Split DX (5) (Under 3 tons)	1																																														x	Provide graphic
Space Temp.	4	x														x													x	x					x	x						x	x			x	x	

DDC System Points List**

System Point Description Building SP-381	Number Required*	Analog																	Binary										System Features																		Notes
		Input												Output					Input						Output				Alarms						Programs													
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
General Building System Components. 16 Exhaust Fans	**1**																																														x	Provide graphic
Space Temp.	**6**	x														x													x	x					x	x						x	x			x	x	
EF Fan Start/Stop	**16**																								x																						x	
EF Fan Status	**16**																			x																						x					x	
Exhaust Damper Open/Close	**16**																									x																					x	
Exhaust Damper Position	**16**																					x																									x	
Domestic Hot Water System (5)	**E**																																														x	Provide graphic
DHW Storage / Supply Temperature	**2**	x																																													x	
DHW Return Temperature	**2**	x																																													x	
Return Pump	**2**																			x					x																						x	
Additional Points																																																
DDC Front End/Communication	**E**																																														x	Automated Logic Corporation
Floor Plan Graphics	**4**																																														x	Provide graphic each floor

Total Points	**1157**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building V-53	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (35)	**1**																																													**x**	Provide graphic
Space Sensor	**35**	**x**														**x**													**x**	**x**					**x**	**x**						**x**	**x**			**x**	**x**	
Box Discharge Air	**35**	**x**																																												**x**	
HTG. Valve	**35**													**x**																																**x**	
Box Damper Position	**35**								**x**					**x**																																**x**	
Box Inlet Air Flow Sensor	**35**		**x**				**x**																																							**x**	
Box Fan	**35**																			**x**					**x**						**x**															**x**	
Electric Reheat	**.**														**x**					**x**																										**x**	
Occupied Override Switch	**35**																						**x**																							**x**	
Fan Coil Terminals (12)	**1**																																													**x**	Provide graphic
Space Sensor	**12**	**x**														**x**													**x**	**x**					**x**	**x**						**x**					**x**	
Discharge Air Temperature	**12**	**x**																																												**x**	
HTG. Valve	**12**													**x**																																**x**	
Cooling Valve	**12**													**x**																																**x**	
Fan Status	**12**																								**x**																					**x**	
Occupied Override Switch	**12**																						**x**																							**x**	
Hot Water (HW) Heating System (2 boilers, 2 HW pumps)	**1**																																													**x**	Provide graphic
Heating Primary Pump Status	**2**																			**x**																				**x**						**x**	
Heating Primary Pump Start/Stop	**2**																								**x**																					**x**	
Primary Pump DP	**.**		**x**																												**x**															**x**	
Heating Secondary Pump Status	**.**																			**x**																				**x**						**x**	
Heating Secondary Pump Start/Stop	**.**																								**x**																					**x**	
Secondary Pump DP	**.**		**x**																												**x**															**x**	
HW Supply Temperature	**1**	**x**														**x**																					**x**										**x**	
HW Return Temperature	**1**	**x**																																												**x**	
HW Flow Rate	**.**					**x**																																								**x**	
HW Mixing Valve Position	**1**													**x**																																**x**	
Boiler Enable	**2**																								**x**																					**x**	
Boiler Status/Alarm	**2**									**x**										**x**											**x**		**x**							**x**						**x**	
Heat Exchanger Inlet Temp.	**.**	**x**																																												**x**	
Heat Exchanger Outlet Temp.	**.**	**x**														**x**																					**x**									**x**	
Pump VFD's	**2**								**x**	**x**				**x**																																**x**	
Condensate Return Pump Status	**.**																			**x**																				**x**						**x**	

DDC System Points List**

System Point Description Building V-53	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (3 air cooled chillers, 4 CW pumps)	**1**																																													**x**	Provide graphic
Chiller Enable/Disable	**3**																								**x**										**x**									**x**			**x**	
Chiller Status	**3**																			**x**																					**x**						**x**	
Chiller Failure Alarms	**3**									**x**										**x**													**x**														**x**	
Chiller EWT	**3**	**x**																																												**x**	
Chiller LWT	**3**	**x**														**x**																						**x**								**x**	
Chiller Primary Flow	**3**					**x**																									**x**	**x**														**x**	
Secondary Flow	**1**					**x**																																								**x**	
Secondary CWS Temperature	**1**	**x**																																												**x**	
Secondary CWR Temperature	**1**	**x**																																												**x**	
Decoupler Temperature	**1**	**x**																																												**x**	
CW System DP(Primary)	**1**		**x**																																											**x**	
CW System DP(Secondary)	**1**		**x**													**x**																						**x**								**x**	
Primary Pump Start/Stop	**5**																						**x**																							**x**	
Primary Pump Status	**5**																			**x**											**x**									**x**						**x**	
Secondary Pump Start/Stop	**2**																						**x**																							**x**	
Secondary Pump Status	**2**																			**x**											**x**									**x**						**x**	
Pump VFD's	**2**							**x**	**x**					**x**																																**x**	
Cooling Tower Fan Status	**.**																			**x**											**x**									**x**						**x**	
Cooling Tower Fans VFD's	**.**							**x**	**x**					**x**																																**x**	
Condenser Supply Temp.	**.**	**x**																																												**x**	
Condenser Return Temp.	**.**	**x**																																												**x**	
Tower Bypass Valve Position	**.**							**x**						**x**																																**x**	
Heat Exchanger Inlet Temp.	**.**	**x**																																												**x**	
Heat Exchanger Outlet Temp.	**.**	**x**														**x**																						**x**								**x**	
Air Distribution System (5 VAV AHU, 2 CAV AHU, 4 MAU)	**3**																																													**x**	Provide graphic each configuration
Supply Air Temperature	**11**	**x**														**x**																				**x**											**x**	
Supply Air Static Pressure	**5**		**x**													**x**																														**x**	
Supply Airflow	**5**						**x**																																							**x**	
Outside Air Temperature	**1**	**x**																																												**x**	
Outside Air Relative Humidity	**1**	**x**																																												**x**	
Return Air Temperature	**11**	**x**																																												**x**	
Mixed Air Temperature	**11**	**x**																																												**x**	
Cooling Coil Discharge Temp.	**11**	**x**														**x**																														**x**	
Heating Coil Discharge Temp.	**11**	**x**														**x**																														**x**	
Preheat Coil Discharge Temp.	**.**	**x**																																												**x**	
Filter Status	**11**																				**x**																							**x**		**x**	
Supply Damper Position	**.**							**x**						**x**																																**x**	

DDC System Points List**

System Point Description Building V-53	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Return Damper Position	7								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	11								x					x																																	x	
Cooling Coil Valve Position	11								x					x																																	x	
Heating Coil Valve Position	11								x					x																																	x	
Preheat Coil Valve Position	1								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	11																						x																								x	
Smoke Detector	11																						x																								x	
Supply Fan Start/Stop	11																								x																						x	
Supply Fan VFD	5								x	x				x																																	x	
Supply Fan Run Status	11																			x																					x						x	
Supply Fan Fault Status	5																			x											x																x	
Return Fan Start/Stop	.																								x																						x	
Return Fan VFD	.								x	x				x																																	x	
Return Fan Run Status	.																			x																					x						x	
Return Fan Fault Status	.																			x											x																x	
Exhaust Fan Run Status	.																			x																					x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	3																			x																					x						x	
Heat Recovery Wheel Discharge Air	3	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
Preheat Coil Pump Start/Stop	3																								x																						x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																		x	x	
Building Water Meter	.											x																																	x	x	
Building Gas Meter	.											x																																	x	x	
Building Steam Meter	.											x																																	x	x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (7 Split Computer Room Systems)	1																																														x	Provide graphic
Space Temp.	7	x														x													x	x					x	x						x	x			x	x	
Space RH	7			x																																											x	
Unoccupied Override Switch	.																			x																											x	
DX Coil Discharge Temp.	7	x																																													x	
Heating Coil Discharge Temp.	.	x																																													x	

DDC System Points List**

System Point Description Building V-53	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Filter Status	7																				x																								x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	7																			x																											x	
Supply Fan Run Status	7																			x											x									x							x	
Mini-Split DX (5) (Under 3 tons)	1																																														x	Provide graphic
Space Temp.	5	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																														x	Provid graphic
DHW Storage / Supply Temperature	1	x																																													x	
DHW Return Temperature	1	x																																													x	
Return Pump	1																			x					x																							x	
Additional Points																																																	
DDC Front End/Communication	1																																														x	
Floor Plan Graphics	3																																														x	Provide graphic each floor

Total Points	**618**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building V-61	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (69)	1																																													x	63 VAV, CVC & TAB terminals on Johnson Controls. Provide graphic for missing
Space Sensor	6	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	6	x																																												x	
HTG. Valve	6													x																																x	
Box Damper Position	6								x					x																																x	
Box Inlet Air Flow Sensor	6		x				x																																							x	
Box Fan	6																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	6																						x																							x	
Fan Coil Terminals (28)	1																																													x	25 FCU on Johnson Controls. Provide graphic for missing equipment
Space Sensor	3	x														x													x	x					x	x						x				x	
Discharge Air Temperature	3	x																																												x	
HTG. Valve	3													x																																x	
Cooling Valve	3													x																																x	
Fan Status	3																								x																					x	
Occupied Override Switch	3																						x																							x	
Hot Water (HW) Heating System (2 boilers, 2 HW pumps)	E																																													x	Update graphic with added points
Heating Primary Pump Status	E																			x																				x						x	
Heating Primary Pump Start/Stop	E																								x																					x	
Primary Pump DP	.		x																												x															x	
Heating Secondary Pump Status	.																			x																				x						x	
Heating Secondary Pump Start/Stop	.																								x																					x	
Secondary Pump DP	.		x																												x															x	
HW Supply Temperature	E	x														x																						x									x	
HW Return Temperature	E	x																																												x	
HW Flow Rate	.					x																																								x	
HW Mixing Valve Position	E													x																																x	
Boiler Enable	E																								x																					x	Boilers on Automated Logic
Boiler Status/Alarm	E									x										x											x		x								x					x	
Heat Exchanger Inlet Temp.	2	x																																												x	
Heat Exchanger Outlet Temp.	2	x														x																						x								x	2 Heat Exchangers not on DDC
Pump VFD's	.								x	x				x																																x	
Condensate Return Pump Status	1																			x																				x						x	

DDC System Points List**

System Point Description Building V-61	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (2 water coled Chillers, 2 Cooling Towers, 2 CW pumps, 3 Cond Water Pumps)	E																																												x	CWS sytem on Johnson Controls
Chiller Enable/Disable	E																								x										x									x			x	
Chiller Status	E																			x																					x						x	
Chiller Failure Alarms	E									x										x													x														x	
Chiller EWT	E	x																																												x	
Chiller LWT	E	x														x																						x								x	
Chiller Primary Flow	E					x																									x	x														x	
Secondary Flow	.					x																																								x	
Secondary CWS Temperature	.	x																																												x	
Secondary CWR Temperature	.	x																																												x	
Decoupler Temperature	.	x																																												x	
CW System DP(Primary)	.		x																																											x	
CW System DP(Secondary)	.		x													x																						x								x	
Primary Pump Start/Stop	E																								x																					x	
Primary Pump Status	E																			x											x										x						x	
Condenser Pump Start/Stop	E																								x																						x	
Condenser Pump Status	E																			x											x										x						x	
Pump VFD's	.								x	x				x																																	x	
Cooling Tower Fan Status	E																			x											x										x						x	
Cooling Tower Fans VFD's	E								x	x				x																																	x	
Condenser Supply Temp.	E	x																																												x	
Condenser Return Temp.	E	x																																												x	
Tower Bypass Valve Position	E								x					x																																	x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Air Distribution System (6 VAV AHU 6 Return Fans)	1																																													x	Provide graphic
Supply Air Temperature	6	x														x																				x										x	
Supply Air Static Pressure	6		x													x																															x	
Supply Airflow	6						x																																								x	
Outside Air Temperature	E	x																																												x	
Outside Air Relative Humidity	E	x																																												x	
Return Air Temperature	6	x																																												x	
Mixed Air Temperature	6	x																																												x	
Cooling Coil Discharge Temp.	6	x														x																														x	
Heating Coil Discharge Temp.	.	x														x																														x	

DDC System Points List**

System Point Description Building V-61	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Preheat Coil Discharge Temp.	6	x																																												x	
Filter Status	6																				x																								x		x	
Supply Damper Position	.								x					x																																	x	
Return Damper Position	6								x					x																																	x	
Exhaust Damper Position	6								x					x																																	x	
OA Damper Position	6								x					x																																	x	
Cooling Coil Valve Position	6								x					x																																	x	
Heating Coil Valve Position	.								x					x																																	x	
Preheat Coil Valve Position	6								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	6																						x																								x	
Smoke Detector	6																						x																								x	
Supply Fan Start/Stop	E																								x																						x	
Supply Fan VFD	E								x	x				x																																	x	
Supply Fan Run Status	E																			x																					x						x	
Supply Fan Fault Status	E																			x											x																x	
Return Fan Start/Stop	6																								x																						x	
Return Fan VFD	6								x	x				x																																	x	
Return Fan Run Status	6																			x																					x						x	
Return Fan Fault Status	6																			x											x																x	
Exhaust Fan Run Status	.																			x																					x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	.				x						x																																		x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (2 as AC-7 and AC-8) (7.5 tons to 3 tons)	1																																														x	Provide graphic
Space Temp.	2	x														x													x	x					x	x						x	x			x	x	
Space RH	.			x																																											x	

DDC System Points List**

System Point Description Building V-61	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Unoccupied Override Switch	2																			x																											x	
DX Coil Discharge Temp.	2	x																																													x	
Heating Coil Discharge Temp.	2	x																																													x	
Filter Status	2																				x																								x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	2																			x																											x	
Supply Fan Run Status	2																			x											x										x						x	
	.																																															
Mini-Split DX (0) (Under 3 tons)	.																																														x	
Space Temp.	.	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	E																																														x	Update graphic with added points
DHW Storage / Supply Temperature	E	x																																													x	
DHW Return Temperature	1	x																																													x	
Return Pump	1																			x					x																						x	
Additional Points																																																
DDC Front End/Communication	E																																														x	Automated Logic and Johnson Controls
Floor Plan Graphics	E																																														x	

Total Points	**201**

*E = Existing Point
*# = A number indicates the number of Points required based on the number of this type equipment within the facility.
*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

DDC System Points List**

System Point Description Building Z-133	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
VAV Terminals (372)	E																																													x	Update graphic with added points
Space Sensor	E	x														x													x	x					x	x						x	x			x	x	
Box Discharge Air	372	x																																												x	
HTG. Valve	E													x																																x	
Box Damper Position	E								x					x																																x	
Box Inlet Air Flow Sensor	E		x				x																																							x	
Box Fan	.																			x					x						x															x	
Electric Reheat	.														x					x																										x	
Occupied Override Switch	E																						x																							x	
Fan Coil Terminals (2)	E																																													x	Updatre graphic with added points
Space Sensor	E	x														x													x	x					x	x						x				x	x	
Discharge Air Temperature	E	x																																												x	
HTG. Valve	E													x																																x	
Cooling Valve	E													x																																x	
Fan Status	E																								x																					x	
Occupied Override Switch	2																						x																							x	
Hot Water (HW) Heating System (4 boilers, 2 HW pumps)	E																																													x	Update graphic with added points
Heating Primary Pump Status	E																			x																					x					x	
Heating Primary Pump Start/Stop	E																								x																					x	
Primary Pump DP	.		x																												x															x	
Heating Secondary Pump Status	E																			x																					x					x	
Heating Secondary Pump Start/Stop	E																								x																					x	
Secondary Pump DP	E		x																												x															x	
HW Supply Temperature	E	x														x																						x									x	
HW Return Temperature	E	x																																												x	
HW Flow Rate	1					x																																								x	
HW Mixing Valve Position	4													x																																x	
Boiler Enable	E																								x																					x	
Boiler Status/Alarm	E									x										x											x		x								x					x	
Heat Exchanger Inlet Temp.	.	x																																												x	
Heat Exchanger Outlet Temp.	.	x														x																						x								x	
Pump VFD's	1								x	x				x																																x	
Condensate Return Pump Status	.																			x																					x					x	

DDC System Points List**

System Point Description Building Z-133	Number Required*	Analog																		Binary										System Features															Notes
		Input												Output						Input						Output				Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.				Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Chilled Water System (2 Water cooled Chillers, 3 CW pumps, 2 Condenser Water pumps)	**1**																																												x	Provide graphic each configuration
Chiller Enable/Disable	**2**																									x										x								x			x	
Chiller Status	**2**																				x																					x						x	
Chiller Failure Alarms	**2**									x											x													x														x	
Chiller EWT	**2**	x																																													x	
Chiller LWT	**2**	x														x																							x								x	
Chiller Primary Flow	**2**					x																										x	x														x	
Secondary Flow	**.**					x																																									x	
Secondary CWS Temperature	**.**	x																																													x	
Secondary CWR Temperature	**.**	x																																													x	
Decoupler Temperature	**.**	x																																													x	
CW System DP(Primary)	**2**		x																																												x	
CW System DP(Secondary)	**.**		x													x																							x								x	
Primary Pump Start/Stop	**3**																									x																					x	
Primary Pump Status	**3**																				x											x										x						x	
Tower Pump Start/Stop	**2**																									x																					x	
Tower Pump Status	**2**																				x											x										x						x	
Pump VFD's	**3**							x	x					x																																	x	
Cooling Tower Fan Status	**3**																				x											x										x						x	
Cooling Tower Fans VFD's	**3**							x	x					x																																	x	
Condenser Supply Temp.	**1**	x																																													x	
Condenser Return Temp.	**1**	x																																													x	
Tower Bypass Valve Position	**2**							x						x																																	x	
Heat Exchanger Inlet Temp.	**.**	x																																													x	
Heat Exchanger Outlet Temp.	**.**	x														x																							x								x	
Air Distribution System (12 VAV AHU)	**1**																																													x	Provide graphic each configuration
Supply Air Temperature	**E**	x														x																					x										x	
Supply Air Static Pressure	**E**		x													x																															x	
Supply Airflow	**E**						x																																								x	
Outside Air Temperature	**E**	x																																													x	
Outside Air Relative Humidity	**E**	x																																													x	
Return Air Temperature	**E**	x																																													x	
Mixed Air Temperature	**E**	x																																													x	
Cooling Coil Discharge Temp.	**E**	x														x																															x	
Heating Coil Discharge Temp.	**E**	x														x																															x	
Preheat Coil Discharge Temp.	**E**	x																																													x	

DDC System Points List**

System Point Description Building Z-133	Number Required*	Analog																	Binary										System Features																Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
Filter Status	E																				x																									x		x	
Supply Damper Position	.								x					x																																	x	
Return Damper Position	E								x					x																																	x	
Exhaust Damper Position	.								x					x																																	x	
OA Damper Position	E								x					x																																	x	
Cooling Coil Valve Position	E								x					x																																	x	
Heating Coil Valve Position	.								x					x																																	x	
Preheat Coil Valve Position	E								x					x																																	x	
Electric Heater Status	.														x								x																								x	
Freezestat	12																						x																								x	
Smoke Detector	E																						x																								x	
Supply Fan Start/Stop	E																								x																						x	
Supply Fan VFD	E								x	x				x																																	x	
Supply Fan Run Status	E																			x																					x						x	
Supply Fan Fault Status	E																			x											x																x	
Return Fan Start/Stop	E																								x																						x	
Return Fan VFD	E								x	x				x																																	x	
Return Fan Run Status	E																			x																					x						x	
Return Fan Fault Status	E																			x											x																x	
Exhaust Fan Run Status	.																			x																					x						x	
Outside Air Fan Run Status	.																			x																					x						x	
Heat Recovery Wheel Rotation	.																			x																					x						x	
Heat Recovery Wheel Discharge Air	.	x																																													x	
Fire Damper Status	.																			x											x																x	
Smoke Damper Status	.																			x																											x	
Preheat Coil Pump Start/Stop	5																								x																						x	
General Building Systems	1																																														x	Provide graphic
Building Electric Meter	E				x						x																																		x		x	
Building Water Meter	.											x																																	x		x	
Building Gas Meter	.											x																																	x		x	
Building Steam Meter	.											x																																	x		x	
HVAC Shutdown Switch Status	1																						x																								x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (4 DX split Systems) (7.5 tons to 3 tons)	1																																														x	Provide graphic
Space Temp.	4	x														x													x	x					x	x						x	x			x	x	
Space RH	4			x																																											x	
Unoccupied Override Switch	4																			x																											x	

DDC System Points List**

System Point Description Building Z-133	Number Required*	Analog																	Binary										System Features															Notes
		Input												Output					Input						Output				Alarms						Programs												
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable		High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	
DX Coil Discharge Temp.	4	x																																												x	
Heating Coil Discharge Temp.	4	x																																												x	
Filter Status	4																				x																								x		x	
OA Damper Command	4													x																					x											x	x	
Electric Heater Status	.																			x																										x	
Supply Fan Run Status	4																			x											x										x						x	
Split DX, Terminal Heat Pumps, VRF, Small Packaged Equipment (7 CRAC units) (7.5 tons to 3 tons)	1																																													x	Provide graphic
Space Temp.	7	x														x													x	x					x	x						x	x			x	x	
Space RH	7			x																																											x	
Unoccupied Override Switch	.																			x																											x	
DX Coil Discharge Temp.	7	x																																												x	
Heating Coil Discharge Temp.	7	x																																												x	
Filter Status	7																				x																							x		x	
OA Damper Command	.													x																					x											x	x	
Electric Heater Status	.																			x																										x	
Supply Fan Run Status	7																			x											x										x						x	
Mini-Split DX (1) (Under 3 tons)	1																																													x	Provide graphic
Space Temp.	1	x														x													x	x					x	x						x	x			x	x	
Domestic Hot Water System	1																																													x	Provide graphic
DHW Storage / Supply Temperature	1	x																																												x	
DHW Return Temperature	1	x																																												x	
Return Pump	1																			x					x																					x	
Additional Points																																																
DDC Front End/Communication	E																																													x	Automated Logic Corporation & Johnson Controls
Floor Plan Graphics	E																																													x	

Total Points	**520**

DDC System Points List**

System Point Description Building Z-133	Number Required*	Analog																	Binary											System Features															Notes
		Input												Output					Input						Output					Alarms						Programs											
		Temperature	Pressure	RH	kW	GPM	CFM	CO2 PPM	Percent	Status/Alarm	KWh	Flow Rate		DDC(4-20mA, 0-10v)	Number of Stages	Setpoint Adj.			Pneu. Transducer	Status On/Off	Filter Status	Status Open/Closed	Status		Off/On	Open/Close	Enable/Disable			High Analog	Low Analog	Proof	Flow Fail	Diagnostics		Time Scheduling	Demand Limiting	Opt. Start/Stop	Reset	Event Program		Run Time	Set Back/Set Up	Morning Warm Up	Chiller Sequencing	Totalizing	Timed Override	Graphic	

*E = Existing Point

*# = A number indicates the number of Points required based on the number of this type equipment within the facility.

*. = This point is not required based on the HVAC system type in the facility.

** x = indicated system features required

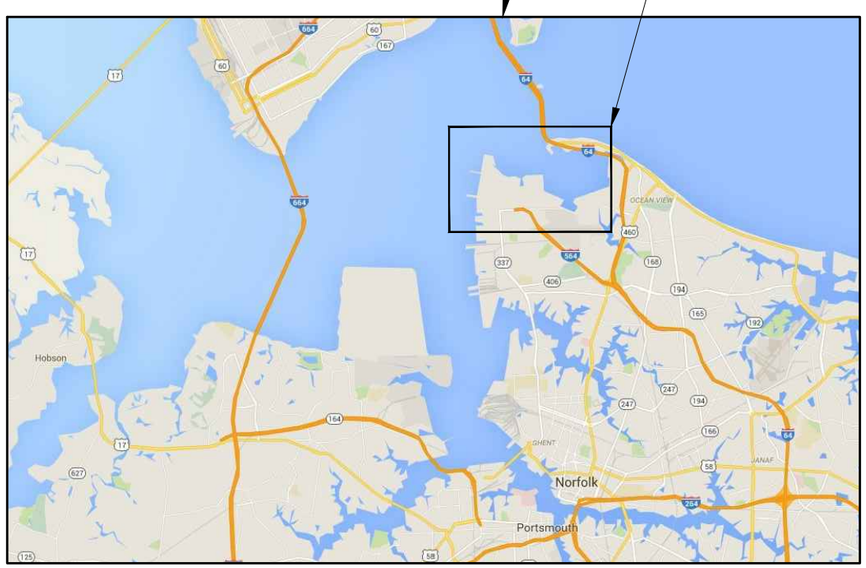
ATTACHMENT 4
CONCEPT DRAWINGS

MAPS AND DRAWING INDEX

VICINITY MAP

NOT TO SCALE

SEE G-002 FOR BASE MAP



LOCATION MAP

NOT TO SCALE

Building No.	Drawing No.	Drawing Title	Sheet No.	NAVFAC No.
	G-001	VICINITY AND AREA MAPS AND DRAWINGS INDEX	1	12724369
	G-002	BASE MAP	2	12724370
A-48	M-101	FIRST AND SECOND FLOOR PLANS	3	12724371
	M-102	THIRD FLOOR AND MECHANICAL ROOM PLANS	4	12724372
A-54	M-101	FIRST FLOOR PLAN	5	12724373
	M-102	FIRST FLOOR AND MECHANICAL ROOM PLANS	6	12724374
C-9	M-101	PATRIAL FIRST FLOOR PLAN	7	12724375
	M-102	NORTH WING PLAN	8	12724376
	M-103	SOUTH WING PLAN	9	12724377
	M-104	SECOND FLOOR PLANS	10	12724378
	M-105	SECOND FLOOR ROOF PLANS	11	12724379
	M-401	ENLARGED MECHANICAL ROOF PLANS	12	12724380
CEP-162	M-101	PARTIAL FLOOR PLAN - AREA B	13	12724381
	M-401	ENLARGED MECHANICAL ROOM PLAN	14	12724382
CEP-198	M-101	FIRST AND SECOND FLOOR PARTIAL PLANS	15	12724383
CEP-209	M-101	FIRST FLOOR PLAN	16	12724384
	M-102	SECOND FLOOR PLAN	17	12724385
	M-103	MECHANICAL ROOM PARTIAL PLANS AND SECTIONS	18	12724386
	M-104	MEZZANINE PARTIAL PLAN	19	12724387
	M-105	SECTION	20	12724388
E-26	M-101	FIRST FLOOR LIGHTING PLAN	21	12724389
	M-102	SECOND FLOOR LIGHTING PLAN	22	12724390
J-50	M-101	FIRST, SECOND, AND THIRD PARTIAL FLOOR PLANS	23	12724391
LF-59	M-101	PHASE 2 FIRST AND SECOND FLOOR PLANS - WEST	24	12724392
	M-102	PHASE 1 FIRST AND SECOND FLOOR PLANS - EAST	25	12724393
	M-301	SECTIONS	26	12724394
	M-401	ENLARGED MECHANICAL ROOM PLANS	27	12724395
	M-402	ENLARGED MECHANICAL ROOM PLANS	28	12724396
LP-21	M-101	PARTIAL FIRST FLOOR PLAN - MECHANICAL	29	12724397
	M-102	PARTIAL FIRST FLOOR PLAN - MECHANICAL	30	12724398
	M-103	PARTIAL FIRST FLOOR PLAN - MECHANICAL	31	12724399
	M-104	PARTIAL SECOND FLOOR PLAN - MECHANICAL	32	12724400
	M-301	SECTION	33	12724401
	M-401	ENLARGED MECHANICAL ROOM LAYOUT	34	12724402
LP-27	M-101	PARTIAL FIRST FLOOR PLAN	35	12724403
	M-102	PARTIAL SECOND FLOOR PLAN	36	12724404
	M-301	SECTIONS	37	12724405
	M-401	ENLARGED MECHANICAL ROOM PLANS	38	12724406
LP-33	M-101	FIRST AND SECOND FLOOR PLANS	39	12724407
LP-34	M-101	FIRST AND SECOND FLOOR PLANS - WING A	40	12724408
	M-102	FIRST AND SECOND FLOOR PLANS - WING B	41	12724409
O-22	M-101	ROOF PLAN - WINGS A AND ELEVATION REFERENCE	42	12724410
	M-102	MACHINE ROOF PLAN AND ELEVATOR SHAFT SECTIONS	43	12724411
O-26	A-101	FIRST FLOOR PLAN	44	12724412
	A-102	SECOND FLOOR PLAN	45	12724413
	A-103	THIRD AND FOURTH FLOOR PLANS	46	12724414
	M-101	FIRST FLOOR PLAN	47	12724415
	M-102	SECOND FLOOR PLAN	48	12724416
	M-103	THIRD AND FOURTH FLOOR PLANS	49	12724417
	M-401	ENLARGED MECHANICAL ROOM PLANS	50	12724418
O-27	M-101	PARTIAL FIRST FLOOR PIPING PLAN - AREA B	51	12724419
	M-401	ENLARGED FIRST FLOOR WATER PLAN - AREA B	52	12724420
Q-80	M-101	FIRST FLOOR PLAN	53	12724421
	M-102	SECOND FLOOR PLAN	54	12724422
	M-103	FIRST FLOOR PLAN	55	12724423
	M-104	POOL FLOOR PLAN	56	12724424
	M-105	ROOF PLAN	57	12724425
	M-401	ENLARGED MECHANICAL ROOM PLAN	58	12724426
SP-12	M-101	FIRST FLOOR PLAN	59	12724427
	M-102	SECOND FLOOR PLAN	60	12724428
SP-108	M-101	MECHANICAL FLOOR PLAN	61	12724429
SP-132	M-101	HVAC PIPING FLOOR PLAN	62	12724430
	M-401	ENLARGED PLANS AND SECTIONS	63	12724431
SP-256	M-101	FIRST FLOOR PLAN	64	12724432
	M-102	SECOND FLOOR PLAN	65	12724433
	M-103	PLANS AND SECTION	66	12724434
SP-300	M-101	PARTIAL FIRST FLOOR PLAN NORTH - HVAC	67	12724435
	M-102	PARTIAL FIRST FLOOR PLAN SOUTH - HVAC	68	12724436
	M-103	PARTIAL SECOND FLOOR PLANS - HVAC	69	12724437
	M-301	CROSS SECTION	70	12724438
	M-302	MECHANICAL BUILDING SECTION	71	12724439
	M-401	ENLARGED MECHANICAL PARTIAL PLANS	72	12724440

Building No.	Drawing No.	Drawing Title	Sheet No.	NAVFAC No.
SP-381	M-100	KEY PLAN	73	12724441
	M-101	PARTIAL FIRST FLOOR PLAN - MECHANICAL	74	12724442
	M-102	PARTIAL SECOND FLOOR PLAN - MECHANICAL	75	12724443
	M-103	PARTIAL FLOOR PLANS - MECHANICAL	76	12724444
	M-104	PARTIAL FIRST FLOOR PLAN- MECHANICAL	77	12724445
	M-105	PARTIAL SECOND FLOOR PLAN - MECHANICAL	78	12724446
	M-106	PARTIAL FIRST & SECOND FLOOR PLANS - MECHANICAL	79	12724447
	M-107	PARTIAL FLOOR PLANS - MECHANICAL	80	12724448
	M-108	PARTIAL FIRST FLOOR PLAN - MECHANICAL	81	12724449
	M-109	PARTIAL SECOND FLOOR PLAN - MECHANICAL	82	12724450
	M-110	PARTIAL FIRST FLOOR PLAN - MECHANICAL	83	12724451
	M-401	ENLARGED FLOOR PLAN AND SECTION	84	12724452
	M-402	ENLARGED FLOOR PLAN AND SECTION	85	12724453
	M-403	ENLARGED FLOOR PLAN AND SECTION	86	12724454
	M-404	ENLARGED FLOOR PLAN AND SECTION	87	12724455
	M-405	ENLARGED FLOOR PLAN AND SECTION	88	12724456
	M-406	ENLARGED FLOOR PLAN AND SECTION	89	12724457
V-53	M-101	PARTIAL FIRST FLOOR PIPING PLAN - AREA A	90	12724458
	M-102	PARTIAL FIRST FLOOR PIPING PLAN - AREA B	91	12724459
	M-103	PARTIAL FIRST FLOOR PIPING PLAN - AREA C	92	12724460
	M-104	PARTIAL FIRST FLOOR PIPING PLAN - AREA D	93	12724461
	M-105	PARTIAL SECOND FLOOR DUCTWORK PLAN - AREA A	94	12724462
	M-106	PARTIAL SECOND FLOOR DUCTWORK PLAN - AREA C	95	12724463
	M-107	PARTIAL THIRD FLOOR DUCTWORK PLAN - AREA A	96	12724464
	M-108	PARTIAL THIRD FLOOR DUCTWORK PLAN - AREA B	97	12724465
	M-109	PARTIAL THIRD FLOOR DUCTWORK PLAN - AREA C	98	12724466
	M-110	PARTIAL THIRD FLOOR DUCTWORK PLAN - AREA D	99	12724467
	M-111	PARTIAL ROOF PLAN - AREA A	100	12724468
	M-112	PARTIAL ROOF PLAN - AREA B	101	12724469
	M-113	PARTIAL ROOF PLAN - AREA C	102	12724470
	M-114	PARTIAL ROOF PLAN - AREA D	103	12724471
	M-401	ENLARGED FIRST FLOOR PLANS	104	12724472
	M-402	ENLARGED PLANS	105	12724473
	M-403	ENLARGED PLANS	106	12724474
V-61	M-101	FIRST FLOOR PLAN	107	12724475
	M-102	SECOND FLOOR PLAN	108	12724476
	M-103	PARTIAL FIRST FLOOR PLAN AND SECTIONS	109	12724477
W-130	M-101	FIRST FLOOR PLAN - SOUTH END	110	12724478
X-70	M-101	FLOOR PLAN - AREA C	111	12724479
Z-133	M-101	ROOF/PENTHOUSE PLAN - AREA A	112	12724480
	M-102	ROOF/PENTHOUSE PLAN - AREA B	113	12724481
	M-103	ROOF/PENTHOUSE PLAN - AREA A	114	12724482
	M-104	ROOF/PENTHOUSE PLAN - AREA B	115	12724483
	M-401	ROOF/PENTHOUSE PARTIAL PLAN	116	12724484
	M-402	ROOF/PENTHOUSE PARTIAL PLAN	117	12724485
	M-403	ROOF/PENTHOUSE PARTIAL PLAN	118	12724486
	M-404	ROOF/PENTHOUSE PARTIAL PLAN	119	12724487

SYM	DESCRIPTION	DATE	APPR

NAVFAC

ch2m:
2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

SEAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ DRW IHK CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

DFSP

NORFOLK, VA

HVAC AND DDC
FACILITY OPTIMIZATION

GENERAL
VICINITY AND AREA MAPS AND DRAWINGS INDEX

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

NAVFAC DRAWING NO. 12724369

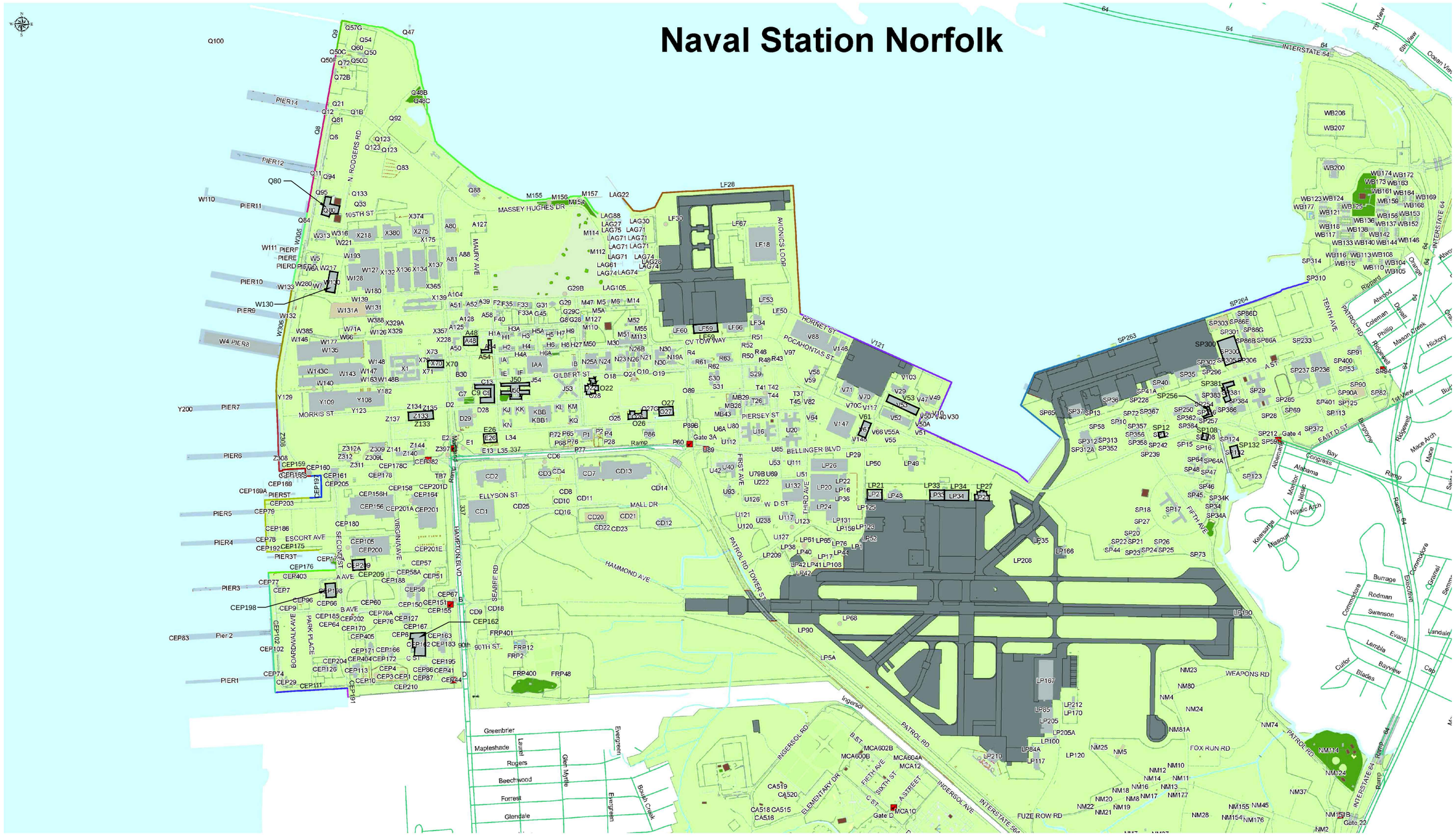
SHEET 1 OF 119

G-001

DRAWFORM REVISION: 10 MAY 2014

672402

Naval Station Norfolk



BASE MAP
NOT TO SCALE

N

LEGEND

BUILDINGS IN THIS PROJECT

SYM	DESCRIPTION	DATE	APPR

NAVFAC

ch2m:
2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

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ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ DRW IHK CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

DFSP

NORFOLK, VA

HVAC AND DDC
FACILITY OPTIMIZATION

GENERAL
BASE MAP

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

NAVFAC DRAWING NO. 12724370

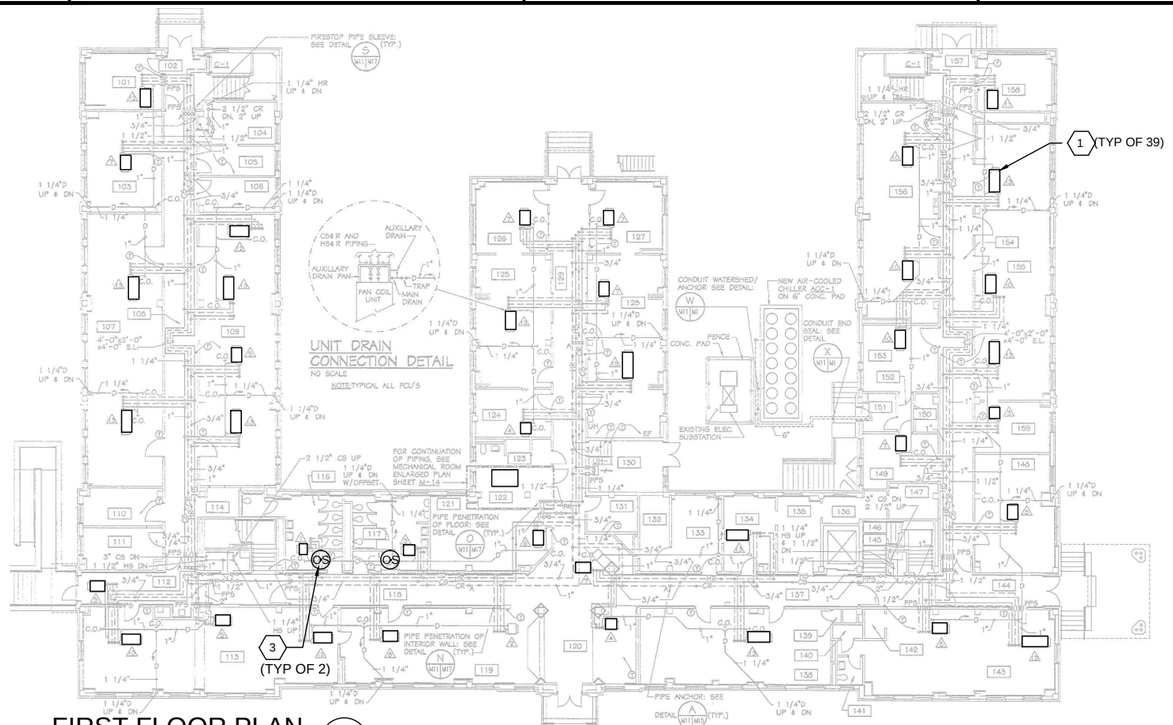
SHEET 2 OF 119

G-002

DRAWFORM REVISION: 10 MAY 2014

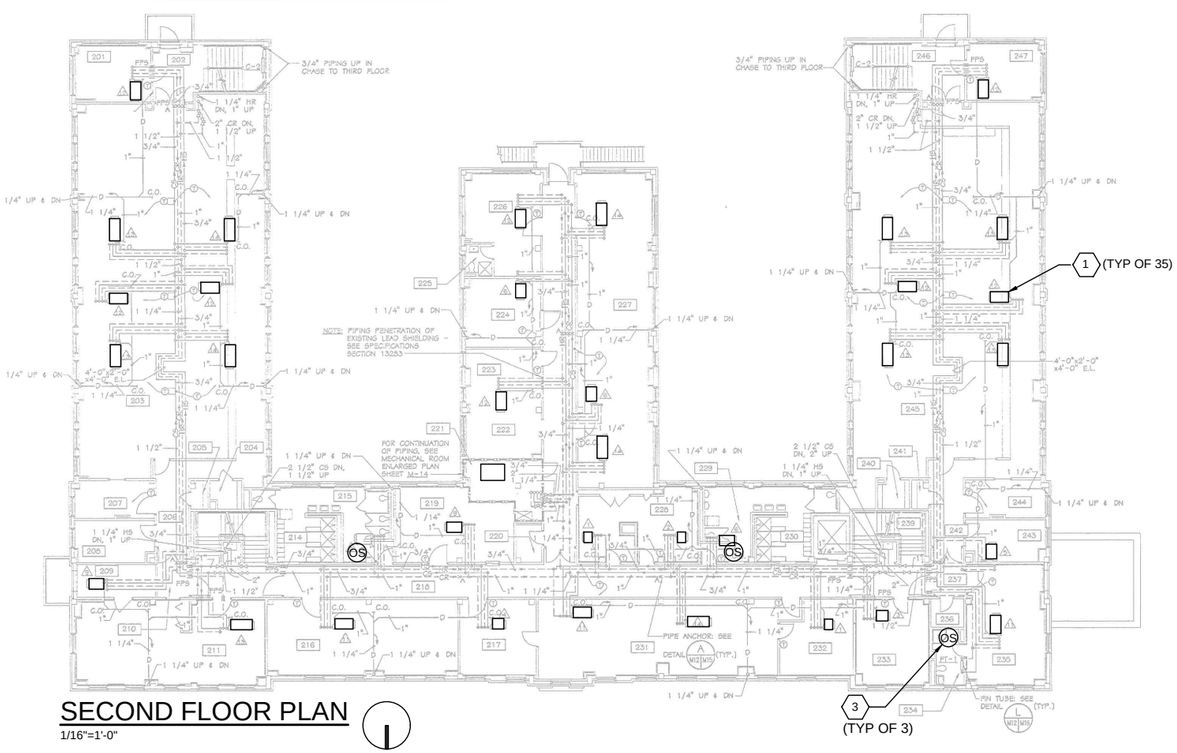
672402

BUILDING A-48



FIRST FLOOR PLAN

1/16"=1'-0"



SECOND FLOOR PLAN

1/16"=1'-0"

GENERAL NOTES

1. THIS PROJECT INCLUDES EXPANSION OF THE EXISTING DDC CONTROL SYSTEM TO INCLUDE POINTS TABULATED IN THE POINTS LIST IN PART 6 OF THIS RFP. WORK ALSO INCLUDES IMPLEMENTATION OF ECM (S) WITHIN THE FACILITY.
2. PROVIDE EQUIPMENT AND CONTROL COMPONENTS FOR A COMPLETE AND FUNCTIONAL SYSTEM.
3. APPROXIMATE LOCATIONS OF EQUIPMENT ARE INDICATED ON CONCEPT DRAWINGS. APPLICABLE NOTES ARE IDENTIFIED BY HEXAGONAL FLAGS.
4. EXACT LOCATIONS FOR EXISTING EQUIPMENT, SUPPORT INFRASTRUCTURE, AND AVAILABLE DDC PANELS ARE NOT KNOWN. CONTRACTOR SHALL FIELD-LOCATE EXISTING EQUIPMENT AND MODIFY THE BUILDING SYSTEMS AS NECESSARY FOR EXPANSION OF THE DDC SYSTEM AND ECM IM PLEMENTATION.
5. REFER TO RECORD DRAWINGS IN PART 6 FOR INFORMATION REGARDING EXISTING EQUIPMENT CONFIGURATION AND CONTROL SEQUENCES.
6. PHYSICAL LAYOUT OF MECHANICAL ROOMS MAY DIFFER FROM RECORD DRAWING PLANS. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF CENTRAL PLANT EQUIPMENT, DUCTWORK, AND PIPING.

SHEET KEYNOTES

1. INSTALL DISCHARGE AIR TEMPERATURE SENSOR AT OUTLET OF ALL CEILING MOUNTED FAN COIL UNITS (APPROXIMATE COUNT OF 111 PER THE DDC POINTS LIST INCLUDED IN PART 6 OF THIS RFP). CONNECT ALL POINTS TO THE BUILDING DDC SYSTEM.
2. NOT USED.
3. ECM WORK INCLUDES REPLACING EXISTING WALL MOUNTED SWITCHES WITH WALL MOUNTED OCCUPANCY SENSORS TO TRIGGER LIGHTING IN THE RESTROOMS.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

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2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

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ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ | DRW IHK | CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

DFSP

NORFOLK, VA

HVAC AND DDC
FACILITY OPTIMIZATION

BUILDING A-48
FIRST AND SECOND FLOOR PLANS

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

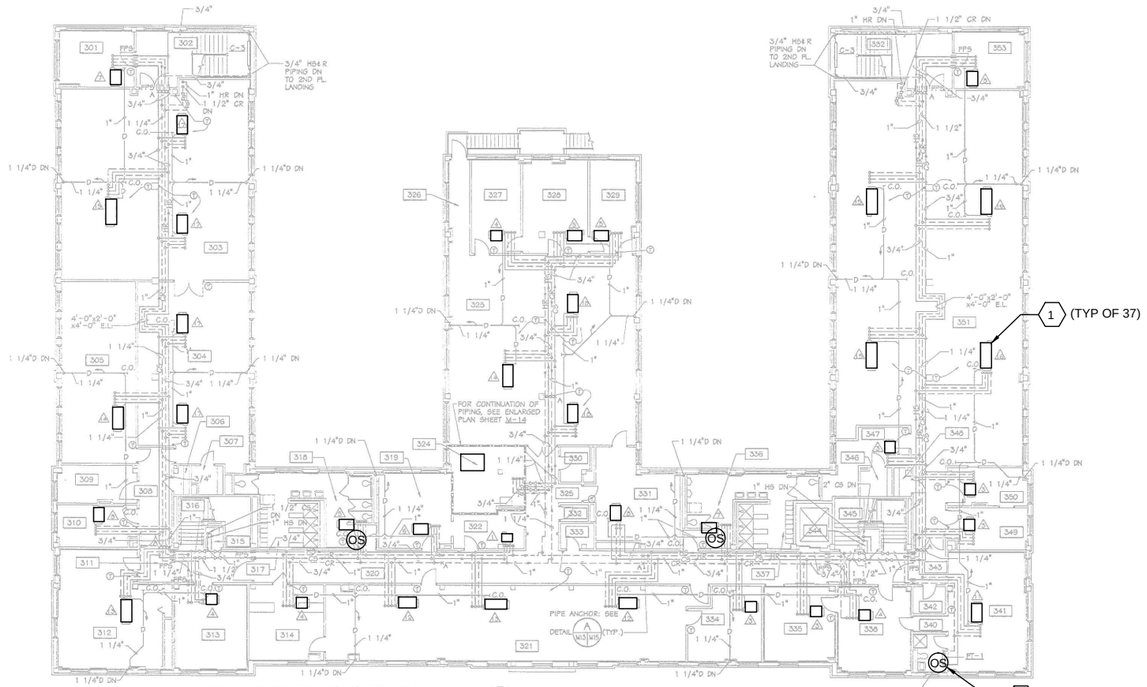
NAVFAC DRAWING NO. 12724371

SHEET 3 OF 119

M-101

DRAWFORM REVISION: 10 MAY 2014

672402



THIRD FLOOR PLAN

1/16"=1'-0"

GENERAL NOTES

1. THIS PROJECT INCLUDES EXPANSION OF THE EXISTING DDC CONTROL SYSTEM TO INCLUDE POINTS TABULATED IN THE POINTS LIST IN PART 6 OF THIS RFP. WORK ALSO INCLUDES IMPLEMENTATION OF ECM (S) WITHIN THE FACILITY.
2. PROVIDE EQUIPMENT AND CONTROL COMPONENTS FOR A COMPLETE AND FUNCTIONAL SYSTEM.
3. APPROXIMATE LOCATIONS OF EQUIPMENT ARE INDICATED ON CONCEPT DRAWINGS. APPLICABLE NOTES ARE IDENTIFIED BY HEXAGONAL FLAGS.
4. EXACT LOCATIONS FOR EXISTING EQUIPMENT, SUPPORT INFRASTRUCTURE, AND AVAILABLE DDC PANELS ARE NOT KNOWN. CONTRACTOR SHALL FIELD-LOCATE EXISTING EQUIPMENT AND MODIFY THE BUILDING SYSTEMS AS NECESSARY FOR EXPANSION OF THE DDC SYSTEM AND ECM IM PLEMENTATION.
5. REFER TO RECORD DRAWINGS IN PART 6 FOR INFORMATION REGARDING EXISTING EQUIPMENT CONFIGURATION AND CONTROL SEQUENCES.
6. PHYSICAL LAYOUT OF MECHANICAL ROOMS MAY DIFFER FROM RECORD DRAWING PLANS. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF CENTRAL PLANT EQUIPMENT, DUCTWORK, AND PIPING.

SHEET KEYNOTES

1. INSTALL DISCHARGE AIR TEMPERATURE SENSOR AT OUTLET OF ALL CEILING MOUNTED FAN COIL UNITS (APPROXIMATE COUNT OF 111 PER THE DDC POINTS LIST INCLUDED IN PART 6 OF THIS RFP). CONNECT ALL POINTS TO THE BUILDING DDC SYSTEM.
2. NOT USED.
3. ECM WORK INCLUDES REPLACING EXISTING WALL MOUNTED SWITCHES WITH WALL MOUNTED OCCUPANCY SENSORS TO TRIGGER LIGHTING IN THE RESTROOMS.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

ch2m
2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ | DRW IHK | CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

NORFOLK, VA

DFSP

HVAC AND DDC
FACILITY OPTIMIZATION

BUILDING A-48
THIRD FLOOR AND MECHANICAL ROOM PLANS

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

NAVFAC DRAWING NO. 12724372

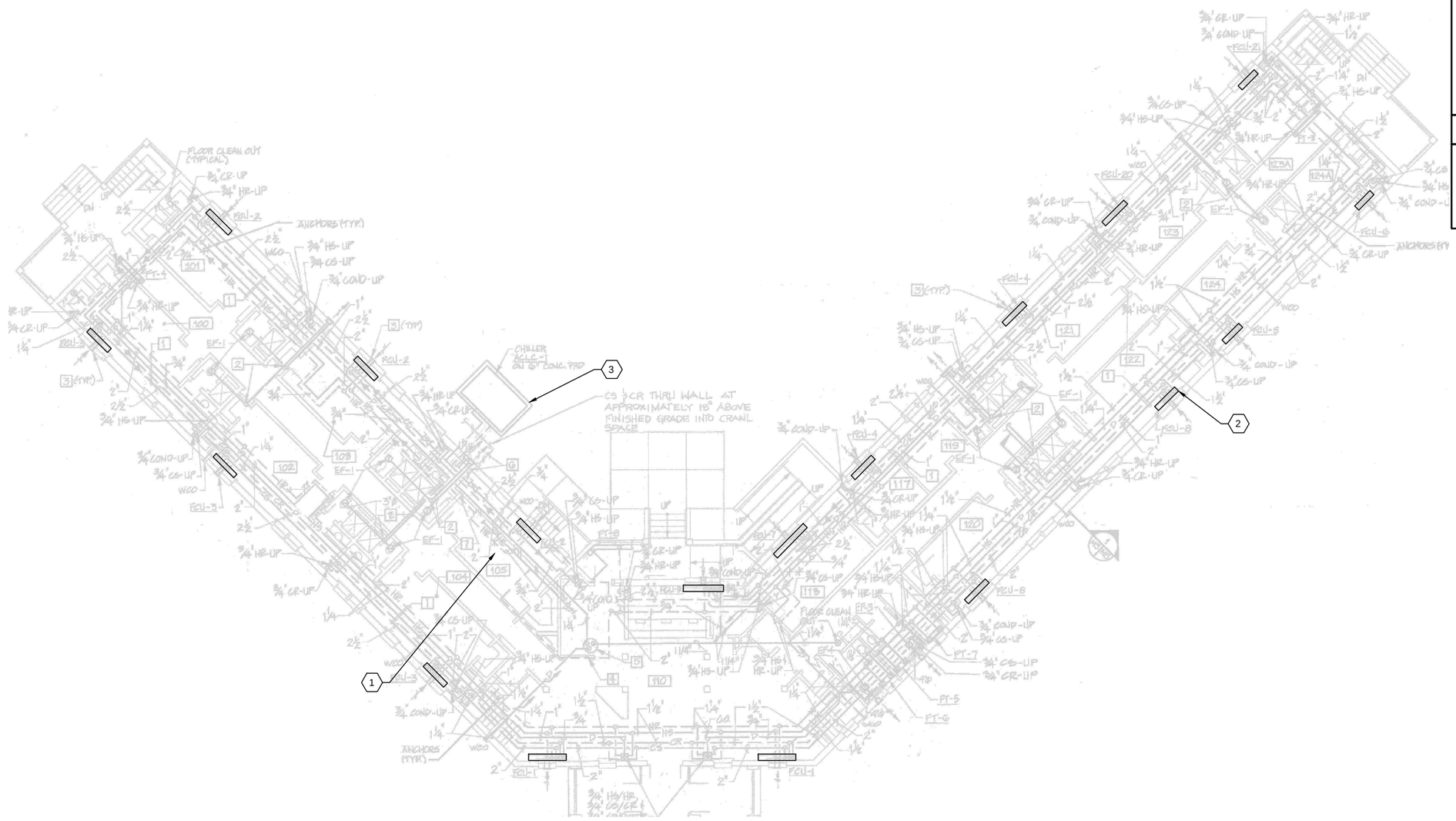
SHEET 4 OF 119

M-102

DRAWFORM REVISION: 10 MAY 2014

672402

BUILDING A-54



FIRST FLOOR MECHANICAL PLAN

3/32"=1'-0"

GENERAL NOTES

1. THIS PROJECT INCLUDES EXPANSION OF THE EXISTING DDC CONTROL SYSTEM TO INCLUDE POINTS TABULATED IN THE POINTS LIST IN PART 6 OF THIS RFP.
2. APPROXIMATE LOCATIONS OF EQUIPMENT ARE INDICATED ON CONCEPT DRAWINGS. APPLICABLE NOTES ARE IDENTIFIED BY HEXAGONAL FLAGS.
3. EXACT LOCATIONS FOR EXISTING EQUIPMENT AND AVAILABLE DDC PANELS ARE NOT KNOWN. CONTRACTOR SHALL FIELD-LOCATE EXISTING EQUIPMENT AND INSTALL ADDITIONAL CONTROLLERS OR PANELS AS NECESSARY TO EXTEND THE EXISTING DDC NETWORK TO ACCOMMODATE THE ADDITIONAL CONTROL POINTS.
4. PHYSICAL LAYOUT OF MECHANICAL ROOMS MAY DIFFER FROM RECORD DRAWING PLANS. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF CENTRAL PLANT EQUIPMENT, DUCTWORK, AND PIPING FOR INSTALLATION OF ADDITIONAL DDC SENSORS AND EQUIPMENT.
5. REFER TO RECORD DRAWINGS IN PART 6 FOR INFORMATION REGARDING EXISTING EQUIPMENT CONFIGURATION AND CONTROL SEQUENCES.

SHEET KEYNOTES

1 MECHANICAL ROOM BELOW. REFER TO SHEET M-102.

2 TYPICAL EXISTING FAN-COIL UNIT.

3 FIELD VERIFY EXISTING AIR-COOLED CHILLER LOCATION.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

ch2m

2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ | DRW IHK | CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

DFSP

NORFOLK, VA

HVAC AND DDC
FACILITY OPTIMIZATION

BUILDING A-54
FIRST FLOOR PLAN

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

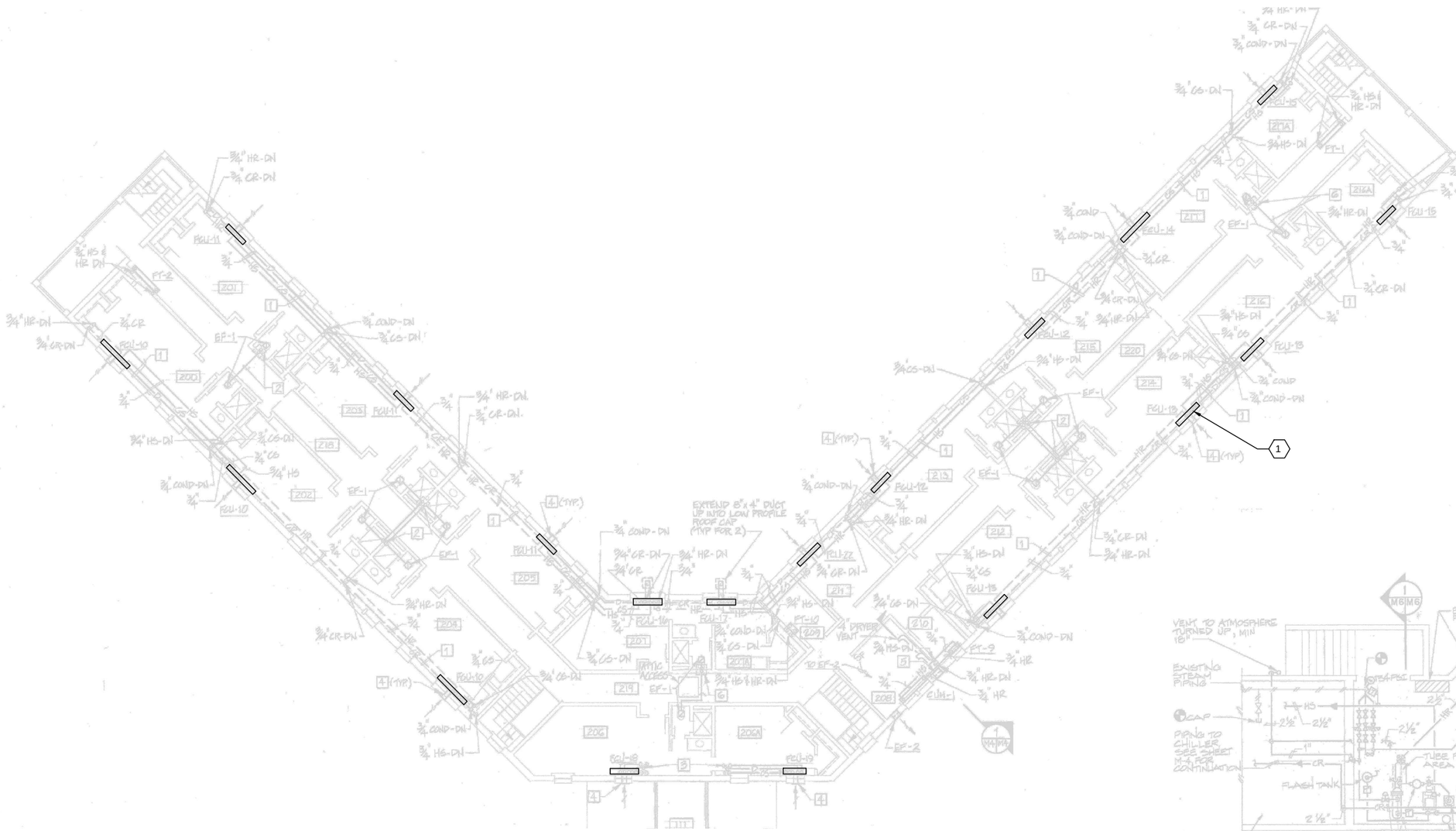
NAVFAC DRAWING NO. 12724373

SHEET 5 OF 119

M-101

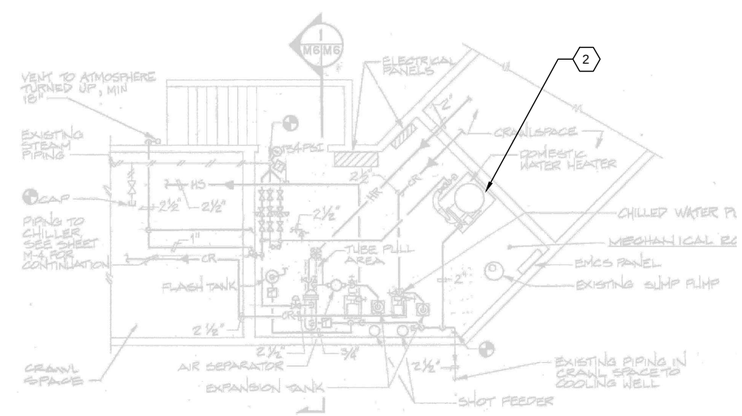
DRAWFORM REVISION: 10 MAY 2014

672402



SECOND FLOOR MECHANICAL PLAN

3/32"=1'-0"



ENLARGED MECHANICAL ROOM PLAN

3/16"=1'-0"

GENERAL NOTES

1. THIS PROJECT INCLUDES EXPANSION OF THE EXISTING DDC CONTROL SYSTEM TO INCLUDE POINTS TABULATED IN THE POINTS LIST IN PART 6 OF THIS RFP.
2. APPROXIMATE LOCATIONS OF EQUIPMENT ARE INDICATED ON CONCEPT DRAWINGS. APPLICABLE NOTES ARE IDENTIFIED BY HEXAGONAL FLAGS.
3. EXACT LOCATIONS FOR EXISTING EQUIPMENT AND AVAILABLE DDC PANELS ARE NOT KNOWN. CONTRACTOR SHALL FIELD-LOCATE EXISTING EQUIPMENT AND INSTALL ADDITIONAL CONTROLLERS OR PANELS AS NECESSARY TO EXTEND THE EXISTING DDC NETWORK TO ACCOMMODATE THE ADDITIONAL CONTROL POINTS.
4. PHYSICAL LAYOUT OF MECHANICAL ROOMS MAY DIFFER FROM RECORD DRAWING PLANS. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF CENTRAL PLANT EQUIPMENT, DUCTWORK, AND PIPING FOR INSTALLATION OF ADDITIONAL DDC SENSORS AND EQUIPMENT.
5. REFER TO RECORD DRAWINGS IN PART 6 FOR INFORMATION REGARDING EXISTING EQUIPMENT CONFIGURATION AND CONTROL SEQUENCES.

SHEET KEYNOTES

1 TYPICAL EXISTING FAN-COIL UNIT.

2 DOMESTIC WATER HEATER.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

ch2m:
2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ | DRW IHK | CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

DFSP

NORFOLK, VA

HVAC AND DDC FACILITY OPTIMIZATION

BUILDING A-54

FIRST FLOOR AND MECHANICAL ROOM PLANS

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

NAVFAC DRAWING NO. 12724374

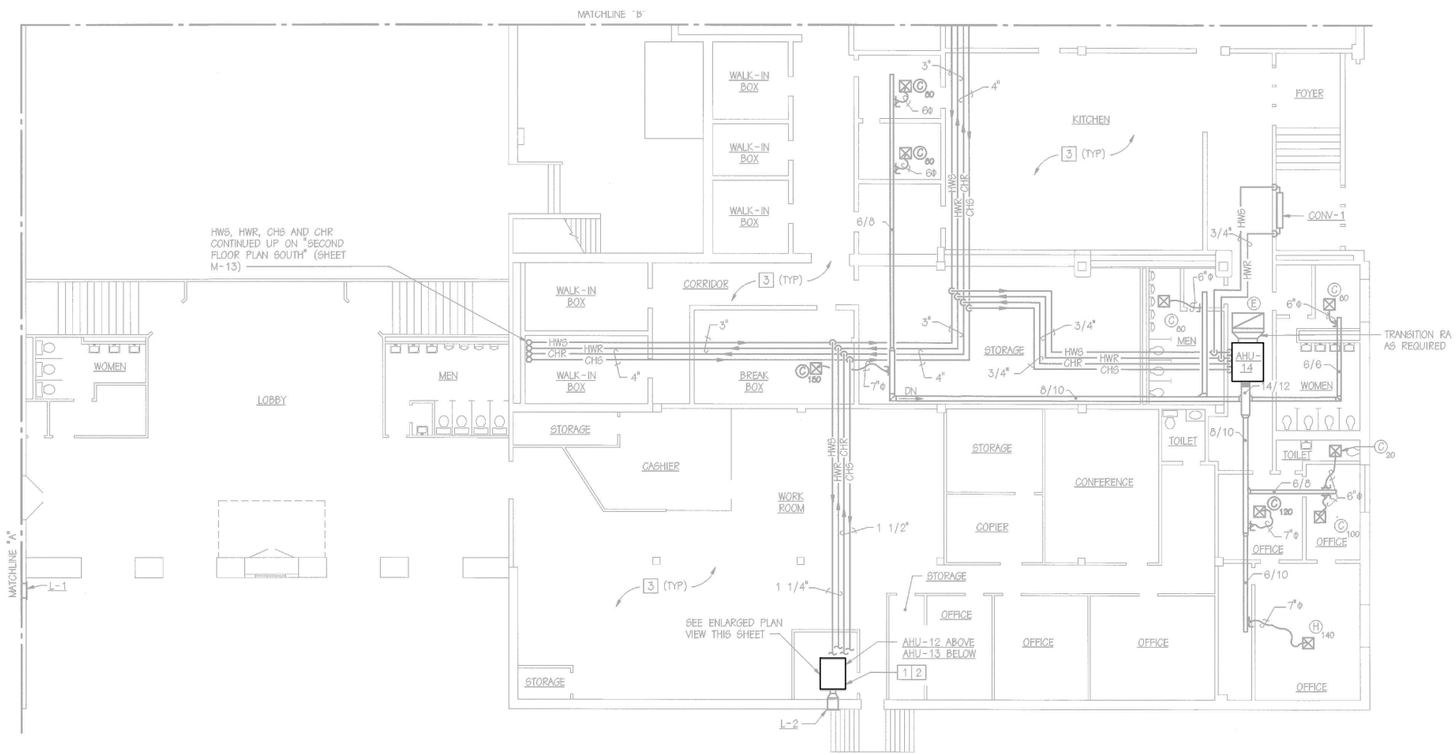
SHEET 6 OF 119

M-102

DRAWFORM REVISION: 10 MAY 2014

672402

BUILDING C-9



PARTIAL FIRST FLOOR PLAN

3/32"=1'-0"

GENERAL NOTES

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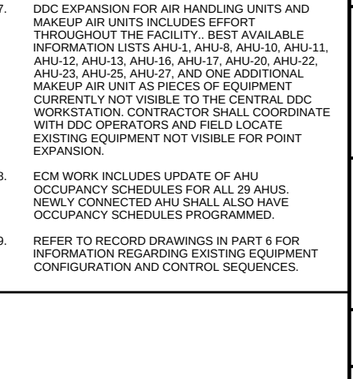
8. ECM WORK INCLUDES UPDATE OF AHU OCCUPANCY SCHEDULES FOR ALL 29 AHUS. NEWLY CONNECTED AHU SHALL ALSO HAVE OCCUPANCY SCHEDULES PROGRAMMED.
9. REFER TO RECORD DRAWINGS IN PART 6 FOR INFORMATION REGARDING EXISTING EQUIPMENT CONFIGURATION AND CONTROL SEQUENCES.



KEY PLAN

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

ch2m
2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES. PTJ | DRW IHK | CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

NORFOLK, VA

DFSP

HVAC AND DDC
FACILITY OPTIMIZATION

BUILDING C-9
PARTIAL FIRST FLOOR PLAN

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

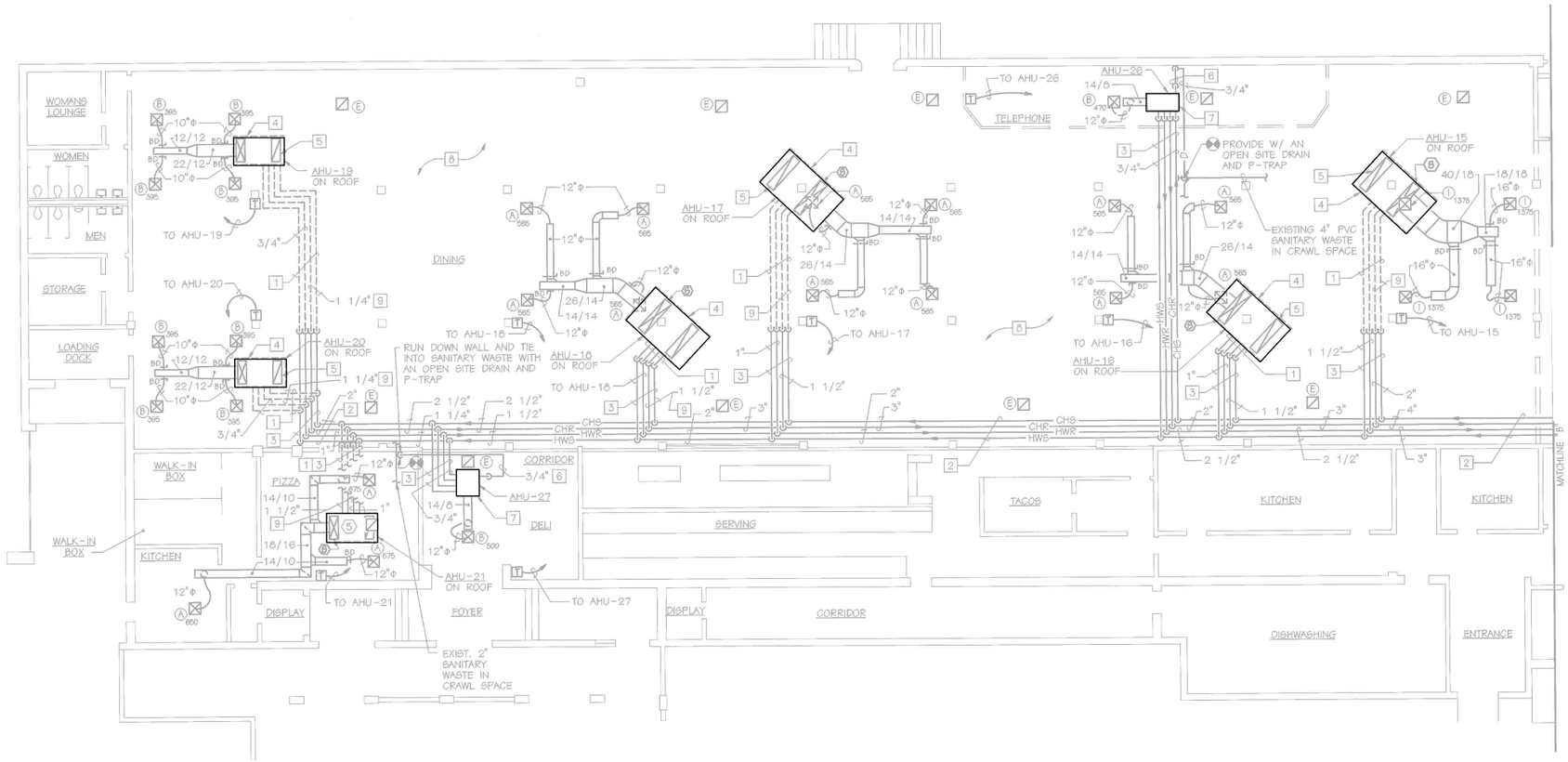
NAVFAC DRAWING NO. 12724375

SHEET 7 OF 119

M-101

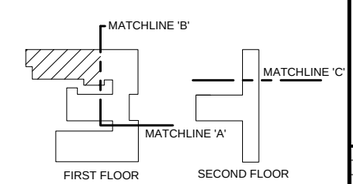
DRAWFORM REVISION: 10 MAY 2014

672402



NORTH WING PLAN

3/32"=1'-0"



KEY PLAN

GENERAL NOTES

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9. REFER TO RECORD DRAWINGS IN PART 6 FOR INFORMATION REGARDING EXISTING EQUIPMENT CONFIGURATION AND CONTROL SEQUENCES.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

ch2m

2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ DRW IHK CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

DFSP

NORFOLK, VA

HVAC AND DDC FACILITY OPTIMIZATION

BUILDING C-9
NORTH WING PLAN

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

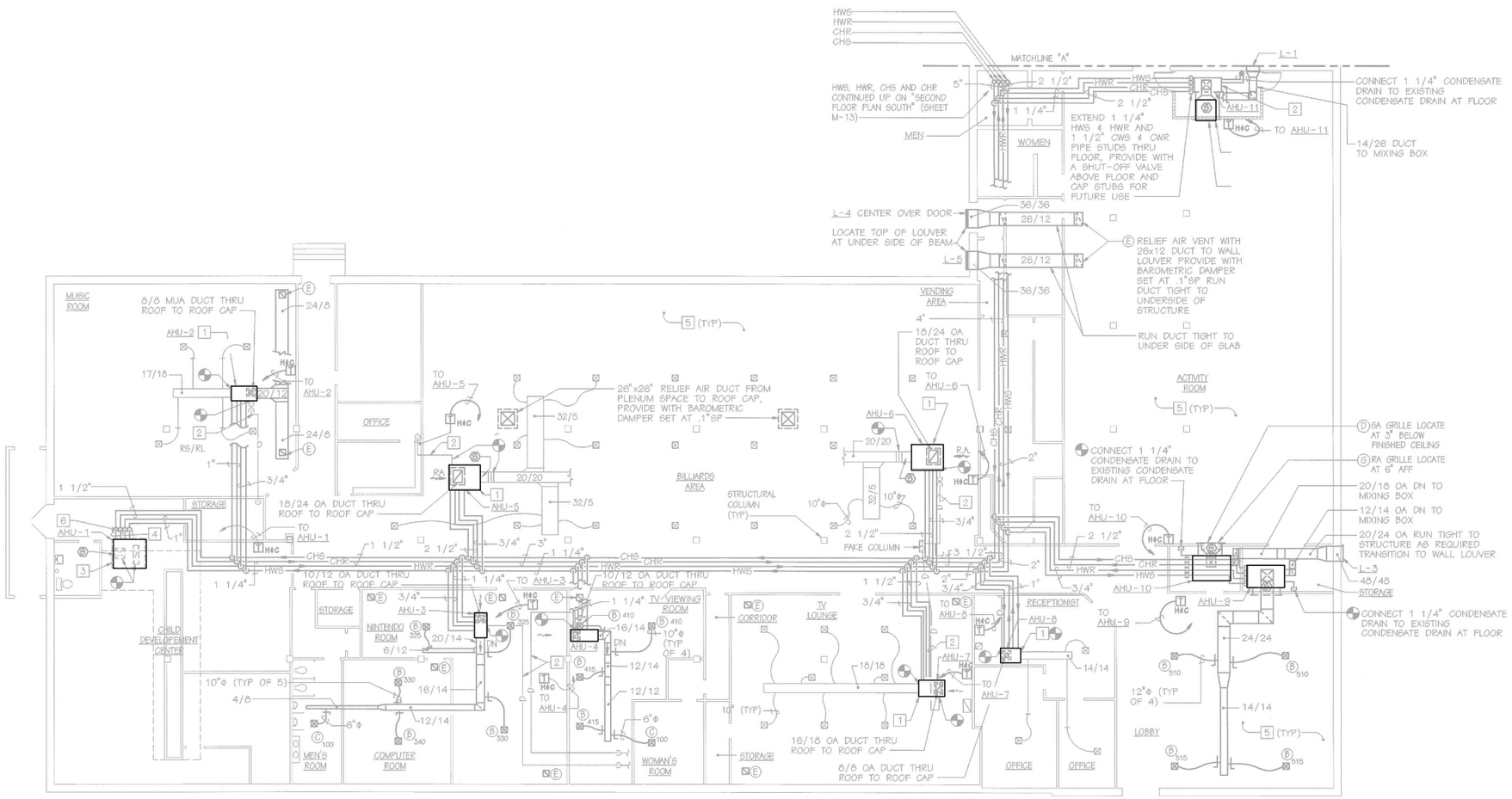
NAVFAC DRAWING NO. 12724376

SHEET 8 OF 119

M-102

DRAWFORM REVISION: 10 MAY 2014

672402



SOUTH WING PLAN

3/32"=1'-0"

N

GENERAL NOTES

1. THIS PROJECT INCLUDES EXPANSION OF THE EXISTING DDC CONTROL SYSTEM TO INCLUDE POINTS TABULATED IN THE POINTS LIST IN PART 6 OF THIS RFP. WORK ALSO INCLUDES IMPLEMENTATION OF ECM(S) WITHIN THE FACILITY.
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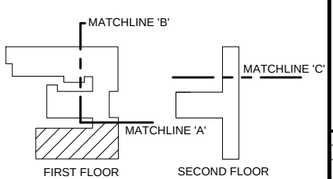


N

KEY PLAN

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

ch2m:
2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

A/E INFO

APPROVED

FOR COMMANDER NAVFAC
ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES	PTJ	DRW	IHK	CHK	BDC
<<PM/DM>>					MHP
BRANCH MANAGER					
CHIEF ENG/ARCH					
<<XX>>					

NAVAL FACILITIES ENGINEERING COMMAND
MID-ATLANTIC
DFSP
NORFOLK, VA

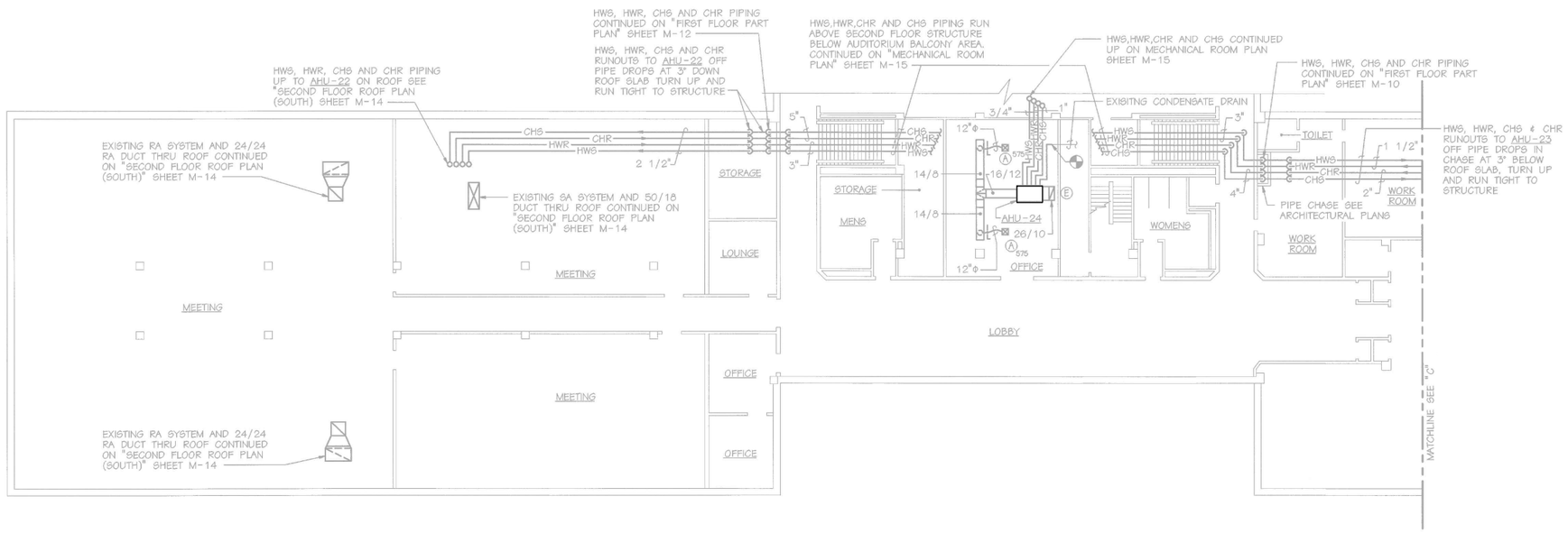
HVAC AND DDC FACILITY OPTIMIZATION
BUILDING C-9
SOUTH WING PLAN

SCALE: AS NOTED
EPROJECT NO.: 1333285
CONSTR. CONTR. NO. N62583-11-D-0533
NAVFAC DRAWING NO. 12724377
SHEET 9 OF 119

M-103

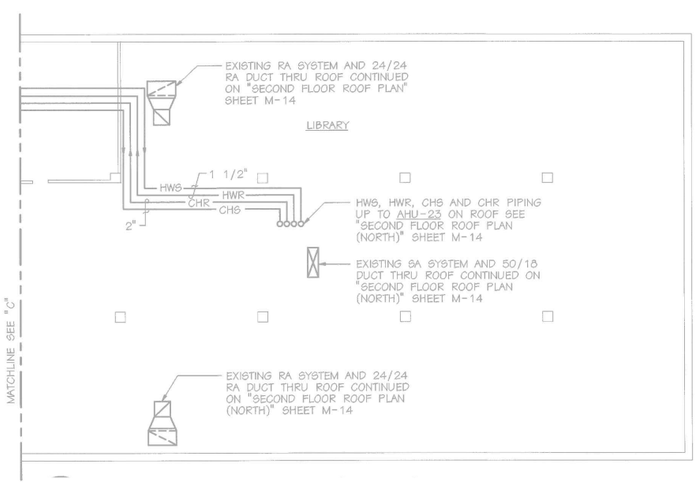
DRAWFORM REVISION: 10 MAY 2014

672402



SECOND FLOOR PLAN - SOUTH

3/32"=1'-0"



SECOND FLOOR PLAN - NORTH

3/32"=1'-0"

GENERAL NOTES

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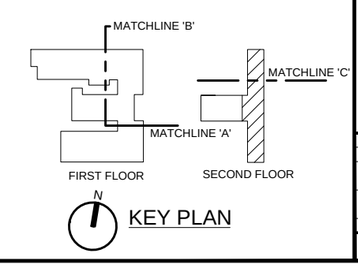


KEY PLAN

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

ch2m

2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ | DRW IHK | CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

DFSP

NORFOLK, VA

HVAC AND DDC
FACILITY OPTIMIZATION

BUILDING C-9
SECOND FLOOR PLANS

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

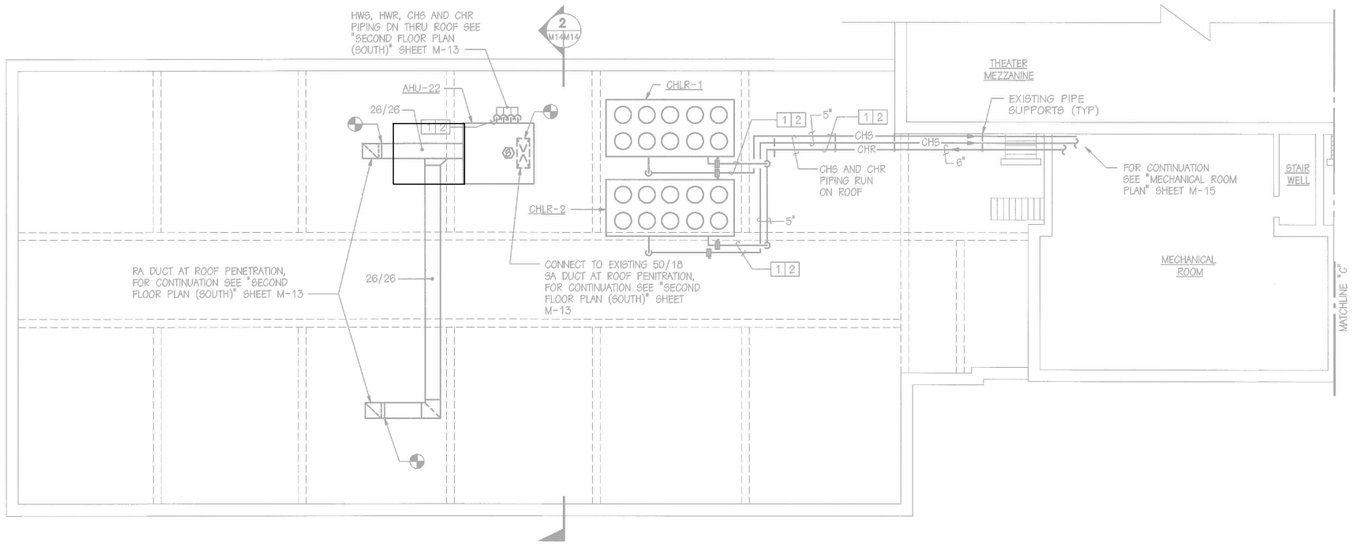
NAVFAC DRAWING NO. 12724378

SHEET 10 OF 119

M-104

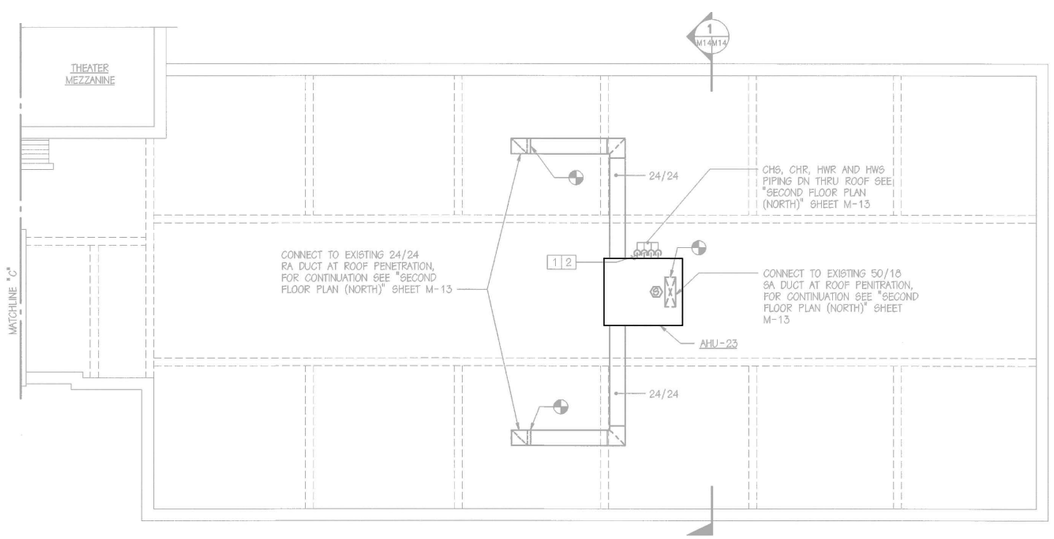
DRAWFORM REVISION: 10 MAY 2014

672402



SECOND FLOOR ROOF PLAN - SOUTH

3/32"=1'-0"



SECOND FLOOR ROOF PLAN - NORTH

3/32"=1'-0"

GENERAL NOTES

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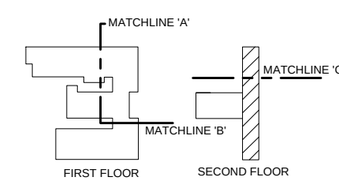


KEY PLAN

SYM	DESCRIPTION	DATE	APPR

SEAL

ch2m
2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ | DRW IHK | CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

DFSP

NORFOLK, VA

HVAC AND DDC FACILITY OPTIMIZATION

BUILDING C-9

SECOND FLOOR ROOF PLANS

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

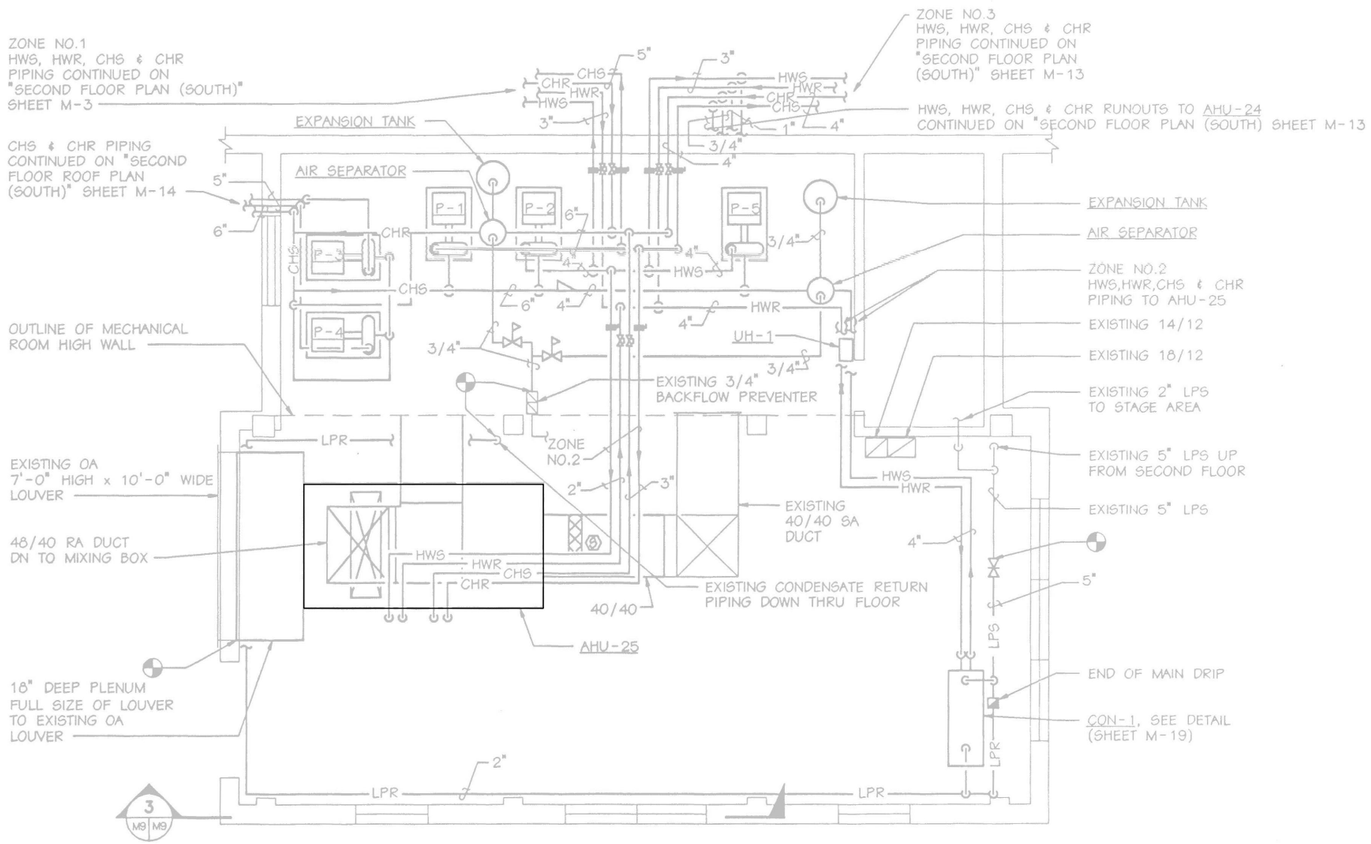
NAVFAC DRAWING NO. 12724379

SHEET 11 OF 119

M-105

DRAWFORM REVISION: 10 MAY 2014

672402



ENLARGED MECHANICAL ROOM PLAN

1/4"=1'-0"

GENERAL NOTES

1. THIS PROJECT INCLUDES EXPANSION OF THE EXISTING DDC CONTROL SYSTEM TO INCLUDE POINTS TABULATED IN THE POINTS LIST IN PART 6 OF THIS RFP. WORK ALSO INCLUDES IMPLEMENTATION OF ECM(S) WITHIN THE FACILITY.
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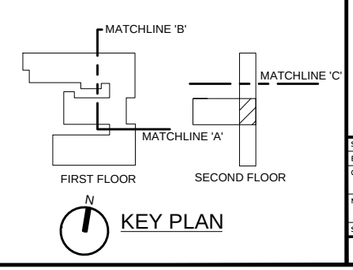

KEY PLAN

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

ch2m

2411 Dulles Corner Park
Suite 500
Herndon, VA 20177

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE 06/02/2016

DES PTJ | DRW IHK | CHK BDC

<<PM/DM>> MHP

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

NAVAL FACILITIES ENGINEERING COMMAND

MID-ATLANTIC

NORFOLK, VA

DFSP

HVAC AND DDC
FACILITY OPTIMIZATION

BUILDING C-9
ENLARGED MECHANICAL ROOM PLAN

SCALE: AS NOTED

EPROJECT NO.: 1333285

CONSTR. CONTR. NO. N62583-11-D-0533

NAVFAC DRAWING NO. 12724380

SHEET 12 OF 119

M-401

DRAWFORM REVISION: 10 MAY 2014

672402