



MID-ATLANTIC / PWD MAINE

FY-16 ENERGY PROJECTS

Building Narratives 100% DESIGN SUBMISSION

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The following is a synopsis of work to be completed on each building within the scope of the FY-16 Energy Projects. This document is not intended to be a stand-alone design document, nor is it intended to completely define the scope of work for a given building. These descriptions are intended only to briefly summarize the work required for a given building based on information gathered in the field to-date. This document will be continuously updated as additional information is gathered and as the design process proceeds. The four sub-tasks associated with the FY-16 Energy Projects are as follows:

- A. ROC at B374:** Provide remote monitoring and control of shipyard DDC, AMI, and SCADA systems in 25 buildings.
- B. R-22 HVAC Replacement & DDC Improvements:** Replace equipment utilizing R-22 refrigerant with new equipment utilizing R-410A or equivalent in 32 buildings. Connect these buildings to the network DDC with remote monitoring in B043, Maintenance Shop.
- C. Retrocommission Shipyard Command Center B086:** Reconfigure perimeter heating to accommodate current floor layouts in B086A, replace pneumatic controls with electrically operated valves, recommission the chilled water system on the first floor of B086, and add energy recovery ventilator units (ERVs) to the B086A air handlers (2).
- D. Retrocommission Shipyard Communications Hub B013:** Replace HVAC systems with VRF system, make repairs to the building envelope, connect new HVAC system to the DDC network, and upgrade the existing hot water heating system.

GLOSSARY OF ACRONYMS

Acronym	Description
AMI	Advanced Metering Infrastructure (digital networks capable of collecting and analyzing data from metered utilities such as electricity, steam, or water)
ATFP	Anti-Terrorism and Force Protection
BOD	Basis of Design
DDC	Direct Digital Control (automated control of HVAC equipment from a central supervisory controller)
ECC	Emergency Command Center
ERV	Energy Recovery Ventilator
GUI	Graphical User Interface
HMI	Human Machine Interface (the terminal through which an ICS can be controlled or monitored)
HVAC	Heating Ventilation and Air Conditioning
ICS	Industrial Control System (digital control and monitoring systems including AMI, DDC, or SCADA)
NAVFAC	Navy Facilities Engineering Command
PNSY	Portsmouth Naval Shipyard
PWD	Public Works Division
ROC	Regional Operations Center (supervisory center within the ECC containing an HMI and necessary server infrastructure for ICS control and monitoring)
SAES	Statement of Architect-Engineering Services
SC	Supervisory Controller
SCADA	Supervisory Control and Data Acquisition (control and monitoring of industrial processes including the power plant, dry docks, electrical distribution system, and water distribution system)
VRF	Variable Refrigerant Flow

Project: ROC at B374		Building No.: 002 - PROD SHOP ELEC SUBSTATION	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	This building has no existing controls. A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three five indoor space locations.		
RF Network	Install non-penetrating roof mount for RF access point on low-bay roof of adjacent B155. CAT5 cable shall be routed through existing penetrations in west wall of B002, and along existing path to JACE.		

Project: ROC at B374		Building No.: 007 - RIGGERS SHOP	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	This building has no existing controls. A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and five indoor space locations.		
RF Network	Mount RF access point to interior knee wall on third floor of northeast stairwell. CAT5 cable shall be routed along existing path to JACE.		

Project: B013 RCx		Building No.: 013 - VA CLASS PLANNING, COMM. CTR.	
<i>Project Objective:</i> Improve energy efficiency and occupant comfort in historic building.			
Work Item	Work Summary		
HVAC	Replace existing heating and cooling systems with new Variable Refrigerant Flow (VRF) units. System includes several outdoor pad-mounted high-efficiency inverter condensing units. Existing DX pad-mounted units will be removed. Local VRF distribution equipment will be ceiling mounted units. VRF piping for distribution equipment will be routed from the outdoor condensing units through walls and floors. Existing steam-to-hot water heating system shall be flushed, cleaned, and repaired to act as a backup to the VRF system.		
Electrical	Minor electrical work in basement for VRF systems power supply.		
DDC Systems	This building has no existing controls. New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to the ROC in B374 via RF network.		
Architectural	Existing historic wooden framed windows will be rehabilitated according to the previously approved standards for historic window repairs. This includes total window restoration including frames, hardware, sashes, glazing, paint, caulking, and installation of exterior storm units.		
RF Network	Contractor shall use non-penetrating mount for RF access point in interior sill of cupola window. CAT5 cable shall be routed along existing path to JACE.		

Project: R-22		Building No.: 014 - RADIOLOGICAL CONTROLS FAC.
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The AHU and ACCU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Connection of replacement R-22 equipment.	
DDC Systems	This building has no existing controls. New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.	
RF Network	Mount RF access point to interior of round attic window on east wall. CAT5 cable shall be routed along existing path to JACE.	

Project: R-22		Building No.: 018 - PROD SHOP, ADMIN
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	Two CRAC units, a chiller, and two ACCUs utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Civil	The existing concrete equipment mounting pad, bollards, and staircase to roof will be demolished and replaced to accommodate new equipment.	
Structural	Existing timber and/or steel frames for roof-mounted equipment may require rework or replacement. Contractor to field verify and submit plans for approval upon equipment selection.	
Electrical	Provide power for JACE supervisory controller. Connection of replacement R-22 equipment.	
DDC Systems	This building has no existing controls. New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.	
RF Network	Install non-penetrating roof-mount for RF access point on interior courtyard flat roof. CAT5 cable shall be routed through existing roof penetration for CRAC unit and along existing path through drop ceiling to JACE.	

Project: R-22		Building No.: 022 - O CLUB, AUDITORIUM, ADMIN
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	Four ACCUs, and four AHUs utilizing R-22 refrigerant will be removed and consolidated into a VRF system consisting of three ACCU and 4 heat pumps utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Connection of replacement R-22 equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.	
RF Network	Install non-penetrating roof-mount for RF access point on west roof. CAT5 cable shall be routed through existing roof penetration for rooftop HVAC equipment and along existing path to JACE.	

Project: R-22		Building No.: 027 - COMSUBLANT ADMIN
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	Three ACCUs, and three AC units utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Connection of replacement R-22 equipment.	
DDC Systems	This building has no existing controls. New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.	
RF Network	Mount RF access point to interior wall on third floor of south stairwell. CAT5 cable shall be routed along existing path to JACE.	

Project: R-22		Building No.: 029 - FIRE STATION / SECURITY
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The chiller, two ACCUs, a CRAC unit, and AHU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Civil	The existing concrete equipment mounting pad will be demolished and replaced to accommodate new equipment.	
Electrical	Provide power for JACE supervisory controller. Connection of replacement R-22 equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller and connected to B043 via RF network. On the security side of the building, the cooling system, MAU, VAV AHU, 22 VAVs, and AC-1 will be integrated. On the fire station side of the building, the heating and cooling system, HRU, and 2 FCUs will also be integrated.	
RF Network	Mount RF access point to existing tower on east side of building. CAT5 cable shall be routed along existing path to JACE.	

Project: R-22		Building No.: 031 - GENERAL ADMINISTRATION
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The AHU and ACCU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Connection of replacement R-22 equipment.	
DDC Systems	This building has no existing controls. New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.	
RF Network	Install non-penetrating roof-mount for RF access point on garage roof. CAT5 cable shall be routed through existing penetrations in east wall and along existing path above drop ceiling to JACE.	

Project: ROC at B374		Building No.: 040 - POST OFFICE
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing Delta controls and connected to the ROC in B374 via RF network. The heating system, AHU-1, AHU-2, convector, base board radiators, and cabinet unit heater will be integrated.	
RF Network	Install non-penetrating mount for RF access point in interior of semi-circle attic window on west wall. CAT5 cable shall be routed through sewer vent penetration along existing path to JACE.	

Project: ROC at B374		Building No.: 042 - PRODUCTION
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing controls and connected to the ROC in B374 via RF network. Existing equipment with DDC compatible unit controllers will be integrated.	
RF Network	Install non-penetrating roof-mount for RF access point on flat roof above room 102. CAT5 cable shall be routed along existing path to JACE.	

Project: ROC at B374		Building No.: 043 - PW SHOP
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	A CRAC unit and ACCU will be installed to support the mini-ROC in B043.	
Civil	Concrete equipment pad and bollards to be constructed.	
Electrical	Provide power for JACE supervisory controller. Uninterruptable power supply for mini-ROC.	
DDC Systems	A JACE supervisory controller will be installed over existing controls and connected to the ROC in B374 supervisory control room via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.	
RF Network	Install non-penetrating mount for RF access point in interior of east wall attic window. CAT5 cable shall be routed along existing path to JACE.	

Project: R-22		Building No.: 044 - HRO / CODE 106
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	Two chillers, one ACCU, and one AHU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Civil	The existing concrete equipment mounting pad and bollards will be demolished and replaced to accommodate new equipment.	
Electrical	Provide power for JACE supervisory controller. Connection of replacement R-22 equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Tridium controls and connected to B043 via RF network. The heating system, cooling system, AHU-HRO, 21 VAVs, 7 FTRs, and an AHU-EAP will be integrated.	
RF Network	Mount RF access point to mortar of exterior wall in first floor mechanical room. CAT5 cable shall be routed along existing path in same room to JACE.	

Project: ROC at B374		Building No.: 045 - SHOP 99
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing controls and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, CHWS, CHWR, and CRAC. Note that this JACE will be shared with B075.	
RF Network	Mount RF access point on the second floor in south wall window. CAT5 cable shall be routed along existing path to JACE.	

Project: R-22		Building No.: 059 - PWD MAINE OFFICE
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The ACCU, and AHU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Connection of replacement R-22 equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Delta controls and connected to B043 via RF network. The Hot Water System, Chilled Water System, AHU-1, AC-1, and 27 VAVs will be integrated.	
RF Network	Mount RF access point on the third floor in south wall window. CAT5 cable shall be routed along existing path following electrical SCADA to JACE.	

Project: R-22		Building No.: 060 - PLASTICS & RUBBER SHOP
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	Existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Barbara Coleman controls and connected to B043 via RF network. The heating system, 4 AHUs, 4 UHs, and 3 BBs will be integrated.	
RF Network	Mount RF access point in south wall attic window. CAT5 cable shall be routed along existing path in attic and down to JACE.	

Project: ROC at B374		Building No.: 064 - PRODUCTION SHOP
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.	
RF Network	Mount RF access point in north wall window. CAT5 cable shall be routed through existing wall penetration to JACE.	

Project: ROC at B374		Building No.: 074 - CENTRAL TOOL SHOP
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing controls and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.	
RF Network	Mount RF access point to inside second floor window in south stairwell. CAT5 cable shall be routed through stairwell ceiling and down through existing penetration to JACE. Contractor to chase as practical.	

Project: ROC at B374		Building No.: 075 - SHEET METAL SHOP
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	Supervisory control will be supplied by the JACE installed in B045.	
RF Network	Mount RF access point inside second floor, north-east corner window. CAT5 cable shall be routed along existing path to JACE.	

Project: ROC at B374		Building No.: 076 - FORGE AND HEAT TREAT SHOP	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.		
RF Network	Mount RF access point inside second floor, north-west corner window. CAT5 cable shall be routed along existing path to JACE.		

Project: R-22		Building No.: 079 - ADMIN, SUPPLY, STORAGE	
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.			
Work Item	Work Summary		
HVAC	2 ACCUs, and the DX cooling coils from two existing AHUs utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.		
Structural	Existing timber and/or steel frames for roof-mounted equipment may require rework or replacement. Contractor to field verify and submit plans for approval upon equipment selection.		
Electrical	Provide power for JACE supervisory controller. Connection of replacement R-22 equipment.		
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Barbard Coleman controls and connected to B043 via RF network.		
RF Network	Contractor shall attach mast to existing HVAC equipment frame for RF access point. CAT5 cable shall be routed through existing roof penetration and path alongside HVAC control wiring.		

Project: ROC at B374		Building No.: 080 - SHOP 06	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.		
RF Network	Contractor shall attach mast to existing ladder guardrail on south west corner of roof for RF access point. CAT5 cable shall be routed alongside existing conduit to JACE.		

Project: R-22 & B086 RCx		Building No.: 086/086A - PLANNING DEPT-ADMIN, SHIPYARD COMND. CTR	
<i>Project Objective:</i>			
Work Item	Work Summary		
HVAC	<p>Under the retrocommissioning of B086 project, the chilled water system on the first floor of B086 will be replaced. The perimeter heating system of B086A will be reconfigured to match current floor layouts. Hot water pumps will be outfitted with Variable Frequency Drives. Two existing Air Handlers will be outfitted with Energy Recovery Ventilators.</p> <p>Under the R-22 project, two ACCUs, four AC units, and four ACCUs utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.</p>		
Structural	Existing timber and/or steel frames for roof-mounted equipment may require rework or replacement. Contractor to field verify and submit plans for approval upon equipment selection. For the retrocommissioning project, a new steel platform is designed and will be installed to support two rooftop mounted ERVs.		
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.		
DDC Systems	All pneumatic controls will be removed. Supervisory control will be supplied by the JACE installed over existing Invensys controls in B086A and connected to the ROC in B374 via RF network. The heating system, AHU, MUA, and 67 FCU in B086 will be integrated. The heating system, cooling system, VAV AHU, and 99 VAVs in B086A will be integrated.		
RF Network	Contractor shall attach RF access point as high as practicable on existing mast. CAT5 cable shall be routed through existing roof penetration in penthouse to JACE.		

Project: R-22		Building No.: 096 - PROD SHOP, STORAGE	
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.			
Work Item	Work Summary		
HVAC	3 RTUs utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.		
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.		
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing KMC controls and connected to B043 via RF network.		
RF Network	Mount RF access point to inside second story window in north wall of low bay area. CAT5 cable shall be routed through existing penetrations and above drop ceiling to JACE.		

Project: R-22		Building No.: 099 - ADMIN
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The chiller utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Civil	The existing concrete equipment mounting pad will be demolished and replaced to accommodate new equipment. Bollards will be constructed.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Invensys controls and connected to B043 via RF network. The heating system, 2 AHUs, and a FCU will be integrated.	
RF Network	Contractor shall use non-penetrating mount for RF access point in interior sill of cupola window. CAT5 cable shall be routed along existing communication path to basement and through existing floor penetration up to JACE.	

Project: R-22		Building No.: 153 - ADMIN, SUPPLY
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The chiller, ACCU, and ACU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Civil	The existing concrete equipment mounting pad will be demolished and replaced to accommodate new equipment. Bollards will be constructed.	
Structural	Existing timber and/or steel frames for roof-mounted equipment may require rework or replacement. Contractor to field verify and submit plans for approval upon equipment selection.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Invensys controls and connected to B043 via RF network. The heating system, cooling system, ERV, 13 FCUs, 22 FTRs, and 35 UHs will be integrated.	
RF Network	Install non-penetrating roof-mount for RF access point. CAT5 cable shall be routed through existing roof penetration and along existing path to JACE.	

Project: R-22		Building No.: 156 - UNACC ENLISTED QTRS
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The ACCU, and 2 ACUs utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	This building has no existing controls. New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.	
RF Network	Contractor shall attach RF access point as high as practicable to existing mast on lower roof. CAT5 cable shall be routed along exterior of building to existing penetration to basement mechanical room for connection to JACE.	

Project: ROC at B374		Building No.: 158 - BATTERY SHOP
<i>Project Objective:</i> N/A		
Work Item	Work Summary	
N/A	Building 158 is scheduled to be demolished under a different contract. It will not be connected to the ROC.	

Project: ROC at B374		Building No.: 166 - SUPPLY STORAGE
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.	
RF Network	Mount RF access point to inside mezzanine window in north east corner. CAT5 cable shall be routed through existing penetrations to JACE.	

Project: R-22		Building No.: 170 - STORAGE-OFFICES
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	2 RTUs, 4 CRAC units, 2 chillers, and 3 ACCUs utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Structural	Existing timber and/or steel frames for roof-mounted equipment may require rework or replacement. Contractor to field verify and submit plans for approval upon equipment selection.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Invensys and Delta controls and connected to B043 via RF network. The cooling system, HRU, VAV RTU, 38 VAVs, 38 UHs, 4 FCU, and 2 AHUs will be integrated.	
RF Network	Contractor shall attach RF access point as high as practicable on existing mast. CAT5 cable shall be routed through existing roof penetration to sixth floor JACE.	

Project: ROC at B374		Building No.: 174 - PROD SHOPS / ADMIN
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing controls installed during an ongoing energy project and connected to the ROC in B374 via RF network. Existing equipment with DDC compatible unit controllers will be integrated.	
RF Network	Contractor shall attach mast to existing HVAC equipment frame for RF access point. CAT5 cable shall be routed through existing roof penetration and path alongside HVAC control wiring.	

Project: ROC at B374		Building No.: 177 - SUPPLY STORAGE	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.		
RF Network	Mount RF access point to interior high bay peak windows in north-west corner. CAT5 cable shall be routed through existing penetrations to JACE.		

Project: ROC at B374		Building No.: 178 - SHIPWAYS	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	A JACE supervisory controller will be installed over existing controls installed during an ongoing energy project and connected to the ROC in B374 via RF network. Existing equipment with DDC compatible unit controllers will be integrated.		
RF Network	Mount RF access point to interior high bay windows on east wall. CAT5 cable shall be routed from JACE to RF access point; all open space, shortest path shall suffice.		

Project: ROC at B374		Building No.: 184 - SUB SYSTEMS LAB / SHOP	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	A JACE supervisory controller will be installed over existing controls installed during an ongoing energy project and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.		
RF Network	Mount RF access point in sheetrock facing south-west corner mechanical room window. CAT5 cable shall be routed through existing penetrations to JACE.		

Project: R-22		Building No.: 238 - CRANES, BATTERY, ELEC SHOP	
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.			
Work Item	Work Summary		
HVAC	The chiller utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.		
Structural	Existing timber and/or steel frames for roof-mounted equipment may require rework or replacement. Contractor to field verify and submit plans for approval upon equipment selection.		
Electrical	Provide power for JACE supervisory controller and R-22 replacement equipment.		
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing controls and connected to B043 via RF network.		
RF Network	Contractor shall attach mast to existing HVAC equipment frame on roof for RF access point. CAT5 cable shall be routed through existing roof penetration and path alongside HVAC control.		

Project: ROC at B374		Building No.: 240 - ELECTRONICS/ELECT SHOP
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing Delta controls installed during an ongoing energy project and connected to the ROC in B374 via RF network. Existing equipment with DDC compatible unit controllers will be integrated.	
RF Network	Install non-penetrating roof-mount for RF access point on highest roof location. CAT5 cable shall be routed through existing roof penetration on lower roof and along existing path to JACE.	

Project: ROC at B374		Building No.: 285 - SAND BLAST FACILITY
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing controls and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.	
RF Network	Contractor shall replace existing pipe mast on south penthouse roof and extend additional 48" minimum above roof line; install RF access point to new pole. CAT5 cable shall be routed through existing roof penetration and path alongside HVAC control.	

Project: R-22		Building No.: 291 - CONTROL FACILITY
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	Existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Alerton controls and connected to B043 via RF network. The cooling system, 2 ERVs, 5 AHUs, and 7 CUHs will be integrated.	
RF Network	Install non-penetrating roof-mount for RF access point on highest roof location. CAT5 cable shall be routed through existing roof penetration and along existing path to JACE.	

Project: ROC at B374		Building No.: 292 - SEWAGE PUMPING STATION
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing controls and connected to the ROC in B374 via RF network. Control of pumps and alarm monitoring will be incorporated into the existing water SCADA system.	

Project: ROC at B374		Building No.: 296 - SEWAGE LIFT STATION	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	A JACE supervisory controller will be installed over existing controls and connected to the ROC in B374 via RF network. Existing equipment with DDC compatible unit controllers will be integrated.		

Project: R-22		Building No.: 299 - WATERFRONT SUPPORT FACILITY	
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.			
Work Item	Work Summary		
HVAC	The RTU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.		
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.		
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing controls and connected to B043 via RF network.		
RF Network	Install new structural support 48"-60" above roof line near hatch system on highest roof; install RF access point on new structure. CAT5 cable shall be routed through existing roof penetration and along existing path to JACE.		

Project: R-22		Building No.: 300 - MACHINE CENTRAL TOOL SHOPS	
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.			
Work Item	Work Summary		
HVAC	Two AHUs will be removed utilizing R-22 refrigerant will be removed and replaced with a VRF system utilizing R-410A or equivalent.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	This building has no existing controls. Existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.		
RF Network	Mount RF access point to exterior of penthouse east wall. CAT5 cable shall be routed through penthouse wall to JACE.		

Project: R-22		Building No.: 301 - FITNESS CENTER	
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	Existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Alerton controls and connected to B043 via RF network. The cooling system, 2 ERVs, 5 AHUs, and 7 CUHs will be integrated.		
RF Network	Contractor to pole mount with standoff RF access point on high exterior east wall. Contractor to determine best path between JACE and RF access point; penetration in east wall is required to route CAT5 to RF access point.		

Project: R-22		Building No.: 306 - TRANSDUCER REPAIR FACILITY
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	An AHU, a dehumidifier, and 2 ACCUs utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Invensys controls and connected to B043 via RF network. The heating system, 2 AHUs, and an FCU will be integrated.	
RF Network	Contractor to pole mount RF access point on existing mast located on west wall peak. CAT5 shall be routed along existing paths and penetrations between JACE and RF access point.	

Project: R-22		Building No.: 308 - BOWLING ALLEY
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The chiller utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Civil	The existing concrete equipment mounting pad, bollards, and retaining wall will be demolished and replaced to accommodate new equipment.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	This building has no existing controls. New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.	
RF Network	Mount RF access point on exterior corner of stairwell on south wall; mount approx. 24" above roof line to ensure clear line-of-sight to B170 access point. CAT5 shall be routed between JACE and RF access point along the existing chilled water line path. additional notes for route CAT5: 1. follow existing conduit along south-facing wall (s stairs are on other side of mechanical room wall) 2. determine best way to breach wall by drilling hole large enough to facilitate 90 degree bend, or removing one or both cinder blocks currently sealing the existing chase under the stairway) 3. breach remaining wall from the outside and route cable through it 4. run through conduit up inside corner of building to antenna located on exterior south wall	

Project: R-22		Building No.: 315 - UOPH (OFFICERS QUARTERS)
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	An ACCU, 27 packaged terminal ACUs, and the cooling coil from an AHU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Barbara Coleman controls and connected to B043 via RF network.	
RF Network	Contractor to pole mount RF access point on existing 2" pipe located on north end of roof. CAT5 shall be routed along existing paths and penetrations between JACE and RF access point.	

Project: ROC at B374		Building No.: 320 - AUTO HOBBY SHOP
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	This building has no existing controls. A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.	
RF Network	Contractor to wall mount RF access point to south exterior elevation. Contractor to drill new penetration to route new CAT5 between JACE and RF access point.	

Project: R-22		Building No.: 337 - HAZ/FLAMABLE STORAGE FAC.
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The RTU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Schneider Electric controls and connected to B043 via RF network. The heating system, 5 ERVs, an RTU, and 5 UHs will be integrated.	
RF Network	Install non penetrating roof-mount for RF access point. CAT5 cable shall be routed along existing paths to JACE; route through roof penetration associated with eru-1 unit located on roof.	

Project: R-22		Building No.: 342 - CHILD DEVELOPMENT CENTER
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	2 ACCUs and 2 AHUs utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing controls and connected to B043 via RF network.	
RF Network	Contractor to wall mount RF access point to north exterior elevation. Contractor to drill new penetration to route new CAT5 between JACE and RF access point.	

Project: R-22		Building No.: 343 - DRYDOCK 2 HEAD END BLDG.
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	Existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing KMC controls and connected to B043 via RF network. The heating system, cooling system, ERU, UH, BB, 38 VAVs, and 6 AHUs will be integrated.	
RF Network	Install RF access point on roof using any mounting system he/she deems most practical. CAT5 cable shall be routed along existing conduits and use existing roof penetrations.	

Project: ROC at B374		Building No.: 357 - SOLID & HAZ WASTE STOR FAC
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing KMC controls installed during an ongoing energy project and connected to the ROC in B374 via RF network. The heating system, 3 RTUs, 17 VAVs, and 7 EFs will be integrated.	
RF Network	Install non-penetrating roof-mount for RF access point on northwest corner of roof. CAT5 cable shall be routed along existing conduits and use existing roof penetrations.	

Project: ROC at B374		Building No.: 374 - EMERGENCY CONTROL CENTER
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	A CRAC unit, two air conditioners, and one ACCU will be installed to service the ROC and server room.	
Civil	Concrete equipment pad will be constructed.	
Electrical	Uninterruptable power supply, etc.	
DDC Systems	All buildings within the scope of this project will be networked to the new ROC housed in B374. The ROC will serve as a hub for the shipyard SCADA, AMI, and DDC systems. The HMI and server center for these networks will each be installed into existing spaces within B374.	
RF Network	Install non-penetrating roof-mount for RF access point on lower roof in northeast corner of northern most section. CAT5 cable shall be routed along existing path to JACE.	

Project: R-22		Building No.: 375 - INDOOR FIRING RANGE
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The RTU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Schneider Electric controls and connected to B043 via RF network.	
RF Network	Contractor to install 12'-14' pipe on existing HVAC handrail structure with minimum of 2 connection points; mount RF access point to new pipe to ensure clear line-of-sight to B170. Cat 5 shall be routed between JACE and new RF access point; route along existing paths in drop ceiling to existing roof penetration.	

Project: ROC at B374		Building No.: 376 - PARKING GARAGE
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.	
RF Network	Contractor to pipe mount with standoff RF access point to existing mast (Water SCADA also located on this existing mast) located on southwest corner on top floor of west wing. CAT5 shall be routed between JACE and new RF access point; route along inside corner of west side building trim to stay concealed.	

Project: R-22		Building No.: 384 - PASS AND ID OFFICE
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The ACCU and AHU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	This building has no existing controls. New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.	
RF Network	Contractor to pipe mount RF access point to cctv tower located northeast of building. CAT5 cable shall be routed along existing paths from JACE location to new RF access point; new wall penetration may be required.	

Project: R-22		Building No.: 386 - TRUCK INSPECTION WITH CANOPY
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	The ACCU and AHU utilizing R-22 refrigerant will be removed and replaced with similarly sized equipment utilizing R-410A or equivalent.	
Electrical	Provide power for JACE supervisory controller. Provide power to R-22 replacement equipment.	
DDC Systems	This building has no existing controls. New and existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed and connected to B043 via RF network.	
RF Network	Contractor to install wall/bulkhead mount RF access point on high northeast corner of exterior east wall. CAT5 cable shall be routed from JACE along high northwall to drop ceiling; new wall penetration may be required to reach RF access point. if this option proves unviable, route CAT5 from JACE along existing conduit located on east wall under soffit to north wall penetration.	

Project: R-22		Building No.: 389 - SERE APPLIED INSTRUCTION
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	Existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing Delta controls and connected to B043 via RF network. The hot water system, chilled water system, 9 UHs, 3 RTUs, an MAU, 3 VAV RTUs, and 40 VAVs will be integrated.	
RF Network	Contractor shall pipe mount RF access point on existing HVAC masts/rails. CAT5 cable shall be routed along existing path to JACE.	

Project: ROC at B374		Building No.: 395 - ARMY RECRUITING BATTALION
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	A JACE supervisory controller will be installed over existing Delta controls and connected to the ROC in B374 via RF network.	
RF Network	Install non-penetrating roof-mount for RF access point on north west corner of roof. CAT5 cable shall be routed along existing path to JACE.	

Project: R-22		Building No.: DD1 - DRYDOCK 1
<i>Project Objective:</i> Replace R-22 equipment and provide monitoring and control.		
Work Item	Work Summary	
HVAC	No mechanical equipment will be replaced.	
Electrical	Provide power for JACE supervisory controller.	
DDC Systems	Existing equipment with DDC compatible unit controllers will be integrated into a new JACE supervisory controller which will be installed over existing controls and connected to B043 via RF network.	
RF Network	Contractor shall pipe mount RF access point on flat roof of "doghouse/bulkhead," mount shall be concrete capable. CAT5 cable shall be routed along existing path to JACE; new penetration may be required if existing proves unsuitable.	

Project: ROC at B374		Building No.: H21 - SERE BARRACKS	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	A JACE supervisory controller will be installed over existing Control Tech controls and connected to the ROC in B374 via RF network. Existing equipment with DDC compatible unit controllers will be integrated.		
RF Network	Install non-penetrating mount for RF access point on west flat roof. Equipment shall be installed with minimum visibility from ground level. Contractor to determine if existing paths from JACE location to west roof are viable options; recent renovations, sheetrock, and cultural features pose as difficult obstacles to verify paths. If existing path is viable, contractor shall route CAT5 cable between JACE and rooftop RF access point. If existing path is not a viable option, contractor shall notify A-E to determine alternate path for CAT5.		

Project: ROC at B374		Building No.: M1-2-3 - OPERATIONS PLANNING AND ENGINEERING	
<i>Project Objective:</i> Provide monitoring and control of shipyard DDC system at the ROC.			
Work Item	Work Summary		
HVAC	No mechanical equipment will be replaced.		
Electrical	Provide power for JACE supervisory controller.		
DDC Systems	A JACE supervisory controller will be installed and connected to the ROC in B374 via RF network. Temperature sensors will be installed to monitor the HWS, HWR, OAT, and three other locations.		
RF Network	Contractor shall pipe mount the RF access point with a standoff to the existing mast located on the NW exterior. CAT5 cable shall be routed along existing path to JACE; follow conduit in mechanical room to stairwell to exterior RF access point pad.		