

**NSWC
Dahlgren
Facilities Engineering Division**

PERFORMANCE WORK STATEMENT

Building 1490 B1490 Replace C-Wing DX Chiller

Design Manager: John Lee

10/21/2025

APPLICABLE CODES AND STANDARDS:

1. The design and construction shall be in accordance with the latest revision/edition of the following referenced codes and standards. The term "Latest Revision/Edition" is defined as the latest version as of the project award date.
 - International Mechanical Code (IMC)
 - International Building Code (IBC)
 - National Electrical Code (NEC)
 - International Plumbing Code (IPC)
 - Unified Facilities Guide Specifications (UFGS)
 - Unified Facilities Criteria (UFC)ASHREA Standards
 - US Army Corps of Engineers Safety and Health Requirements Manual EM 385

2. PROJECT DESCRIPTION:

The scope of this project is to replace the C-Wing York Air Cooled chiller, identified as chiller #2. The existing chilled water plant consists of two air-cooled chillers and a primary/secondary chilled water loop system. The primary chilled water loop consists of three primary pumps that can operate either chiller. Only one pump is needed to operate one chiller. The secondary chilled water loop is a variable flow loop with pumps controlled by VFDs to maintain a secondary loop DP. The secondary chilled water loop provides chilled water to C Wing AHUs 1 and 2. The existing air-cooled chillers sit on a 22' x 24' x 4" concrete pad. All work is to take place at NSF Dahlgren, VA Building 1490 and Building 182 during normal working hours. Normal working hours are defined as Monday – Friday 0700-1600 NO Escorting will be required. No classified area work is anticipated.

1. Chiller Data Plate Information:

- Chiller #2
- Manufacture: York
- Model Number:
- YCAL0080EC46XCASD – See Equipment Manufacturer Tag
- Serial Number: SLNM-572080
- Capacity: Nominal Capacity KW. 281.3 (80 Tons)
- Type: Scroll
- Voltage/Phase: 460/3
- GPM: 236
- Evaporator Design:
- Entering 57 DEG F
- Leaving 44 DEG F
- Ambient 95 DEG F

3. Mechanical Work:

Demolition

- Coordinate with the Government prior to bringing the C Wing Chillers offline. B1490 has redundant chillers that can supply chilled water to C wing during Construction. Chiller shutdown requires three weeks' notice to the Government.
- Demo/Remove the existing C-Wing Chiller #2.
- Remove existing heat trace on chiller #2 piping
- Demo/Remove all chilled water piping from the demoed chiller to the first manual isolation valve on both the supply and return chilled water lines.
- Demo all exterior above grade-chilled water piping insulation associated with chiller #2.
- All BAS control wiring shall be removed from the existing chiller #2 in a manner that it can be reused. The BAS communication wire shall be replaced and routed from Chiller #1 to Chiller #2. The wire shall be a 1.5 Wire, twisted Shielded pair and be configured in a daisy chain configuration. Terminate communication wire on BACNET port of the new chiller
- Demo all existing Pressure and Temperature gauges associated with chiller #2
- The Contractor shall replace the flow switch and reuse the existing flow switch well or plug the existing flow switch well if the new chiller has an on-board flow switch.

New Work

- **The basis of Design for the new Chiller (Chiller#2) is a Daikin AGZ-F**
- Install a new scroll air-cooled chiller that best matches the basis of design
- The new chiller shall be covered by a manufacturer extended 2nd -5th year whole unit parts and labor warranty.
- Re-pipe and make all necessary chilled water connections to connect the new chiller to the existing chilled water system. All new horizontal piping shall be installed to match the elevation of the current systems piping.
- Chiller Piping and connections can be either welded or Victaulic
- Install new Heat Trace on all external piping (Heat Trace must be alarmable locally and at the remote BAS Workstation on failure)
- Re-insulate all exterior chilled water piping associated with the new chiller.
- All new insulation shall match that of the existing insulation both in R factor and weather proofing.
- All new exterior insulation shall be covered in aluminum and sealed to be watertight.
- Install new pressure and temperature gauges on the supply and return lines of chiller #2. The new pressure and temperature gauges shall be installed in a manner that will allow for replacement of these gauges from the system without water loss. The gauge(s) isolation valves shall be ball valve type. When round gauges are used, they shall have a four inch (4") minimum diameter. When adjustable angle thermometers are used, they shall have a minimum length of nine inches (9") All pressure gauges shall read in PSI and temperature gauges shall read in Degrees Fahrenheit.
- Install a new flow switch that interlocks with chiller #2 to prevent the chiller from operating with no flow.
- Chiller shall be capable of operating at 0 DEGF (Low Ambient Option).

DDC (Direct Digital Control): Demolition

- Prior to starting any DDC work, the contractor shall capture and provide to the Government, the state of all points for chiller#2 and its associated field panel. The contractors' report shall indicate any and all failed or out of calibration sensors. This requirement is to ensure the contractor is not held liable for DDC points that were/are failed prior to this project. If the contractor fails to provide this report, the contractor will be considered at fault for any and all failed and out of calibration points.
- Carefully remove all control wiring from the chiller. The contractor may re-use the control wires for all "Hard Wired Points". Communication Wire shall be replaced between Chiller#1 and Chiller #2

DDC (Direct Digital Control): New Work

- The BAS communication protocol shall be BACNET MSTP
- Install a new 1.5 pair BACNET MSTP RS 485 Communication wire from the existing chiller#1 to the new Chiller#2.
- Coordinate with the Government for addressing and Naming Convention
- Install new background graphics for chiller#2. The graphics shall mimic that of the existing chiller with updated points.
- Trend required points to verify chiller operation
- There is No requirement for BAS programming of the sequence of Operation.

Minimum Trending Points - All BACNET points shall be unbundled. The following points shall be trended and available on the chiller graphics at the B182 Workstation

- Chiller Command
- Chiller Status
- Chilled Water supply/return temperature
- Chilled Water Setpoint
- Chiller Run Time
- Chiller Flow Status
- Chiller Alarms
- Chiller Running Capacity

Chiller Isolation/Vibration Eliminators

The new chiller shall sit on new neoprene isolators. Neoprene Isolators provide isolation between the chiller and the structure to help eliminate vibration transmission. Neoprene isolators are more effective and recommended over spring isolators.

Electrical Work: Demolition

- Make safe – Chiller #2 electrical feed
- Demo all chiller power circuit wiring from the chiller #2 disconnect to the chiller.
- Demo chiller #2 service disconnect. All feeder wiring demoed from the existing disconnect shall be removed in a manner that it can be reconnected to a new chiller disconnect.
- Demo all heat Trace

New Work Electrical: Installation

- Install a new service disconnect for chiller #2 in the same location as the existing service disconnect.(NEMA 3R)
- Install new power wiring between the chiller and service disconnect.
- Make all necessary power connections to tie in the new chiller to the existing chiller #2 circuit.
- Install a new heat trace system on all exterior chilled water piping associated with chiller #2.

COMMISSIONING:

- Provide a Water Test-and-Balance (TAB) report on the new Chiller. This requirement is for the chiller and not the building wide chilled water system. TAB shall be completed before chiller start-up. This report shall be submitted to the project Construction Manager (CM) no later than one week after TAB has been completed. This report shall be included as part of the O&M.
- Contractor shall have a factory startup performed by a certified representative of the Chiller manufacturer.
- The contractor shall submit a startup report to the project Construction Manager (CM) no later than one week after chiller startup has been completed. This report shall be included as part of the O&M's.
- The contractor shall submit a Point to Point verification report from the BAS subcontractor for every newly installed input/output and virtual point in the chilled water system and chiller. This report shall indicate sensor accuracy and proper setup of all input and output points. This report shall be submitted to the project Construction Manager (CM) no later than one week after point to point has been completed. This report shall be included as part of the O&M's.
- The contractor shall submit a test plan to include how the chiller operation testing will be performed.
- Contractor shall perform all work as per federal, state and local code and in accordance to manufacturer's recommendation.
- Contractor shall be responsible for the installation, startup of the new chiller in accordance to manufacturer recommendation.

Training

- Provide (4) hours of onsite training from the chillers manufacturer. The training shall cover chiller operation, chiller service and chiller maintenance.

CONTRACTOR CLEANUP:

Contractor shall be responsible for and not limited to:

- Cleaning up debris on project site at the end of each working day.
- Properly dispose of removed materials and debris at completion of project.

OTHER PROJECT REQUIREMENTS:

1. Complete the CIMU Building Component Flat File for Dynamic and Non-Dynamic equipment. The form shall be posted in a readily available location for easy viewing by government construction representatives. The form should be updated as new materials and equipment are delivered to the construction site.

The purpose of the form is to assist the Navy's Asset Management office maintain an accurate and current database of all materials and equipment in buildings on the base for future maintenance or repair actions.

2. The contractor shall fill out and submit it to the projects Construction Manager (CM) the base refrigerant disposal form (ODS) Ozone Depleting Substance form after the refrigerant is reclaimed from the chiller. This form must be submitted no later than five (5) business days after the refrigerant has been removed from the system. A copy of this form is attached to this RFP.

Required Contractor Submittals:

- Chiller
- Chiller Disconnect
- Heat trace
- BAS Controls
- Pipe Insulation
- BACnet Wire
- O&M's 3 Hard copies and 3 electronic copies on a
- Ozone Depleting Substance Report
- Crane/Lifting Plan
- Chiller testing Plan – How will the chiller operation will be tested

Existing Chiller#2 Equipment Information



BAP2X0027626

Model/PIN		YCAL0080EC46XCASDTXLTXRLXCXX45SX1XXXXXXDAXXBXX5XXXLXNJAXXX				SERIAL #		SLNM-572080							
Refrigerant	Max. Allowable Pressure -Bar (psig):		High Side		31(450)		Low Side		24(350)						
22	System Pressure Test On		OCT. 18, 2004		at High Side		31(450)		Low Side		24(350)				
OUTDOOR USE															
Unit Control Supply:		Volt-Phase-Hertz		Voltage Limits		Min. Circuit Ampacity (Amps)		Max. Dual Element Fuse Size (Amps)		Max. Circuit Breaker Size (Amps)		Max. Amps at Min. Volts			
		115-1-60		104-126		20		20		30					
Unit Power Supply:		460-3-60		414-506		165		175		175					
Protection Device Size-Amps															
Systems No.		Min. Circuit Ampacity		Max. Dual Element Fuse Size		Max. Circuit Breaker Size		Max. Running Current		Compressor-Amps		Fans			
										Rated Current RLA /Nominal		No.			
1		---		---		---		---		23.7		3			
2		---		---		---		---		23.7		3			
										Start-up LRA		FLA			
										198		4.0			
										11.8		2			
										36.3(80)		Kg (lb)			
										36.3(80)		2			
YORK INTERNATIONAL CORP. York, PA				829 - 22778 - 888 REV. A				Heater Loads				No.			
								Compressor:				5			
								Cooler:				1			
								Volts-Phase-Hertz				115-1-60			
								Watts				70			
												420			
												Unit Weight Kg (lb)			
												2931(6448)			



Stationary Refrigeration and Air Conditioning

Ozone Depleting Substances (ODS) Required Records

REQUIREMENT Any federal employee, contractor, or Self Help Section 233 projects that work on equipment containing refrigerant **SHALL** complete this form and provide the requested information.

LAW Section 608 of the Clean Air Act prohibits the knowing release of refrigerant during the maintenance, service, repair, or disposal of air-conditioning (AC) and refrigeration equipment. The EPA requires proper refrigerant management practices by technicians, owners and operators of refrigeration and AC systems, and others.

REQUIRED INFORMATION

Contract or Work Order Number: _____
Date of Service: _____
Date Completed: _____
Technician's Name: _____
Building Number: _____
Equipment Manufacturer, Model Number, and Serial Number: _____
Type of Refrigerant: _____
Full charge of refrigerant: _____
Service required: _____
Describe Work Done: _____
Initial Verification Test: _____
Date & Method: _____
Follow Up Verification Test: _____
Date and Method: _____

If a leak is detected

Leak detection date: _____
Refrigerant recovered (in lbs.): _____
Refrigerant reinstalled (in lbs.): _____
Refrigerant leaked or added (in lbs.): _____
Date refrigerant was last added: _____
Days since last charge of refrigerant: _____

ATTACH TO THIS FORM

1. Technician's Certification to work on Refrigeration Type
2. Disposal Manifest of any refrigerant removed

Return this form and attachments to:

Tom Valentour
Clean Air Act Program Manager
NAVFAC WASHINGTON
Naval Support Facility Dahlgren
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Dahlgren, VA 22448
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(540) 842-1062

<https://www.epa.gov/section608>

